Using Prediction to Understand Regression

LPO 9952

Too often, analysts consider the analysis done when they've run a regression and then re- ported some tables. You should consider reporting your parameter estimates as the start of your report, not the end. In particular, you should think about what you r results predict. The point of almost all policy analysis is to predict what would happen to the dependent variable if the independent variable changed. This is the essence of prediction.

You'll want to use prediction for several different purposes, each of which we'll go through.

- To show how well the model predicts the data used to estimate parameters
- To make out-ofsample predictions using the regression line
- To forecast results for individuals in sample
- To forecast results for individuals out of sample

A bit of theory

The standard estimated equation is:

$$\hat{y} = \hat{\beta}_0 + \hat{\beta}_1 x_1 + \hat{\beta}_2 x_2 \ldots \hat{\beta}_k x_k$$

Our parameter for the prediction is θ:

$$\theta_0 = \beta_0 + \beta_1 c_1 + \beta_2 c_2 \ldots + \beta_k c_k \quad = E(y|x_1 = c_1, x_2 = c_2 ... x_k = c_k)$$

The estimate of θ is therefore

$$\hat{\theta_0} = \hat{\beta}_0 + \hat{\beta}_1 c_1 + \hat{\beta}_2 c_2 \ldots \hat{\beta}_k c_k$$

Of course, θ_0 is not measured without error. Instead, we need to make use of the uncertainty surrounding our estimates $\hat{\beta}_k$ which go into the estimate.

To accomplish this, we can plug the definition of β_0 from above into the population model:

$$\beta_0 = \theta_0 - \beta_1 c_1 - \beta_2 c_2 \ldots - \beta_k c_k$$

$$
\begin{aligned}
y &= \beta_0 + \beta_1 x_1 + \beta_2 x_2 \dots \beta_k x_k + u \\
&= \theta_0 - \beta_1 c_1 - \beta_2 c_2 \dots \beta_k c_k + \beta_1 x_1 + \\
&\beta_2 x_2 \dots \beta_k x_k \\
&= \theta_0 + \beta_1 (x_1 - c_1) + \beta_2 (x_2 - c_2) \dots + \beta_2 (x_k - c_k)
\end{aligned}
$$

In effect, we subtract the specific values c_j from each value of x_j and regress y_i on the result, we'll get a set of estimates where the intercept and error term are the predicted value of y for the linear combination of values of x_j contained in x_c

Predicting data in sample

We're using the `caschool.dta` data again. We'll run two regressions, a basic one with no controls showing the impact of student teacher ratios on math test scores, then another again estimating the relationship after controlling for other characteristics of the school districts.

```
. version 14

. capture log close

. log using "reg_predictlog",replace
-------------------------------------------------------------------------------
      name:  <unnamed>
       log:  /Users/doylewr/lpo_prac/lessons/s2-04-regression_prediction/reg_predictlo
  log type:  smcl
 opened on:  25 Feb 2021, 08:49:20

. clear

. clear mata

. clear matrix

. estimates clear

. graph drop _all

. set scheme s1color

. set more off

. global gdir "../../data/"
```

```
. use ${gdir}caschool, clear

. gen  expn_stu_t=expn_stu/1000

. save caschool_new, replace
file caschool_new.dta saved

. label variable math_scr "Math Scores"

. label variable str "Student Teacher Ratio"

. label variable expn_stu_t "Expenditures per Student (1000s)"

. label variable avginc "Average Income"

. label variable el_pct "English Language Percent"

. label variable meal_pct "Percent on Free/Reduced Meals"

. label variable comp_stu "Computers per Student"

. local gtype pdf /*For Mac*/

. local first_part=1

. local second_part=1

. local y math_scr

. local x str

. local controls expn_stu_t avginc el_pct meal_pct comp_stu

. local alpha=.05

. local alpha_a=.1

. local alpha_2=`alpha'/2

. local alpha_2a=`alpha_a'/2

. reg `y' `x'

      Source |       SS           df       MS      Number of obs   =       420
-------------+----------------------------------   F(1, 418)       =     16.62
       Model |  5635.62443         1  5635.62443   Prob > F        =    0.0001
```

```
    Residual |  141735.097       418   339.07918   R-squared       =    0.0382
-------------+----------------------------------   Adj R-squared   =    0.0359
       Total |  147370.722       419  351.720099   Root MSE        =    18.414

------------------------------------------------------------------------------
    math_scr |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         str |  -1.938591   .4755165    -4.08   0.000    -2.873292   -1.003889
       _cons |   691.4174   9.382469    73.69   0.000     672.9747    709.8601
------------------------------------------------------------------------------


. eststo  basic

. reg `y' `x' `controls'

      Source |       SS           df       MS      Number of obs   =       420
-------------+----------------------------------   F(6, 413)       =    180.29
       Model |  106651.228         6  17775.2047   Prob > F        =    0.0000
    Residual |  40719.4931       413  98.5944143   R-squared       =    0.7237
-------------+----------------------------------   Adj R-squared   =    0.7197
       Total |  147370.722       419  351.720099   Root MSE        =    9.9295

------------------------------------------------------------------------------
    math_scr |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         str |  -.2217831   .3355029    -0.66   0.509    -.8812893    .4377232
  expn_stu_t |  -.0070057   1.044094    -0.01   0.995    -2.059407    2.045395
      avginc |   .7093258   .1037914     6.83   0.000     .5053005    .9133511
      el_pct |  -.1097502   .0372649    -2.95   0.003    -.1830028   -.0364976
    meal_pct |  -.3824315   .0330651   -11.57   0.000    -.4474284   -.3174346
    comp_stu |   14.11309   8.116897     1.74   0.083     -1.84249    30.06868
       _cons |   663.7802   10.64377    62.36   0.000     642.8575    684.7029
------------------------------------------------------------------------------


. eststo basic_controls

. #delimit ;
delimiter now ;
. quietly esttab * using my_models.tex,          /* estout command: * indicates all es


. #delimit cr
delimiter now cr
. local df_r=e(df_r)
```

```
. local myt=invttail(`df_r',`alpha_2')

. scalar myt=`myt'

. local myt2=invttail(`df_r',`alpha_2a')

. scalar myt2=`myt2'

. if `first_part'==1{
. estimates restore basic
(results basic are active now)
```

What we want to do is to first show the overall relationship between student teacher ratios and test scores and to indicate our uncertainty for the regression line. This is when prediction comes in handy.

```
. predict yhat, xb
. predict yhat_se,stdp
. gen low_ci=yhat-(`myt'*yhat_se)
. gen hi_ci=yhat+(`myt'*yhat_se)
. gen low_ci_90=yhat-(`myt2'*yhat_se)
. gen hi_ci_90=yhat+(`myt2'*yhat_se)
. sort `x'
. graph twoway scatter `y' `x',msize(small) mcolor(blue)  ///
   || line yhat `x',lcolor(red) ///
   || line low_ci `x', lcolor(red) lpattern(dash) ///
   || line hi_ci `x', lcolor(red) lpattern(dash) ///
   || line low_ci_90 `x', lcolor(yellow) lpattern(dash) ///
   || line hi_ci_90 `x', lcolor(yellow) lpattern(dash) ///
       legend( order(1 "Math score" 2 "Prediction" 3 "95% Confidence Interval" 5 "90%
       name(basic_predict)

.

. graph export basic_predict.`gtype', replace
(file /Users/doylewr/lpo_prac/lessons/s2-04-regression_prediction/basic_predict.pdf wr
```

Remember that the prediction interval does not tell us where we can expect any individual unit to be located. Instead, the prediction interval tells us the likely range of *lines* that would be generated in repeated samples.

Hypothetical Values

Many times, we'd also like to think about how the dependent variable would increase or decrease as a function of hypothetical values of x. Using only Stata's

predict' command, we're stuck with just using the data in memory. The margins command can help us to make predictions for hypothetical values of the independent variable.

There are two steps to using margins. First, we need to generate values of $\hat{y}$ across levels of x, then we need to generate the standard error of $\hat{y}$ across those same levels of x. With those estimates in hand, we can save them in memory and plot them.

```
. sum `x', detail

                    Student Teacher Ratio
-------------------------------------------------------------
      Percentiles      Smallest
 1%     15.13898            14
 5%     16.41658       14.20176
10%     17.34573       14.54214       Obs                 420
25%     18.58179       14.70588       Sum of Wgt.         420

50%     19.72321                      Mean           19.64043
                        Largest       Std. Dev.      1.891812
75%     20.87183          24.95
90%     21.87561       25.05263       Variance       3.578952
95%     22.64514       25.78512       Skewness      -.0253655
99%     24.88889           25.8       Kurtosis       3.609597
. local mymin=r(min)
. local mymax=r(max)
. estimates restore basic_controls
(results basic_controls are active now)
. local dfr=e(df_r)
. #delimit ;
delimiter now ;
. margins , /* init margins */    predict(xb) /* Type of prediction */    nose /* Don'


Adjusted predictions                              Number of obs     =        420

Expression   : Linear prediction, predict(xb)

1._at        : str             =          14
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

2._at        : str             =        14.1
```

```
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

3._at           : str           =        14.2
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

4._at           : str           =        14.3
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

5._at           : str           =        14.4
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

6._at           : str           =        14.5
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

7._at           : str           =        14.6
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

8._at           : str           =        14.7
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
```

```
                comp_stu        =    .1359266 (mean)

9._at         : str             =        14.8
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

10._at        : str             =        14.9
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

11._at        : str             =          15
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

12._at        : str             =        15.1
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

13._at        : str             =        15.2
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

14._at        : str             =        15.3
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

15._at        : str             =        15.4
                expn_stu_t      =    5.312408 (mean)
```

```
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

16._at        : str             =        15.5
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

17._at        : str             =        15.6
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

18._at        : str             =        15.7
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

19._at        : str             =        15.8
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

20._at        : str             =        15.9
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

21._at        : str             =          16
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
22._at       : str            =        16.1
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

23._at       : str            =        16.2
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

24._at       : str            =        16.3
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

25._at       : str            =        16.4
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

26._at       : str            =        16.5
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

27._at       : str            =        16.6
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

28._at       : str            =        16.7
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
```

```
                  el_pct          =    15.76816 (mean)
                  meal_pct        =    44.70524 (mean)
                  comp_stu        =    .1359266 (mean)

29._at          : str             =        16.8
                  expn_stu_t      =    5.312408 (mean)
                  avginc          =    15.31659 (mean)
                  el_pct          =    15.76816 (mean)
                  meal_pct        =    44.70524 (mean)
                  comp_stu        =    .1359266 (mean)

30._at          : str             =        16.9
                  expn_stu_t      =    5.312408 (mean)
                  avginc          =    15.31659 (mean)
                  el_pct          =    15.76816 (mean)
                  meal_pct        =    44.70524 (mean)
                  comp_stu        =    .1359266 (mean)

31._at          : str             =          17
                  expn_stu_t      =    5.312408 (mean)
                  avginc          =    15.31659 (mean)
                  el_pct          =    15.76816 (mean)
                  meal_pct        =    44.70524 (mean)
                  comp_stu        =    .1359266 (mean)

32._at          : str             =        17.1
                  expn_stu_t      =    5.312408 (mean)
                  avginc          =    15.31659 (mean)
                  el_pct          =    15.76816 (mean)
                  meal_pct        =    44.70524 (mean)
                  comp_stu        =    .1359266 (mean)

33._at          : str             =        17.2
                  expn_stu_t      =    5.312408 (mean)
                  avginc          =    15.31659 (mean)
                  el_pct          =    15.76816 (mean)
                  meal_pct        =    44.70524 (mean)
                  comp_stu        =    .1359266 (mean)

34._at          : str             =        17.3
                  expn_stu_t      =    5.312408 (mean)
                  avginc          =    15.31659 (mean)
                  el_pct          =    15.76816 (mean)
                  meal_pct        =    44.70524 (mean)
                  comp_stu        =    .1359266 (mean)
```

```
35._at       : str             =        17.4
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

36._at       : str             =        17.5
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

37._at       : str             =        17.6
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

38._at       : str             =        17.7
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

39._at       : str             =        17.8
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

40._at       : str             =        17.9
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

41._at       : str             =          18
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
```

```
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

42._at          : str           =        18.1
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

43._at          : str           =        18.2
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

44._at          : str           =        18.3
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

45._at          : str           =        18.4
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

46._at          : str           =        18.5
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

47._at          : str           =        18.6
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

48._at          : str           =        18.7
```

```
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

49._at        : str             =        18.8
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

50._at        : str             =        18.9
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

51._at        : str             =          19
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

52._at        : str             =        19.1
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

53._at        : str             =        19.2
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

54._at        : str             =        19.3
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
```

```
                comp_stu        =    .1359266 (mean)

55._at          : str           =        19.4
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

56._at          : str           =        19.5
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

57._at          : str           =        19.6
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

58._at          : str           =        19.7
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

59._at          : str           =        19.8
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

60._at          : str           =        19.9
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

61._at          : str           =          20
                  expn_stu_t    =    5.312408 (mean)
```

```
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

62._at        : str             =        20.1
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

63._at        : str             =        20.2
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

64._at        : str             =        20.3
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

65._at        : str             =        20.4
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

66._at        : str             =        20.5
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

67._at        : str             =        20.6
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
68._at       : str            =        20.7
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

69._at       : str            =        20.8
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

70._at       : str            =        20.9
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

71._at       : str            =          21
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

72._at       : str            =        21.1
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

73._at       : str            =        21.2
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

74._at       : str            =        21.3
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
```

```
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

75._at        : str             =        21.4
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

76._at        : str             =        21.5
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

77._at        : str             =        21.6
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

78._at        : str             =        21.7
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

79._at        : str             =        21.8
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

80._at        : str             =        21.9
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
81._at       : str             =          22
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

82._at       : str             =        22.1
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

83._at       : str             =        22.2
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

84._at       : str             =        22.3
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

85._at       : str             =        22.4
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

86._at       : str             =        22.5
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

87._at       : str             =        22.6
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
```

```
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

88._at        : str             =        22.7
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

89._at        : str             =        22.8
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

90._at        : str             =        22.9
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

91._at        : str             =          23
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

92._at        : str             =        23.1
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

93._at        : str             =        23.2
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

94._at        : str             =        23.3
```

```
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

95._at        : str             =        23.4
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

96._at        : str             =        23.5
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

97._at        : str             =        23.6
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

98._at        : str             =        23.7
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

99._at        : str             =        23.8
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

100._at       : str             =        23.9
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
```

```
                comp_stu        =    .1359266 (mean)

101._at       : str             =          24
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

102._at       : str             =        24.1
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

103._at       : str             =        24.2
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

104._at       : str             =        24.3
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

105._at       : str             =        24.4
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

106._at       : str             =        24.5
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

107._at       : str             =        24.6
                expn_stu_t      =    5.312408 (mean)
```

```
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

108._at       : str             =        24.7
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

109._at       : str             =        24.8
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

110._at       : str             =        24.9
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

111._at       : str             =          25
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

112._at       : str             =        25.1
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

113._at       : str             =        25.2
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
114._at      : str            =        25.3
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

115._at      : str            =        25.4
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

116._at      : str            =        25.5
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

117._at      : str            =        25.6
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

118._at      : str            =        25.7
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

------------------------------------------------------------------------------
             |     Margin
-------------+----------------------------------------------------------------
         _at |
          1  |   654.5936
          2  |   654.5714
          3  |   654.5492
          4  |    654.527
          5  |   654.5049
          6  |   654.4827
```

7	654.4605
8	654.4383
9	654.4161
10	654.394
11	654.3718
12	654.3496
13	654.3274
14	654.3053
15	654.2831
16	654.2609
17	654.2387
18	654.2165
19	654.1944
20	654.1722
21	654.15
22	654.1278
23	654.1056
24	654.0835
25	654.0613
26	654.0391
27	654.0169
28	653.9948
29	653.9726
30	653.9504
31	653.9282
32	653.906
33	653.8839
34	653.8617
35	653.8395
36	653.8173
37	653.7951
38	653.773
39	653.7508
40	653.7286
41	653.7064
42	653.6843
43	653.6621
44	653.6399
45	653.6177
46	653.5955
47	653.5734
48	653.5512
49	653.529
50	653.5068
51	653.4847
52	653.4625

53	653.4403
54	653.4181
55	653.3959
56	653.3738
57	653.3516
58	653.3294
59	653.3072
60	653.285
61	653.2629
62	653.2407
63	653.2185
64	653.1963
65	653.1742
66	653.152
67	653.1298
68	653.1076
69	653.0854
70	653.0633
71	653.0411
72	653.0189
73	652.9967
74	652.9746
75	652.9524
76	652.9302
77	652.908
78	652.8858
79	652.8637
80	652.8415
81	652.8193
82	652.7971
83	652.7749
84	652.7528
85	652.7306
86	652.7084
87	652.6862
88	652.6641
89	652.6419
90	652.6197
91	652.5975
92	652.5753
93	652.5532
94	652.531
95	652.5088
96	652.4866
97	652.4645
98	652.4423

```
         99  |   652.4201
        100  |   652.3979
        101  |   652.3757
        102  |   652.3536
        103  |   652.3314
        104  |   652.3092
        105  |    652.287
        106  |   652.2648
        107  |   652.2427
        108  |   652.2205
        109  |   652.1983
        110  |   652.1761
        111  |    652.154
        112  |   652.1318
        113  |   652.1096
        114  |   652.0874
        115  |   652.0652
        116  |   652.0431
        117  |   652.0209
        118  |   651.9987
-------------------------------------------------------------------------------
. #delimit cr
delimiter now cr
. mat xb=e(b)
. mat allx=e(at)
. matrix myx=allx[1...,1]'
. estimates restore basic_controls
(results basic_controls are active now)
. margins , predict(stdp) nose at(`x'=(`mymin'(.1)`mymax') (mean) `controls') post

Adjusted predictions                            Number of obs     =        420

Expression   : S.E. of the prediction, predict(stdp)

1._at        : str             =          14
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

2._at        : str             =        14.1
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
```

```
                comp_stu        =    .1359266 (mean)

3._at           : str           =        14.2
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

4._at           : str           =        14.3
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

5._at           : str           =        14.4
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

6._at           : str           =        14.5
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

7._at           : str           =        14.6
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

8._at           : str           =        14.7
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

9._at           : str           =        14.8
                  expn_stu_t    =    5.312408 (mean)
```

```
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

10._at        : str             =        14.9
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

11._at        : str             =          15
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

12._at        : str             =        15.1
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

13._at        : str             =        15.2
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

14._at        : str             =        15.3
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

15._at        : str             =        15.4
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
16._at       : str            =        15.5
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

17._at       : str            =        15.6
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

18._at       : str            =        15.7
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

19._at       : str            =        15.8
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

20._at       : str            =        15.9
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

21._at       : str            =          16
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

22._at       : str            =        16.1
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
```

```
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

23._at        : str             =        16.2
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

24._at        : str             =        16.3
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

25._at        : str             =        16.4
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

26._at        : str             =        16.5
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

27._at        : str             =        16.6
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

28._at        : str             =        16.7
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
29._at       : str             =        16.8
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

30._at       : str             =        16.9
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

31._at       : str             =          17
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

32._at       : str             =        17.1
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

33._at       : str             =        17.2
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

34._at       : str             =        17.3
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

35._at       : str             =        17.4
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
```

```
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

36._at          : str           =        17.5
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

37._at          : str           =        17.6
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

38._at          : str           =        17.7
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

39._at          : str           =        17.8
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

40._at          : str           =        17.9
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

41._at          : str           =          18
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

42._at          : str           =        18.1
```

```
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

43._at          : str           =        18.2
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

44._at          : str           =        18.3
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

45._at          : str           =        18.4
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

46._at          : str           =        18.5
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

47._at          : str           =        18.6
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

48._at          : str           =        18.7
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
```

```
                comp_stu        =    .1359266 (mean)

49._at          : str           =        18.8
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

50._at          : str           =        18.9
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

51._at          : str           =          19
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

52._at          : str           =        19.1
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

53._at          : str           =        19.2
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

54._at          : str           =        19.3
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

55._at          : str           =        19.4
                  expn_stu_t    =    5.312408 (mean)
```

```
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

56._at        : str             =        19.5
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

57._at        : str             =        19.6
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

58._at        : str             =        19.7
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

59._at        : str             =        19.8
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

60._at        : str             =        19.9
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

61._at        : str             =          20
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
62._at       : str            =        20.1
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

63._at       : str            =        20.2
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

64._at       : str            =        20.3
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

65._at       : str            =        20.4
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

66._at       : str            =        20.5
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

67._at       : str            =        20.6
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

68._at       : str            =        20.7
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
```

```
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

69._at        : str             =        20.8
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

70._at        : str             =        20.9
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

71._at        : str             =          21
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

72._at        : str             =        21.1
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

73._at        : str             =        21.2
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

74._at        : str             =        21.3
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
75._at       : str            =        21.4
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

76._at       : str            =        21.5
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

77._at       : str            =        21.6
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

78._at       : str            =        21.7
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

79._at       : str            =        21.8
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

80._at       : str            =        21.9
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

81._at       : str            =          22
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
```

```
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

82._at          : str           =        22.1
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

83._at          : str           =        22.2
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

84._at          : str           =        22.3
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

85._at          : str           =        22.4
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

86._at          : str           =        22.5
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

87._at          : str           =        22.6
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

88._at          : str           =        22.7
```

```
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

89._at        : str             =        22.8
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

90._at        : str             =        22.9
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

91._at        : str             =          23
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

92._at        : str             =        23.1
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

93._at        : str             =        23.2
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

94._at        : str             =        23.3
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
```

```
                comp_stu        =    .1359266 (mean)

95._at        : str             =        23.4
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

96._at        : str             =        23.5
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

97._at        : str             =        23.6
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

98._at        : str             =        23.7
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

99._at        : str             =        23.8
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

100._at       : str             =        23.9
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

101._at       : str             =          24
                expn_stu_t      =    5.312408 (mean)
```

```
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

102._at       : str             =        24.1
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

103._at       : str             =        24.2
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

104._at       : str             =        24.3
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

105._at       : str             =        24.4
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

106._at       : str             =        24.5
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

107._at       : str             =        24.6
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
108._at      : str            =        24.7
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

109._at      : str            =        24.8
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

110._at      : str            =        24.9
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

111._at      : str            =          25
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

112._at      : str            =        25.1
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

113._at      : str            =        25.2
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

114._at      : str            =        25.3
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
```

```
              el_pct          =    15.76816 (mean)
              meal_pct        =    44.70524 (mean)
              comp_stu        =    .1359266 (mean)

115._at       : str           =        25.4
              expn_stu_t      =    5.312408 (mean)
              avginc          =    15.31659 (mean)
              el_pct          =    15.76816 (mean)
              meal_pct        =    44.70524 (mean)
              comp_stu        =    .1359266 (mean)

116._at       : str           =        25.5
              expn_stu_t      =    5.312408 (mean)
              avginc          =    15.31659 (mean)
              el_pct          =    15.76816 (mean)
              meal_pct        =    44.70524 (mean)
              comp_stu        =    .1359266 (mean)

117._at       : str           =        25.6
              expn_stu_t      =    5.312408 (mean)
              avginc          =    15.31659 (mean)
              el_pct          =    15.76816 (mean)
              meal_pct        =    44.70524 (mean)
              comp_stu        =    .1359266 (mean)

118._at       : str           =        25.7
              expn_stu_t      =    5.312408 (mean)
              avginc          =    15.31659 (mean)
              el_pct          =    15.76816 (mean)
              meal_pct        =    44.70524 (mean)
              comp_stu        =    .1359266 (mean)

------------------------------------------------------------------------------
             |     Margin
-------------+----------------------------------------------------------------
         _at |
          1  |   1.953419
          2  |   1.920935
          3  |   1.888489
          4  |   1.856081
          5  |   1.823715
          6  |   1.791393
          7  |   1.759116
          8  |   1.726889
          9  |   1.694712
         10  |    1.66259
```

```
11  |   1.630525
12  |   1.598521
13  |   1.566582
14  |   1.534712
15  |   1.502915
16  |   1.471195
17  |   1.439559
18  |   1.408011
19  |   1.376558
20  |   1.345207
21  |   1.313964
22  |   1.282837
23  |   1.251836
24  |    1.22097
25  |   1.190249
26  |   1.159684
27  |   1.129289
28  |   1.099078
29  |   1.069066
30  |    1.03927
31  |    1.00971
32  |   .9804069
33  |   .9513842
34  |   .9226692
35  |   .8942904
36  |   .8662813
37  |    .838679
38  |   .8115251
39  |   .7848666
40  |   .7587546
41  |   .7332482
42  |   .7084126
43  |    .684321
44  |   .6610551
45  |   .6387042
46  |   .6173683
47  |   .5971561
48  |   .5781854
49  |   .5605828
50  |   .5444801
51  |   .5300145
52  |   .5173233
53  |   .5065399
54  |   .4977885
55  |   .4911774
56  |   .4867938
```

57	.4846984
58	.4849207
59	.4874576
60	.4922732
61	.4993017
62	.5084513
63	.51961
64	.5326513
65	.547441
66	.5638415
67	.5817165
68	.6009344
69	.6213703
70	.6429087
71	.6654422
72	.6888733
73	.7131135
74	.7380824
75	.7637097
76	.7899308
77	.8166884
78	.8439316
79	.8716143
80	.8996969
81	.9281427
82	.9569193
83	.9859976
84	1.015351
85	1.044958
86	1.074797
87	1.104848
88	1.135096
89	1.165524
90	1.19612
91	1.226869
92	1.257763
93	1.288789
94	1.319938
95	1.351202
96	1.382574
97	1.414045
98	1.445611
99	1.477263
100	1.508998
101	1.540809
102	1.572693

```
        103  |   1.604645
        104  |    1.63666
        105  |   1.668736
        106  |   1.700869
        107  |   1.733056
        108  |   1.765294
        109  |   1.797579
        110  |    1.82991
        111  |   1.862284
        112  |   1.894699
        113  |   1.927153
        114  |   1.959643
        115  |   1.992169
        116  |   2.024729
        117  |    2.05732
        118  |   2.089942
-------------------------------------------------------------------------------
.

. mat stdp=e(b)
. mat pred1=[stdp \ xb\ myx]'
. svmat pred1
. generate lb = pred12 - (`myt' * pred11) /*Prediction minus t value times SE */
(302 missing values generated)
. generate ub = pred12 + (`myt'* pred11) /*Prediction plus t value times SE */
(302 missing values generated)
. graph twoway line pred12 pred13, ///
     xtitle("Hypothetical Values of Student-Teacher Ratio") ///
     ytitle("Predicted Values of Math Test Scores") ///
     name(basic_predict_margins)

.

. graph export basic_predict.`gtype', replace
(file /Users/doylewr/lpo_prac/lessons/s2-04-regression_prediction/basic_predict.pdf wr
. graph twoway line pred12 pred13 || ///
     line lb pred13,lcolor(red) || ///
     line ub pred13,lcolor(red) ///
     xtitle("Hypothetical Values of Student Teacher Ratio ") ///
     ytitle("Predicted Values of Math Test Scores") ///
     legend(order(1 "Predicted Value" 2 "Lower/Upper Bound 95% CI" )) ///
     name(ci_predict95)

.

. graph export ci_predict95.`gtype', replace
```

```
(file /Users/doylewr/lpo_prac/lessons/s2-04-regression_prediction/ci_predict95.pdf wri
. drop pred11 pred12 pred13
. estimates restore basic_controls
(results basic_controls are active now)
. local dfr=e(df_r)
. #delimit ;
delimiter now ;
. margins , /* init margins */    predict(xb) /* Type of prediction */    at( (mean) /


Adjusted predictions                              Number of obs     =        420
Model VCE    : OLS

Expression   : Linear prediction, predict(xb)

1._at        : str             =          14
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

2._at        : str             =        14.1
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

3._at        : str             =        14.2
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

4._at        : str             =        14.3
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

5._at        : str             =        14.4
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
```

```
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

6._at         : str             =        14.5
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

7._at         : str             =        14.6
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

8._at         : str             =        14.7
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

9._at         : str             =        14.8
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

10._at        : str             =        14.9
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

11._at        : str             =          15
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
12._at       : str             =        15.1
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

13._at       : str             =        15.2
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

14._at       : str             =        15.3
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

15._at       : str             =        15.4
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

16._at       : str             =        15.5
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

17._at       : str             =        15.6
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

18._at       : str             =        15.7
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
```

```
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

19._at          : str           =        15.8
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

20._at          : str           =        15.9
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

21._at          : str           =          16
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

22._at          : str           =        16.1
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

23._at          : str           =        16.2
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

24._at          : str           =        16.3
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

25._at          : str           =        16.4
```

```
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

26._at          : str           =        16.5
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

27._at          : str           =        16.6
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

28._at          : str           =        16.7
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

29._at          : str           =        16.8
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

30._at          : str           =        16.9
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

31._at          : str           =          17
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
```

```
                comp_stu        =    .1359266 (mean)

32._at          : str           =        17.1
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

33._at          : str           =        17.2
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

34._at          : str           =        17.3
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

35._at          : str           =        17.4
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

36._at          : str           =        17.5
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

37._at          : str           =        17.6
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

38._at          : str           =        17.7
                  expn_stu_t    =    5.312408 (mean)
```

```
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

39._at        : str             =        17.8
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

40._at        : str             =        17.9
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

41._at        : str             =          18
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

42._at        : str             =        18.1
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

43._at        : str             =        18.2
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

44._at        : str             =        18.3
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
45._at       : str             =        18.4
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

46._at       : str             =        18.5
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

47._at       : str             =        18.6
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

48._at       : str             =        18.7
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

49._at       : str             =        18.8
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

50._at       : str             =        18.9
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

51._at       : str             =          19
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
```

```
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

52._at        : str             =        19.1
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

53._at        : str             =        19.2
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

54._at        : str             =        19.3
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

55._at        : str             =        19.4
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

56._at        : str             =        19.5
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

57._at        : str             =        19.6
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
58._at       : str            =        19.7
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

59._at       : str            =        19.8
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

60._at       : str            =        19.9
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

61._at       : str            =          20
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

62._at       : str            =        20.1
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

63._at       : str            =        20.2
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

64._at       : str            =        20.3
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
```

```
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

65._at          : str           =        20.4
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

66._at          : str           =        20.5
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

67._at          : str           =        20.6
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

68._at          : str           =        20.7
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

69._at          : str           =        20.8
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

70._at          : str           =        20.9
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

71._at          : str           =          21
```

```
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

72._at          : str           =        21.1
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

73._at          : str           =        21.2
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

74._at          : str           =        21.3
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

75._at          : str           =        21.4
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

76._at          : str           =        21.5
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

77._at          : str           =        21.6
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
```

```
                comp_stu        =    .1359266 (mean)

78._at          : str           =        21.7
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

79._at          : str           =        21.8
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

80._at          : str           =        21.9
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

81._at          : str           =          22
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

82._at          : str           =        22.1
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

83._at          : str           =        22.2
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

84._at          : str           =        22.3
                  expn_stu_t    =    5.312408 (mean)
```

```
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

85._at        : str             =        22.4
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

86._at        : str             =        22.5
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

87._at        : str             =        22.6
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

88._at        : str             =        22.7
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

89._at        : str             =        22.8
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

90._at        : str             =        22.9
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
91._at       : str            =         23
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

92._at       : str            =       23.1
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

93._at       : str            =       23.2
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

94._at       : str            =       23.3
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

95._at       : str            =       23.4
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

96._at       : str            =       23.5
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

97._at       : str            =       23.6
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
```

```
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

98._at        : str             =        23.7
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

99._at        : str             =        23.8
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

100._at       : str             =        23.9
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

101._at       : str             =          24
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

102._at       : str             =        24.1
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

103._at       : str             =        24.2
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
104._at      : str            =        24.3
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

105._at      : str            =        24.4
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

106._at      : str            =        24.5
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

107._at      : str            =        24.6
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

108._at      : str            =        24.7
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

109._at      : str            =        24.8
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

110._at      : str            =        24.9
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
```

```
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

111._at       : str             =          25
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

112._at       : str             =        25.1
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

113._at       : str             =        25.2
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

114._at       : str             =        25.3
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

115._at       : str             =        25.4
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

116._at       : str             =        25.5
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

117._at       : str             =        25.6
```

```
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

118._at       : str             =        25.7
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

	Delta-method				
_at	Margin	Std. Err.	t	P>|t|	[95% Conf. Interval]
1	654.5936	1.953419	335.10	0.000	650.7537 658.4335
2	654.5714	1.920935	340.76	0.000	650.7954 658.3474
3	654.5492	1.888489	346.60	0.000	650.837 658.2615
4	654.527	1.856081	352.64	0.000	650.8785 658.1756
5	654.5049	1.823715	358.89	0.000	650.9199 658.0898
6	654.4827	1.791393	365.35	0.000	650.9613 658.0041
7	654.4605	1.759116	372.04	0.000	651.0026 657.9184
8	654.4383	1.726889	378.97	0.000	651.0437 657.8329
9	654.4161	1.694712	386.15	0.000	651.0848 657.7475
10	654.394	1.66259	393.60	0.000	651.1258 657.6622
11	654.3718	1.630525	401.33	0.000	651.1666 657.5769
12	654.3496	1.598521	409.35	0.000	651.2074 657.4919
13	654.3274	1.566582	417.68	0.000	651.248 657.4069
14	654.3053	1.534712	426.34	0.000	651.2884 657.3221
15	654.2831	1.502915	435.34	0.000	651.3288 657.2374
16	654.2609	1.471195	444.71	0.000	651.3689 657.1529
17	654.2387	1.439559	454.47	0.000	651.4089 657.0685
18	654.2165	1.408011	464.64	0.000	651.4488 656.9843
19	654.1944	1.376558	475.24	0.000	651.4884 656.9003
20	654.1722	1.345207	486.30	0.000	651.5279 656.8165
21	654.15	1.313964	497.84	0.000	651.5671 656.7329
22	654.1278	1.282837	509.91	0.000	651.6061 656.6495
23	654.1056	1.251836	522.52	0.000	651.6449 656.5664
24	654.0835	1.22097	535.71	0.000	651.6834 656.4836
25	654.0613	1.190249	549.52	0.000	651.7216 656.401
26	654.0391	1.159684	563.98	0.000	651.7595 656.3187
27	654.0169	1.129289	579.14	0.000	651.7971 656.2368
28	653.9948	1.099078	595.04	0.000	651.8343 656.1552

29	653.9726	1.069066	611.72	0.000	651.8711	656.0741
30	653.9504	1.03927	629.24	0.000	651.9075	655.9933
31	653.9282	1.00971	647.64	0.000	651.9434	655.913
32	653.906	.9804069	666.97	0.000	651.9788	655.8333
33	653.8839	.9513842	687.30	0.000	652.0137	655.754
34	653.8617	.9226692	708.66	0.000	652.048	655.6754
35	653.8395	.8942904	731.13	0.000	652.0816	655.5974
36	653.8173	.8662813	754.74	0.000	652.1145	655.5202
37	653.7951	.838679	779.55	0.000	652.1465	655.4438
38	653.773	.8115251	805.61	0.000	652.1777	655.3682
39	653.7508	.7848666	832.95	0.000	652.208	655.2936
40	653.7286	.7587546	861.58	0.000	652.2371	655.2201
41	653.7064	.7332482	891.52	0.000	652.2651	655.1478
42	653.6843	.7084126	922.75	0.000	652.2917	655.0768
43	653.6621	.684321	955.20	0.000	652.3169	655.0073
44	653.6399	.6610551	988.78	0.000	652.3404	654.9394
45	653.6177	.6387042	1023.35	0.000	652.3622	654.8732
46	653.5955	.6173683	1058.68	0.000	652.382	654.8091
47	653.5734	.5971561	1094.48	0.000	652.3995	654.7472
48	653.5512	.5781854	1130.35	0.000	652.4146	654.6877
49	653.529	.5605828	1165.80	0.000	652.4271	654.631
50	653.5068	.5444801	1200.24	0.000	652.4365	654.5771
51	653.4847	.5300145	1232.96	0.000	652.4428	654.5265
52	653.4625	.5173233	1263.16	0.000	652.4456	654.4794
53	653.4403	.5065399	1290.01	0.000	652.4446	654.436
54	653.4181	.4977885	1312.64	0.000	652.4396	654.3966
55	653.3959	.4911774	1330.26	0.000	652.4304	654.3615
56	653.3738	.4867938	1342.20	0.000	652.4169	654.3307
57	653.3516	.4846984	1347.95	0.000	652.3988	654.3044
58	653.3294	.4849207	1347.29	0.000	652.3762	654.2826
59	653.3072	.4874576	1340.23	0.000	652.349	654.2654
60	653.285	.4922732	1327.08	0.000	652.3174	654.2527
61	653.2629	.4993017	1308.35	0.000	652.2814	654.2444
62	653.2407	.5084513	1284.77	0.000	652.2412	654.2402
63	653.2185	.51961	1257.13	0.000	652.1971	654.2399
64	653.1963	.5326513	1226.31	0.000	652.1493	654.2434
65	653.1742	.547441	1193.14	0.000	652.098	654.2503
66	653.152	.5638415	1158.40	0.000	652.0436	654.2603
67	653.1298	.5817165	1122.76	0.000	651.9863	654.2733
68	653.1076	.6009344	1086.82	0.000	651.9264	654.2889
69	653.0854	.6213703	1051.04	0.000	651.864	654.3069
70	653.0633	.6429087	1015.79	0.000	651.7995	654.327
71	653.0411	.6654422	981.36	0.000	651.733	654.3492
72	653.0189	.6888733	947.95	0.000	651.6648	654.373
73	652.9967	.7131135	915.70	0.000	651.5949	654.3985
74	652.9746	.7380824	884.69	0.000	651.5237	654.4254

```
        75 |   652.9524   .7637097   854.97   0.000     651.4511    654.4536
        76 |   652.9302   .7899308   826.57   0.000     651.3774     654.483
        77 |    652.908   .8166884   799.46   0.000     651.3026    654.5134
        78 |   652.8858   .8439316   773.62   0.000     651.2269    654.5448
        79 |   652.8637   .8716143   749.03   0.000     651.1503     654.577
        80 |   652.8415   .8996969   725.62   0.000     651.0729      654.61
        81 |   652.8193   .9281427   703.36   0.000     650.9948    654.6438
        82 |   652.7971   .9569193   682.19   0.000     650.9161    654.6782
        83 |   652.7749   .9859976   662.05   0.000     650.8367    654.7131
        84 |   652.7528   1.015351   642.88   0.000     650.7569    654.7487
        85 |   652.7306   1.044958   624.65   0.000     650.6765    654.7847
        86 |   652.7084   1.074797   607.29   0.000     650.5957    654.8212
        87 |   652.6862   1.104848   590.75   0.000     650.5144    654.8581
        88 |   652.6641   1.135096   574.99   0.000     650.4328    654.8953
        89 |   652.6419   1.165524   559.96   0.000     650.3508     654.933
        90 |   652.6197    1.19612   545.61   0.000     650.2685    654.9709
        91 |   652.5975   1.226869   531.92   0.000     650.1858    655.0092
        92 |   652.5753   1.257763   518.84   0.000     650.1029    655.0478
        93 |   652.5532   1.288789   506.33   0.000     650.0198    655.0866
        94 |    652.531   1.319938   494.37   0.000     649.9364    655.1256
        95 |   652.5088   1.351202   482.91   0.000     649.8527    655.1649
        96 |   652.4866   1.382574   471.94   0.000     649.7689    655.2044
        97 |   652.4645   1.414045   461.42   0.000     649.6848    655.2441
        98 |   652.4423   1.445611   451.33   0.000     649.6006    655.2839
        99 |   652.4201   1.477263   441.64   0.000     649.5162     655.324
       100 |   652.3979   1.508998   432.34   0.000     649.4316    655.3642
       101 |   652.3757   1.540809   423.40   0.000     649.3469    655.4045
       102 |   652.3536   1.572693   414.80   0.000     649.2621     655.445
       103 |   652.3314   1.604645   406.53   0.000     649.1771    655.4857
       104 |   652.3092    1.63666   398.56   0.000      649.092    655.5264
       105 |    652.287   1.668736   390.89   0.000     649.0067    655.5673
       106 |   652.2648   1.700869   383.49   0.000     648.9214    655.6083
       107 |   652.2427   1.733056   376.35   0.000      648.836    655.6494
       108 |   652.2205   1.765294   369.47   0.000     648.7504    655.6906
       109 |   652.1983   1.797579   362.82   0.000     648.6648    655.7319
       110 |   652.1761    1.82991   356.40   0.000      648.579    655.7732
       111 |    652.154   1.862284   350.19   0.000     648.4932    655.8147
       112 |   652.1318   1.894699   344.19   0.000     648.4073    655.8562
       113 |   652.1096   1.927153   338.38   0.000     648.3213    655.8979
       114 |   652.0874   1.959643   332.76   0.000     648.2353    655.9395
       115 |   652.0652   1.992169   327.31   0.000     648.1492    655.9813
       116 |   652.0431   2.024729   322.04   0.000      648.063    656.0231
       117 |   652.0209    2.05732   316.93   0.000     647.9768     656.065
       118 |   651.9987   2.089942   311.97   0.000     647.8905     656.107
------------------------------------------------------------------------------
. #delimit cr
```

```
delimiter now cr
. marginsplot , recast(line) plotopts(lcolor(black)) recastci(rarea)

  Variables that uniquely identify margins: str
.

. }/* End first part */

. if `second_part'==1{
```

Forecasting

Forecasting is distinct from prediction in the parlance of regression. The prediction interval is all about how different the regression line is likely to be in repeated samples. The forecast interval is all about how well the model predicts the location of individual points. A 95% confidence interval around the regression line says: `In 95 percent of repeated samples, an interval calculated in this way will include the true value of the regression line.''` `A 95\% forecast interval around the regression line says`In 95 percent of repeated samples, an interval calculated in this way will include all but 5 percent of observations."

The process for generating these lines is very similar to the one we just went through, with the exception that we'll be using `stdf`, the standrad error of the forecast, as opposed to `stdp`, the standard error of the prediction.

Here's what the forecast interval looks like for us, when predicting using available data:

```
. drop yhat* *ci
. estimates restore basic
(results basic are active now)
. predict yhat, xb
. predict yhat_se,stdp
. predict yhat_fse,stdf
. gen low_ci=yhat-(myt*yhat_se)
. gen hi_ci=yhat+(myt*yhat_se)
. gen low_ci_f=yhat-(myt*yhat_fse)
. gen hi_ci_f=yhat+(myt*yhat_fse)
. sort `x'
. graph twoway scatter `y' `x',msize(small) mcolor(blue)  ///
   || line yhat `x',lcolor(red) ///
   || line low_ci `x', lcolor(red) lpattern(dash) ///
   || line hi_ci `x', lcolor(red) lpattern(dash) ///
   || line low_ci_f `x', lcolor(green) lpattern(dash) ///
   || line hi_ci_f `x', lcolor(green) lpattern (dash) ///
```

```
     legend( order(1 "Math score" 2 "Prediction" 3 "95% Confidence Interval, Predictio

.

. graph export predictvforecast.`gtype', replace
(file /Users/doylewr/lpo_prac/lessons/s2-04-regression_prediction/predictvforecast.pdf
. gen outside=`y' < low_ci_f | `y' >hi_ci_f
. egen total_out=sum(outside)
. sum total_out

    Variable |        Obs        Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
   total_out |        420          20           0         20         20
. scalar my_out=r(mean)
. scalar myn=_N
. scalar pct_out=my_out/myn
. scalar li pct_out
   pct_out =  .04761905
. estimates restore basic_controls
(results basic_controls are active now)
```

With hypothetical data, we're forecasting out of range, and so the intervals are going to be quite wide.

```
. sum `x', detail

                    Student Teacher Ratio
-------------------------------------------------------------
      Percentiles      Smallest
 1%     15.13898            14
 5%     16.41658       14.20176
10%     17.34573       14.54214       Obs                 420
25%     18.58179       14.70588       Sum of Wgt.         420

50%     19.72321                      Mean           19.64043
                        Largest       Std. Dev.      1.891812
75%     20.87183          24.95
90%     21.87561       25.05263       Variance       3.578952
95%     22.64514       25.78512       Skewness      -.0253655
99%     24.88889           25.8       Kurtosis       3.609597
. local mymin=0
. local mymax=100
. local diff=`mymax'-`mymin'
. local step=`diff'/100
. estimates restore basic_controls
(results basic_controls are active now)
. local dfr=e(df_r)
```

```
. margins , predict(xb) nose at( (mean) `controls' `x'=(`mymin'(`step')`mymax')) post

Adjusted predictions                            Number of obs     =        420

Expression   : Linear prediction, predict(xb)

1._at        : str             =           0
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

2._at        : str             =           1
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

3._at        : str             =           2
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

4._at        : str             =           3
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

5._at        : str             =           4
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

6._at        : str             =           5
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
```

```
                comp_stu        =    .1359266 (mean)

7._at           : str           =           6
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

8._at           : str           =           7
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

9._at           : str           =           8
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

10._at          : str           =           9
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

11._at          : str           =          10
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

12._at          : str           =          11
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

13._at          : str           =          12
                  expn_stu_t    =    5.312408 (mean)
```

```
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

14._at        : str             =          13
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

15._at        : str             =          14
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

16._at        : str             =          15
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

17._at        : str             =          16
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

18._at        : str             =          17
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

19._at        : str             =          18
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
20._at       : str            =          19
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

21._at       : str            =          20
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

22._at       : str            =          21
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

23._at       : str            =          22
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

24._at       : str            =          23
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

25._at       : str            =          24
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
               el_pct         =    15.76816 (mean)
               meal_pct       =    44.70524 (mean)
               comp_stu       =    .1359266 (mean)

26._at       : str            =          25
               expn_stu_t     =    5.312408 (mean)
               avginc         =    15.31659 (mean)
```

```
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

27._at        : str             =          26
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

28._at        : str             =          27
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

29._at        : str             =          28
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

30._at        : str             =          29
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

31._at        : str             =          30
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

32._at        : str             =          31
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
33._at       : str            =         32
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

34._at       : str            =         33
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

35._at       : str            =         34
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

36._at       : str            =         35
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

37._at       : str            =         36
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

38._at       : str            =         37
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

39._at       : str            =         38
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
```

```
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

40._at          : str           =          39
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

41._at          : str           =          40
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

42._at          : str           =          41
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

43._at          : str           =          42
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

44._at          : str           =          43
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

45._at          : str           =          44
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

46._at          : str           =          45
```

```
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

47._at        : str             =          46
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

48._at        : str             =          47
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

49._at        : str             =          48
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

50._at        : str             =          49
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

51._at        : str             =          50
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

52._at        : str             =          51
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
```

```
                comp_stu        =    .1359266 (mean)

53._at        : str             =          52
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

54._at        : str             =          53
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

55._at        : str             =          54
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

56._at        : str             =          55
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

57._at        : str             =          56
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

58._at        : str             =          57
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

59._at        : str             =          58
                expn_stu_t      =    5.312408 (mean)
```

```
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

60._at        : str             =          59
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

61._at        : str             =          60
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

62._at        : str             =          61
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

63._at        : str             =          62
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

64._at        : str             =          63
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

65._at        : str             =          64
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
66._at       : str             =         65
               expn_stu_t      =   5.312408 (mean)
               avginc          =   15.31659 (mean)
               el_pct          =   15.76816 (mean)
               meal_pct        =   44.70524 (mean)
               comp_stu        =   .1359266 (mean)

67._at       : str             =         66
               expn_stu_t      =   5.312408 (mean)
               avginc          =   15.31659 (mean)
               el_pct          =   15.76816 (mean)
               meal_pct        =   44.70524 (mean)
               comp_stu        =   .1359266 (mean)

68._at       : str             =         67
               expn_stu_t      =   5.312408 (mean)
               avginc          =   15.31659 (mean)
               el_pct          =   15.76816 (mean)
               meal_pct        =   44.70524 (mean)
               comp_stu        =   .1359266 (mean)

69._at       : str             =         68
               expn_stu_t      =   5.312408 (mean)
               avginc          =   15.31659 (mean)
               el_pct          =   15.76816 (mean)
               meal_pct        =   44.70524 (mean)
               comp_stu        =   .1359266 (mean)

70._at       : str             =         69
               expn_stu_t      =   5.312408 (mean)
               avginc          =   15.31659 (mean)
               el_pct          =   15.76816 (mean)
               meal_pct        =   44.70524 (mean)
               comp_stu        =   .1359266 (mean)

71._at       : str             =         70
               expn_stu_t      =   5.312408 (mean)
               avginc          =   15.31659 (mean)
               el_pct          =   15.76816 (mean)
               meal_pct        =   44.70524 (mean)
               comp_stu        =   .1359266 (mean)

72._at       : str             =         71
               expn_stu_t      =   5.312408 (mean)
               avginc          =   15.31659 (mean)
```

```
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

73._at        : str             =          72
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

74._at        : str             =          73
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

75._at        : str             =          74
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

76._at        : str             =          75
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

77._at        : str             =          76
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

78._at        : str             =          77
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
79._at       : str            =         78
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

80._at       : str            =         79
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

81._at       : str            =         80
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

82._at       : str            =         81
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

83._at       : str            =         82
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

84._at       : str            =         83
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

85._at       : str            =         84
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
```

```
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

86._at          : str           =          85
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

87._at          : str           =          86
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

88._at          : str           =          87
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

89._at          : str           =          88
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

90._at          : str           =          89
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

91._at          : str           =          90
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

92._at          : str           =          91
```

```
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

93._at        : str             =          92
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

94._at        : str             =          93
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

95._at        : str             =          94
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

96._at        : str             =          95
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

97._at        : str             =          96
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

98._at        : str             =          97
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
```

```
              comp_stu        =    .1359266 (mean)

99._at        : str           =          98
              expn_stu_t      =    5.312408 (mean)
              avginc          =    15.31659 (mean)
              el_pct          =    15.76816 (mean)
              meal_pct        =    44.70524 (mean)
              comp_stu        =    .1359266 (mean)

100._at       : str           =          99
              expn_stu_t      =    5.312408 (mean)
              avginc          =    15.31659 (mean)
              el_pct          =    15.76816 (mean)
              meal_pct        =    44.70524 (mean)
              comp_stu        =    .1359266 (mean)

101._at       : str           =         100
              expn_stu_t      =    5.312408 (mean)
              avginc          =    15.31659 (mean)
              el_pct          =    15.76816 (mean)
              meal_pct        =    44.70524 (mean)
              comp_stu        =    .1359266 (mean)

------------------------------------------------------------------------------
             |     Margin
-------------+----------------------------------------------------------------
         _at |
          1  |   657.6985
          2  |   657.4767
          3  |    657.255
          4  |   657.0332
          5  |   656.8114
          6  |   656.5896
          7  |   656.3678
          8  |   656.1461
          9  |   655.9243
         10  |   655.7025
         11  |   655.4807
         12  |   655.2589
         13  |   655.0371
         14  |   654.8154
         15  |   654.5936
         16  |   654.3718
         17  |     654.15
         18  |   653.9282
         19  |   653.7064
```

20	653.4847
21	653.2629
22	653.0411
23	652.8193
24	652.5975
25	652.3757
26	652.154
27	651.9322
28	651.7104
29	651.4886
30	651.2668
31	651.045
32	650.8233
33	650.6015
34	650.3797
35	650.1579
36	649.9361
37	649.7143
38	649.4926
39	649.2708
40	649.049
41	648.8272
42	648.6054
43	648.3836
44	648.1619
45	647.9401
46	647.7183
47	647.4965
48	647.2747
49	647.0529
50	646.8312
51	646.6094
52	646.3876
53	646.1658
54	645.944
55	645.7222
56	645.5005
57	645.2787
58	645.0569
59	644.8351
60	644.6133
61	644.3915
62	644.1698
63	643.948
64	643.7262
65	643.5044

```
        66  |   643.2826
        67  |   643.0609
        68  |   642.8391
        69  |   642.6173
        70  |   642.3955
        71  |   642.1737
        72  |   641.9519
        73  |   641.7302
        74  |   641.5084
        75  |   641.2866
        76  |   641.0648
        77  |    640.843
        78  |   640.6212
        79  |   640.3995
        80  |   640.1777
        81  |   639.9559
        82  |   639.7341
        83  |   639.5123
        84  |   639.2905
        85  |   639.0688
        86  |    638.847
        87  |   638.6252
        88  |   638.4034
        89  |   638.1816
        90  |   637.9598
        91  |   637.7381
        92  |   637.5163
        93  |   637.2945
        94  |   637.0727
        95  |   636.8509
        96  |   636.6291
        97  |   636.4074
        98  |   636.1856
        99  |   635.9638
       100  |    635.742
       101  |   635.5202
------------------------------------------------------------------------------
.

. mat xb=e(b)
. mat allx=e(at)
. matrix myx=allx[1...,1]'
. estimates restore basic_controls
(results basic_controls are active now)
. margins , predict(stdf) nose at(`x'=(`mymin'(`step')`mymax') (mean) `controls') post
```

```
Adjusted predictions                            Number of obs     =        420

Expression   : S.E. of the forecast, predict(stdf)

1._at        : str             =           0
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

2._at        : str             =           1
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

3._at        : str             =           2
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

4._at        : str             =           3
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

5._at        : str             =           4
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

6._at        : str             =           5
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)
```

```
7._at        : str            =          6
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

8._at        : str            =          7
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

9._at        : str            =          8
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

10._at       : str            =          9
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

11._at       : str            =         10
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

12._at       : str            =         11
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

13._at       : str            =         12
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
```

```
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

14._at          : str           =          13
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

15._at          : str           =          14
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

16._at          : str           =          15
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

17._at          : str           =          16
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

18._at          : str           =          17
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

19._at          : str           =          18
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

20._at          : str           =          19
```

```
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

21._at        : str             =          20
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

22._at        : str             =          21
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

23._at        : str             =          22
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

24._at        : str             =          23
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

25._at        : str             =          24
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

26._at        : str             =          25
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
```

```
                comp_stu        =    .1359266 (mean)

27._at          : str           =          26
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

28._at          : str           =          27
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

29._at          : str           =          28
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

30._at          : str           =          29
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

31._at          : str           =          30
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

32._at          : str           =          31
                  expn_stu_t    =    5.312408 (mean)
                  avginc        =    15.31659 (mean)
                  el_pct        =    15.76816 (mean)
                  meal_pct      =    44.70524 (mean)
                  comp_stu      =    .1359266 (mean)

33._at          : str           =          32
                  expn_stu_t    =    5.312408 (mean)
```

```
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

34._at        : str             =          33
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

35._at        : str             =          34
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

36._at        : str             =          35
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

37._at        : str             =          36
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

38._at        : str             =          37
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

39._at        : str             =          38
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
40._at       : str            =         39
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

41._at       : str            =         40
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

42._at       : str            =         41
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

43._at       : str            =         42
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

44._at       : str            =         43
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

45._at       : str            =         44
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

46._at       : str            =         45
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
```

```
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

47._at        : str             =          46
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

48._at        : str             =          47
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

49._at        : str             =          48
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

50._at        : str             =          49
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

51._at        : str             =          50
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

52._at        : str             =          51
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
53._at       : str            =         52
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

54._at       : str            =         53
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

55._at       : str            =         54
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

56._at       : str            =         55
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

57._at       : str            =         56
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

58._at       : str            =         57
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

59._at       : str            =         58
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
```

```
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

60._at          : str           =          59
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

61._at          : str           =          60
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

62._at          : str           =          61
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

63._at          : str           =          62
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

64._at          : str           =          63
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

65._at          : str           =          64
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

66._at          : str           =          65
```

```
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

67._at          : str           =          66
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

68._at          : str           =          67
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

69._at          : str           =          68
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

70._at          : str           =          69
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

71._at          : str           =          70
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

72._at          : str           =          71
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
```

```
                comp_stu        =    .1359266 (mean)

73._at        : str             =          72
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

74._at        : str             =          73
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

75._at        : str             =          74
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

76._at        : str             =          75
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

77._at        : str             =          76
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

78._at        : str             =          77
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

79._at        : str             =          78
                expn_stu_t      =    5.312408 (mean)
```

```
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

80._at        : str             =          79
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

81._at        : str             =          80
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

82._at        : str             =          81
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

83._at        : str             =          82
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

84._at        : str             =          83
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

85._at        : str             =          84
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
86._at       : str            =         85
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

87._at       : str            =         86
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

88._at       : str            =         87
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

89._at       : str            =         88
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

90._at       : str            =         89
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

91._at       : str            =         90
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
               el_pct         =   15.76816 (mean)
               meal_pct       =   44.70524 (mean)
               comp_stu       =   .1359266 (mean)

92._at       : str            =         91
               expn_stu_t     =   5.312408 (mean)
               avginc         =   15.31659 (mean)
```

```
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

93._at        : str             =          92
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

94._at        : str             =          93
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

95._at        : str             =          94
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

96._at        : str             =          95
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

97._at        : str             =          96
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)

98._at        : str             =          97
                expn_stu_t      =    5.312408 (mean)
                avginc          =    15.31659 (mean)
                el_pct          =    15.76816 (mean)
                meal_pct        =    44.70524 (mean)
                comp_stu        =    .1359266 (mean)
```

```
99._at       : str             =          98
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

100._at      : str             =          99
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)

101._at      : str             =         100
               expn_stu_t      =    5.312408 (mean)
               avginc          =    15.31659 (mean)
               el_pct          =    15.76816 (mean)
               meal_pct        =    44.70524 (mean)
               comp_stu        =    .1359266 (mean)
```

	Margin
_at	
1	11.92684
2	11.74481
3	11.56965
4	11.40167
5	11.24119
6	11.08855
7	10.94407
8	10.80807
9	10.68088
10	10.56283
11	10.45421
12	10.35532
13	10.26646
14	10.18787
15	10.1198
16	10.06246
17	10.01603
18	9.980678
19	9.956509
20	9.943607
21	9.942018

22	9.951745
23	9.972756
24	10.00498
25	10.04831
26	10.1026
27	10.16768
28	10.24333
29	10.32934
30	10.42544
31	10.53135
32	10.64679
33	10.77145
34	10.905
35	11.04713
36	11.19752
37	11.35583
38	11.52173
39	11.69491
40	11.87504
41	12.06182
42	12.25494
43	12.4541
44	12.65903
45	12.86943
46	13.08506
47	13.30565
48	13.53097
49	13.76078
50	13.99486
51	14.23299
52	14.47499
53	14.72066
54	14.96981
55	15.22228
56	15.47791
57	15.73653
58	15.99801
59	16.26221
60	16.529
61	16.79825
62	17.06985
63	17.34368
64	17.61965
65	17.89765
66	18.17759
67	18.45939

```
         68  |   18.74295
         69  |    19.0282
         70  |   19.31507
         71  |   19.60348
         72  |   19.89337
         73  |   20.18468
         74  |   20.47733
         75  |   20.77128
         76  |   21.06648
         77  |   21.36286
         78  |   21.66039
         79  |     21.959
         80  |   22.25867
         81  |   22.55935
         82  |     22.861
         83  |   23.16358
         84  |   23.46706
         85  |   23.77139
         86  |   24.07656
         87  |   24.38252
         88  |   24.68925
         89  |   24.99671
         90  |   25.30489
         91  |   25.61376
         92  |   25.92329
         93  |   26.23346
         94  |   26.54424
         95  |   26.85562
         96  |   27.16757
         97  |   27.48008
         98  |   27.79313
         99  |   28.10669
        100  |   28.42075
        101  |    28.7353
-------------------------------------------------------------------------------
.

. mat stdf=e(b)
. mat pred1=[stdf \ xb\ myx]'
. svmat pred1
. drop lb ub
. generate lb = pred12 - (`myt' * pred11) /*Prediction minus t value times SE */
(319 missing values generated)
. generate ub = pred12 +  (`myt' * pred11) /*Prediction plus t value times SE */
(319 missing values generated)
. graph twoway line pred12 pred13 || ///
```

```
    line lb pred13,lcolor(red) || ///
    line ub pred13,lcolor(red) ///
    xtitle("Hypothetical Values of Student-Teacher Ratio") ///
    ytitle("Predicted Values of Math Test Scores") ///
    legend(order(1 "Predicted Value" 2 "Lower/Upper Bound 95% CI" )) ///
    name(ci_predict95_b)

.

. graph export ci_predict95_forecast.`gtype', replace
(file /Users/doylewr/lpo_prac/lessons/s2-04-regression_prediction/ci_predict95_forecas
```

The point is that we should approach these results with some humility. Too often, we don't take forecast intervals very seriously. Predictions are made on "average" using the conditional expectation function. If you're going to forecast for an individual unit— a person, a school, a state— you need to acknowledge that the uncertainty is likely to be large.

```
. } /* End part 2 */
```