
name: <unnamed>
log: C:\henry\HGBOOKee\secondedition\webmat\uprogslog.log
log type: text
opened on: 21 Jul 2015, 09:54:50

*** STEP 1. Load the programs in uprogs.do

quietly do uprogs

*** STEP 2. Load the programs in ceagraphs.do

quietly do ceagraphs

*** STEP 3. If you need help/documentation for the programs in uprogs.do,
*** run the uprogsdoc program. uprogsdoc is loaded when you 'do'
*** uprogs.do

*** STEP 4. If you need help/documentation for the programs in ceagraphs.do,
*** run the ceagraphsdoc program. ceagraphsdoc is loaded when you 'do'
*** ceagraphs.do

uprogsdoc

* UPROGS CONTAINS 8 PROGRAMS THAT USE THE RESULTS
* OF UNIVARITATE T-TESTS OF MEANS FOR THE CALCULATION
* OF FIELLER'S METHOD CONFIDENCE INTERVALS
* FOR COST-EFFECTIVENESS RATIOS (FIELLERU),
* AND BOUNDARIES BETWEEN PATTERNS 1, 2, AND 3
* RESULTS (CIBOUNDU), NET MONETARY BENEFIT FOR VARYING
* VALUES OF WTP (NMBU), NET MONETARY BENEFIT FOR A
* SINGLE VALUE OF WTP (NMB1U), THE ACCEPTABILITY CURVE
* FOR VARYING VALUES OF WTP (ACCEPTU), THE PROPORTION
* ACCEPTABLE FOR A SINGLE VALUE OF WILLINGNESS TO PAY
* (ACCEPT1U), THE VALUE OF INFORMATION CURVE FOR
* VARYING VALUES OF WTP (VOIU), AND THE VALUE OF
* INFORMATION FOR A SINGLE VALUE OF WILLINGNESS
* TO PAY (VOI1U). MANY OF THESE CURVES CAN BE GRAPHED
* USING PROGRAMS IN CEAGRAPHS.DO. IT ALSO CONTAINS
* A NUMBER OF UTILITY PROGRAMS THAT ARE USED TO
* CALCULATE THESE MEASURES OF UNCERTAINTY.

* IF ONE HAS USED METHODS OTHER THAN T-TESTS TO
* DERIVE THE PARAMETERS NEEDED FOR ESTIMATION,
* (E.G., REGRESSION ANALYSIS SUCH AS OLS, GLM, OR
* SUEST), USE OF THE PROGRAMS IN IPROGS.DO

* Glick, uprogsdoc last revised 04/19/15

* PROGRAM: CIBOUNDU

* DEFINES T-STATISTICS AND CI THAT FORM
* BOUNDARIES BETWEEN PATTERNS 1, 2, AND 3

* COMMAND LINE: ciboundu [COST] [EFFECT] [GROUP] [if]

* The 3 arguments are all names of variables
** `1' Name of cost variable
** `2' Name of effect variable
** `3' Name of dichotomous treatment variable

* Saved Results

* r(tscore1_2)
* r(cil_2)
* r(fll1_2)
* r(full1_2)
* r(tscore2_3)
* r(widestCI)
* r(widestCL)

```

* r(cd)
* r(sec)
* r(qd)
* r(seq)
* r(rho)
* r(dof)

* PROGRAM:  FIELLERU

* CALCULATES FIELLER INTERVALS
* Reports the point estimate and quadrant for the CER as
* well as the specified interval.  If the specified interval
* isn't defined, it reports the limit of the widest
* defined interval

*  COMMAND LINE:  fielleru [COST] [EFFECT] [GROUP] [CI] [if]

* The first 3 arguments are names of variables; the fourth is a number
** `1' Name of cost variable
** `2' Name of effect variable
** `3' Name of dichotomous treatment variable
** `4' confidence interval, as decimal (e.g., 0.95 for a 95% interval)

* Saved Results

* r(R)
* r(CI)
* r(fill)
* r(ful)
* r(widestCI)
* r(widestCL)
* r(cd)
* r(sec)
* r(qd)
* r(seq)
* r(rho)
* r(dof)

* Saved Results (macros)
* r(cmd)

* PROGRAM:  ACCEPTU

* CALCULATES WILLINGNESS TO PAY (WTP), % ACCEPTABLE, and P-VALUE

*  COMMAND LINE:  acceptu [COST] [EFFECT] [GROUP] [if]

* The 3 arguments are all names of variables
** `1' Name of cost variable
** `2' Name of effect variable
** `3' Name of dichotomous treatment variable

* Saved Results (scalars)
* r(cd)
* r(sec)
* r(qd)
* r(seq)
* r(rho)
* r(dof)

* Saved Results (macros)
* r(cmd)

* Saved Results (matrices)
* r(accmat)

* PROGRAM:  NMBU

```

```

* CALCULATES NMB, CI, AND P-VALUE FOR VARYING
* VALUES OF WILLINGNESS TO PAY

*   COMMAND LINE:  nmbu [COST] [EFFECT] [GROUP] [CI] [if]
//
* The first 3 arguments are names of variables; the fourth is a number
** `1' Name of cost variable
** `2' Name of effect variable
** `3' Name of dichotomous treatment variable
** `4' confidence interval, as decimal (e.g., 0.95 for a 95% interval)

* Saved Results (scalars)
* r(CI)
* r(cd)
* r(sec)
* r(qd)
* r(seq)
* r(rho)
* r(dof)

* Saved Results (macros)
* r(cmd)

* Saved Results (matrices)
* r(nmbmat)

```

PROGRAM: VOIU

CALCULATES VALUE OF INFORMATION FOR VARYING
VALUES OF WTP

```

*   COMMAND LINE:  voiu [COST] [EFFECT] [GROUP] [if]

* The 3 arguments are all names of variables
** `1' Name of cost variable
** `2' Name of effect variable
** `3' Name of dichotomous treatment variable

* Saved Results (scalars)
* r(cd)
* r(sec)
* r(qd)
* r(seq)
* r(rho)
* r(dof)

* Saved Results (macros)
* r(cmd)

* Saved Results (matrices)
* r(voimat)

```

PROGRAM: ACCEPT1U

CALCULATES THE PERCENT ACCEPTBLE FOR A
SPECIFIED VALUE OF WTP

```

*   COMMAND LINE:  accept1u [COST] [EFFECT] [GROUP] [WTP] [if]

* The first 3 arguments are names of variables;
* the fourth is a number
** `1' Name of cost variable
** `2' Name of effect variable
** `3' Name of dichotomous treatment variable
** `4' Willingness to pay (e.g., 50000)

* Saved Results (scalars)
* r(wtp)
* r(accept)

```

```
* r(p)
* r(cd)
* r(sec)
* r(qd)
* r(seq)
* r(rho)
* r(dof)
```

```
* Save Results (macros)
* r(cmd)
```

```
PROGRAM:  NMBLU
```

```
CALCULATES THE NET MONETARY BENEFIT PLUS ITS
LOWER AND UPPER CL FOR A SPECIFIED VALUE OF WTP
```

```
*  COMMAND LINE:  nmblu [COST] [EFFECT] [GROUP] [WTP] [CI] [if]
```

```
* The first 3 arguments are names of variables;
* the fourth and fifth are numbers
** `1' Name of cost variable
** `2' Name of effect variable
** `3' Name of dichotomous treatment variable
** `4' Willingness to pay (e.g., 50000)
** `5' Confidence interval, as decimal (e.g., 0.95 for a 95% interval)
```

```
* Saved Results (scalars)
```

```
* r(wtp)
* r(nmb)
* r(nmbll)
* r(nmbul)
* r(p)
* r(cd)
* r(sec)
* r(qd)
* r(seq)
* r(rho)
* r(dof)
```

```
* Save Results (macros)
* r(cmd)
```

```
* PROGRAM:  VOILU
```

```
CALCULATES THE VALUE OF INFORMATION FOR A
SPECIFIED VALUE OF WTP
```

```
*  COMMAND LINE:  voilu [COST] [EFFECT] [GROUP] [WTP] [CI] [if]
```

```
* The FIRST 3 arguments are names of variables;
* the fourth is a number
** `1' Name of cost variable
** `2' Name of effect variable
** `3' Name of dichotomous treatment variable
** `4' Willingness to pay (e.g., 50000)
```

```
* Saved Results (scalars)
```

```
* r(wtp)
* r(voi)
* r(cd)
* r(sec)
* r(qd)
* r(seq)
* r(rho)
* r(dof)
```

```
* Save Results (macros)
* r(cmd)
```

```

* Utility Programs
* ipinputs: Calculates t-test inputs for
*   ciboundu, fielleru, acceptu, nmbu,
*   voiu, acceptlu, nmblu, and voilu
* fielleri
* nmbi
* nmbli
* accepti
* acceptli
* ciboundi
* voii
* voili

* See ceagraphs.do for programs that graph
* the results of fielleru, acceptu, nmbu,
* voiu, and nmblu

```

ceagraphsdoc

```

* The programs in this file graph the results of the fielleri,
* nmbi, nmbli, accepti, acceptli, and voii programs contained
* in the iprogs.do file as well as the fielleru, nmbu, nmblu,
* acceptu, acceptlu, and voiu programs contained in the
* uprogs.do file (updated on or after 5/11/12. For each program
* in this file, you first run one of the 6 programs in iprogs
* (e.g., fielleri) (or one of the 6 programs in uprogs) and
* immediately thereafter run the graphing program (e.g.,
* fiellergraph). The following lines provide examples:
*
* fielleri 1000 500 .1 .05 .1 498 .95
* fiellergraph,ellipse
* [OR if no ellipse is desired]
* fiellergraph
*
* fielleru cost galy treat 95
* fiellergraph,ellipse
* [OR if no ellipse is desired]
* fiellergraph
*
* nmbi 1000 500 .1 .05 .1 498 .95
* nmbgraph
*
* nmbu cost galy treat .95
* nmbgraph
*
* nmbli 1000 500 .1 .05 .1 50000 498 .95
* nmbgraph,ellipse
* [OR if no ellipse is desired]
* nmbgraph
*
* nmblu cost galy treat 50000 .95
* nmbgraph,ellipse
* [OR if no ellipse is desired]
* nmbgraph
*
* accepti 1000 500 .1 .05 .1 498
* accgraph
* [OR, if decision lies are desired]
* accgraph 0.95
*
* acceptu cost galy treat 50000
* accgraph
* [OR, if decision lies are desired]
* accgraph 0.95
*
* acceptli 1000 500 .1 .05 .1 50000 498
* acceptlgraph
*

```

```

* acceptlu cost qaly treat 50000
* acceptlgraph
*
* voii 1000 500 .1 .05 .1 498
* voigraph
*
* voiu cost qaly treat 50000
* voigraph
*
* Glick, last revised 04/27/15
*
* PROGRAM: fiellergraph
*
* This program graphs the point estimate of the CER and the
* upper and lower limits of its confidence interval on the
* cost-effectiveness plane. It also reports the cost and
* effect pairs that form the tangency between the limits
* and the appropriate bivariate normal ellipse. Optionally,
* it draws 2 confidence ellipses. The program is meant to
* be run directly after running fielleri or fielleru
* because it uses elements of the return list that is
* created by both fielleri and fielleru
*
* Syntax
* fielleri [cost] [sec] [effect] [seq] [corr] [dof] [ci]
* fiellergraph,ellipse /// [draws ellipse]
* [OR if no ellipse is desired]
* fiellergraph /// [no ellipse drawn]
*
* fielleru [cost variable] [effect variable] [ci]
* fiellergraph,ellipse /// [draws ellipse]
* [OR if no ellipse is desired]
* fiellergraph /// [no ellipse drawn]
*
* Saved Results:
*
* r(c11) /// mean cost, lower limit
* r(e11) /// mean cost, lower limit
* r(cu1) /// mean cost, upper limit
* r(eu1) /// mean cost, upper limit
* r(R) /// point estimate of ratio
* r(CI) /// requested CI (e.g., 95%)
* r(f11) /// Fieller's lower limit
* r(fu1) /// Fieller's upper limit
* r(widestCI) /// Widest definable interval (WDI)
* r(widestCL) /// Limit of WDI
* r(cd) /// point estimate cost difference
* r(sec) /// SE, cost difference
* r(qd) /// point estimate effect difference
* r(seq) /// SE, effect difference
* r(rho) /// correlation of the differences
* r(dof) /// degrees of freedom
* r(cmd) /// program identifier
* r(ellipse) /// 721 x 4 matrix with ellipse data
*
* PROGRAM: nmbgraph
*
* This program draws the NMB graph. It is meant to be run
* directly after running the either the nmbi program or
* the nmbu program (or soon enough after that the r(nmbmat)
* return matrix is still resident in memory. As currently
* written, it draws the graph for values of wtp between
* 0 and 125,000. To change the upper bound wtp in the
* graph, open the program file and revise the statement
* wtp<125000.
*
* Command Line: nmbgraph
*
* Saved Results

```

```

* r(CI)
* r(cmd)
* r(nmbmat)
*
* Syntax
* nmbi [cost] [sec] [effect] [seq] [corr] [dof] [ci]
* nmbgraph
*
* nmbu [cost variable] [effect variable] [ci]
* nmbgraph
*
*
* PROGRAM: nmbgraph
*
* This program graphs the point estimate of NMB and the
* upper and lower limits of its confidence interval on the
* cost-effectiveness plane. It also reports the cost and
* effect pairs that form the tangency between the limits
* and the appropriate bivariate normal ellipse. Optionally,
* it draws 2 confidence ellipses. The program is meant to
* be run directly after running nmbli or nmblu because it
* uses elements of the return list that is created by nmbli.
*
* Syntax
* nmbli [cost] [sec] [effect] [seq] [corr] [wtp] [dof] [ci]
* [ WITH ELLIPSE ]
* nmbgraph,ellipse
* [ OR if no ellipse is desired]
* nmbgraph
*
* nmblu [cost variable] [effect variable] [wtp] [ci]
* [ WITH ELLIPSE ]
* nmbgraph,ellipse
* [ OR if no ellipse is desired]
* nmbgraph
*
* Saved Results
*
* r(elpse)          \\ 0/1 representing whether ellipse was drawn
* r(c11)
* r(ell)
* r(cul)
* r(eul)
* r(nmb)
* r(CI)
* r(nmb11)
* r(nmbul)
* r(cd)
* r(sec)
* r(qd)
* r(seq)
* r(rho)
* r(WTP)
* r(dof)
* r(cmd)
* r(ellipse)       \\ 721 x 4 matrix with ellipse data
*
*
* PROGRAM: accgraph
*
* This program draws the acceptability curve. It is meant to be
* run directly after running the accepti or acceptu program (or
* soon enough after that the r(accmat) return matrix is still
* resident in memory.
* As currently written, the program draws the curve for values of
* wtp between 0 and 125,000. To change the upper bound wtp in the
* graph, open the program file and revise the statement wtp<125000.
* The default setting draws the acceptability curve alone.
* Optionally, you can add horizontal confidence lines by specifying
* your desired confidence level (e.g., for 2-tailed 95% confidence,
* 0.95).

```

```

*
* Command Line:          accgraph
* For optional horizontal lines (e.g., for 95% 2-tailed confidence):
*                        accgraph 0.95
*
* Saved Results
* r(accmat)
* r(cmd)
*
* PROGRAM: acceptlgraph
*
* This program graphs a line that divides the joint density
* of the difference in cost and effect that is acceptable
* from the joint density that is not for a specified value
* of willingness to pay. It also graphs a pair of bivariate
* normal ellipses. The program is meant to be run directly
* after running acceptli or acceptlu because it uses
* elements of the return list that is created by these
* programs.
*
* Syntax
* acceptli [cost] [sec] [effect] [seq] [corr] [wtp] [dof]
* acceptlgraph
* acceptlu [cost variable] [effect variable] [WTP]
* acceptlgraph
*
* Saved Results
*
* r(WTP)
* r(accept)
* r(cd)
* r(sec)
* r(qd)
* r(seq)
* r(rho)
* r(dof)
* r(p)
* r(cmd)
* r(ellipse)          \\ 721 x 4 matrix with ellipse data
*
* PROGRAM: voigraph
*
* This program draws the VOI curve. It is meant to be run
* directly after running the voii or voiu program (or soon enough
* after that the r(voimat) return matrix is still resident in memory.
* As currently written, the program draws the curve for values of
* wtp between 0 and 125,000. To change the upper bound wtp in the
* graph, open the program file and revise the statement wtp<125000.
*
* Command Line:        voigraph
*
* Saved Results
* r(voimat)
* r(cmd)
*

```

```

*** STEP 5. Load the data you wish to analyze. In the first example, we load
*** the c8exper1 dataset

```

```
use c8exper1
```

```
sum
```

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|----------|-----|-------|-----------|------|-------|
| id | 500 | 250.5 | 144.4818 | 1 | 500 |
| treat | 500 | .5 | .5005008 | 0 | 1 |
| cost | 500 | 9500 | 3664.302 | 1402 | 22082 |

qaly | 500 1.065 .0220753 .9984848 1.114543

*** STEP 6. Run fielleri and graph the results

fielleru cost qaly treat 0.95

Summary Statistics

| | |
|-----------------------------|------------|
| Difference in cost: | 1000 |
| SE, difference in cost: | 324.99927 |
| Difference in effect: | .01000001 |
| SE, difference in effect: | .00192499 |
| Correlation of differences: | -.71000917 |
| Degrees of freedom: | 498 |

Cost-Effectiveness Analysis

| | |
|-----------------|-------------|
| Point Estimate: | 100000 |
| Quadrant: | Upper right |
| T-score: | 1.9647 |

Fieller 95 % Confidence Interval

| | |
|---------------|-----------|
| Lower limit : | 28184.301 |
| Upper limit: | 245218.33 |

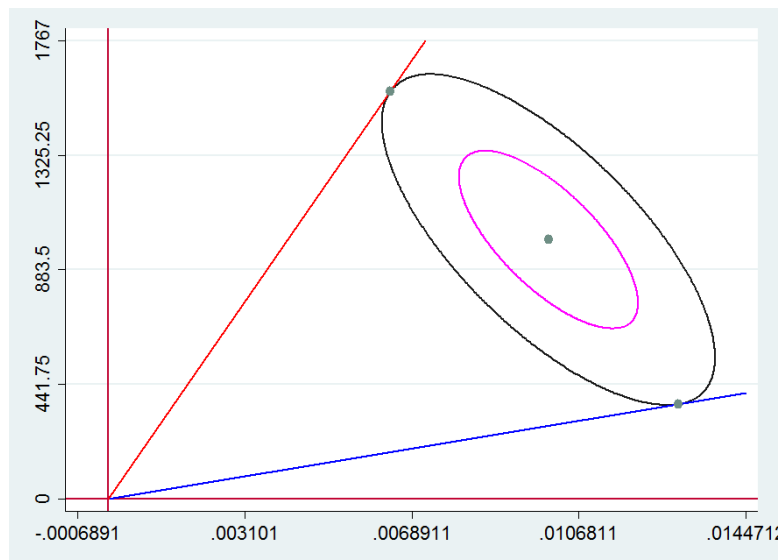
Confidence Statements:

For WTP <28184, we can be 95% confident that the therapy with the larger point estimate for effect represents bad value;

For WTP >=28184 and <=245218, we can't be 95% confident that the 2 therapies differ in value;

For WTP > 245218, we can be 95% confident that the therapy with the larger point estimate for effect represents good value compared with the alternative

fiellergraph,ellipse



Fieller 95% confidence limits

Lower limit: 28184.301
Upper limit: 245218.33
Tangent ellipse: 85.5%

Ellipse estimates

Lower limit: 28184.3
Cost at tangency: 364.96231
Effect at tangency: .01294914

Upper limit: 245218.34
Cost at tangency: 1570.2957
Effect at tangency: .00640366

Ellipse estimates are approximations. Mismatches between Fieller limits and ellipse limits may result because the program estimates approximate tangencies with the ellipse

graph export explfielugraph.png,replace
(file explfielgraphu.png written in PNG format)

*** STEP 7. Use ciboundi to define the boundaries between the 3 patterns of
*** results for experiment c8exper1

ciboundu cost qaly treat

Summary Statistics

Difference in cost: 1000
SE, difference in cost: 324.99927
Difference in effect: .01000001
SE, difference in effect: .00192499
Correlation of differences: -.71000917
Degrees of freedom: 498

T-scores and CI that define boundaries
between patterns 1, 2, and 3

Pattern 1/2 boundary

T-score for 1/2 boundary: 5.1948052
Boundary CI: 99.99997 %
Approximate limits at boundary
Lower limit: -42100
Upper limit: 4.397e+17

Pattern 2/3 boundary

T-score for widest definable CI: 10.921696
Widest definable CI: 100 %
Upper and lower limits, widest
defineable CI: -184158

*** STEP 8. Calculate NMB and its CI for varying values of WTP

nmbu cost qaly treat 0.95

Summary Statistics

Difference in cost: 1000
SE, difference in cost: 324.99927
Difference in effect: .01000001
SE, difference in effect: .00192499
Correlation of differences: -.71000917
Degrees of freedom: 498

WTP, NMB, CI, and P-Values

| | | 95 % Lower limit | 95 % Upper limit | P-value |
|--------|-------|------------------------|------------------------|---------|
| WTP | NMB | | | |
| -42079 | -1421 | -1958 | -883 | 0.0000 |
| -28588 | -1286 | -1853 | -719 | 0.0000 |
| -25652 | -1257 | -1830 | -683 | 0.0000 |
| -23852 | -1239 | -1817 | -661 | 0.0000 |
| -22537 | -1225 | -1806 | -644 | 0.0000 |
| -21495 | -1215 | -1799 | -631 | 0.0001 |
| -20629 | -1206 | -1792 | -621 | 0.0001 |
| -19886 | -1199 | -1786 | -611 | 0.0001 |
| -19234 | -1192 | -1781 | -603 | 0.0001 |
| -18653 | -1187 | -1777 | -596 | 0.0001 |
| -14557 | -1146 | -1746 | -545 | 0.0002 |
| -10732 | -1107 | -1718 | -497 | 0.0004 |
| -8368 | -1084 | -1700 | -467 | 0.0006 |
| -6627 | -1066 | -1687 | -445 | 0.0008 |
| -5237 | -1052 | -1677 | -428 | 0.0010 |
| -4075 | -1041 | -1668 | -413 | 0.0012 |
| -3073 | -1031 | -1661 | -400 | 0.0014 |
| -2189 | -1022 | -1655 | -389 | 0.0016 |
| -1397 | -1014 | -1649 | -379 | 0.0018 |
| -679 | -1007 | -1644 | -370 | 0.0020 |
| 4306 | -957 | -1607 | -307 | 0.0040 |
| 7458 | -925 | -1584 | -267 | 0.0060 |
| 9817 | -902 | -1567 | -236 | 0.0080 |
| 11724 | -883 | -1554 | -212 | 0.0100 |
| 13338 | -867 | -1542 | -191 | 0.0120 |
| 14744 | -853 | -1532 | -173 | 0.0140 |
| 15994 | -840 | -1523 | -157 | 0.0160 |
| 17124 | -829 | -1515 | -143 | 0.0180 |
| 18156 | -818 | -1507 | -129 | 0.0200 |
| 19109 | -809 | -1501 | -117 | 0.0220 |
| 20000 | -800 | -1494 | -106 | 0.0240 |
| 26111 | -739 | -1451 | -27 | 0.0420 |
| 28184 | -718 | -1436 | -0 | 0.0500 |
| 30000 | -700 | -1424 | 24 | 0.0579 |
| 30872 | -691 | -1417 | 35 | 0.0620 |
| 34606 | -654 | -1391 | 83 | 0.0820 |
| 37740 | -623 | -1369 | 124 | 0.1020 |
| 40476 | -595 | -1350 | 160 | 0.1220 |
| 42928 | -571 | -1333 | 192 | 0.1420 |
| 45166 | -548 | -1318 | 221 | 0.1620 |
| 47237 | -528 | -1303 | 248 | 0.1820 |
| 49174 | -508 | -1290 | 273 | 0.2020 |
| 50000 | -500 | -1284 | 284 | 0.2109 |
| 51002 | -490 | -1277 | 297 | 0.2220 |
| 57374 | -426 | -1233 | 381 | 0.3000 |
| 64436 | -356 | -1185 | 474 | 0.4000 |
| 70803 | -292 | -1142 | 558 | 0.5000 |
| 75000 | -250 | -1113 | 613 | 0.5697 |
| 76787 | -232 | -1101 | 637 | 0.6000 |
| 82576 | -174 | -1062 | 714 | 0.7000 |
| 88302 | -117 | -1024 | 790 | 0.8000 |
| 94076 | -59 | -985 | 866 | 0.9000 |
| 99984 | -0 | -945 | 945 | 0.9997 |
| 100000 | 0 | -945 | 945 | 1.0000 |
| 106181 | 62 | -904 | 1028 | 0.9000 |
| 112747 | 127 | -861 | 1116 | 0.8000 |
| 119860 | 199 | -813 | 1211 | 0.7000 |
| 125000 | 250 | -780 | 1280 | 0.6335 |
| 127746 | 277 | -761 | 1316 | 0.6000 |
| 136748 | 367 | -702 | 1437 | 0.5000 |
| 147438 | 474 | -632 | 1581 | 0.4000 |
| 150000 | 500 | -615 | 1615 | 0.3789 |
| 160895 | 609 | -544 | 1762 | 0.3000 |
| 174790 | 748 | -454 | 1950 | 0.2220 |

| | | | | |
|----------|--------|--------|--------|--------|
| 179134 | 791 | -426 | 2008 | 0.2020 |
| 179592 | 796 | -423 | 2015 | 0.2000 |
| 183933 | 839 | -395 | 2073 | 0.1820 |
| 189298 | 893 | -360 | 2146 | 0.1620 |
| 195390 | 954 | -320 | 2228 | 0.1420 |
| 202443 | 1024 | -275 | 2324 | 0.1220 |
| 210825 | 1108 | -221 | 2437 | 0.1020 |
| 211757 | 1118 | -215 | 2450 | 0.1000 |
| 221160 | 1212 | -154 | 2578 | 0.0820 |
| 234635 | 1346 | -68 | 2761 | 0.0620 |
| 245218 | 1452 | -0 | 2904 | 0.0500 |
| 253954 | 1540 | 56 | 3023 | 0.0420 |
| 287829 | 1878 | 272 | 3484 | 0.0220 |
| 293048 | 1930 | 305 | 3556 | 0.0200 |
| 298892 | 1989 | 343 | 3635 | 0.0180 |
| 305523 | 2055 | 385 | 3726 | 0.0160 |
| 313172 | 2132 | 433 | 3830 | 0.0140 |
| 322185 | 2222 | 491 | 3953 | 0.0120 |
| 333110 | 2331 | 560 | 4102 | 0.0100 |
| 346903 | 2469 | 647 | 4291 | 0.0080 |
| 365427 | 2654 | 765 | 4544 | 0.0060 |
| 393120 | 2931 | 940 | 4923 | 0.0040 |
| 445518 | 3455 | 1270 | 5640 | 0.0020 |
| 454128 | 3541 | 1324 | 5758 | 0.0018 |
| 463972 | 3640 | 1386 | 5893 | 0.0016 |
| 475438 | 3754 | 1458 | 6050 | 0.0014 |
| 489091 | 3891 | 1544 | 6238 | 0.0012 |
| 505840 | 4058 | 1650 | 6467 | 0.0010 |
| 527317 | 4273 | 1784 | 6762 | 0.0008 |
| 556729 | 4567 | 1969 | 7165 | 0.0006 |
| 601909 | 5019 | 2252 | 7786 | 0.0004 |
| 691380 | 5914 | 2813 | 9015 | 0.0002 |
| 819768 | 7198 | 3616 | 10780 | 0.0001 |
| 841451 | 7415 | 3751 | 11078 | 0.0001 |
| 867408 | 7674 | 3913 | 11435 | 0.0001 |
| 898933 | 7989 | 4110 | 11869 | 0.0001 |
| 938572 | 8386 | 4357 | 12414 | 0.0001 |
| 990939 | 8909 | 4684 | 13135 | 0.0000 |
| 1065609 | 9656 | 5150 | 14162 | 0.0000 |
| 1187359 | 10874 | 5909 | 15838 | 0.0000 |
| 1456387 | 13564 | 7585 | 19542 | 0.0000 |
| 32550537 | 324505 | 200941 | 448070 | 0.0000 |

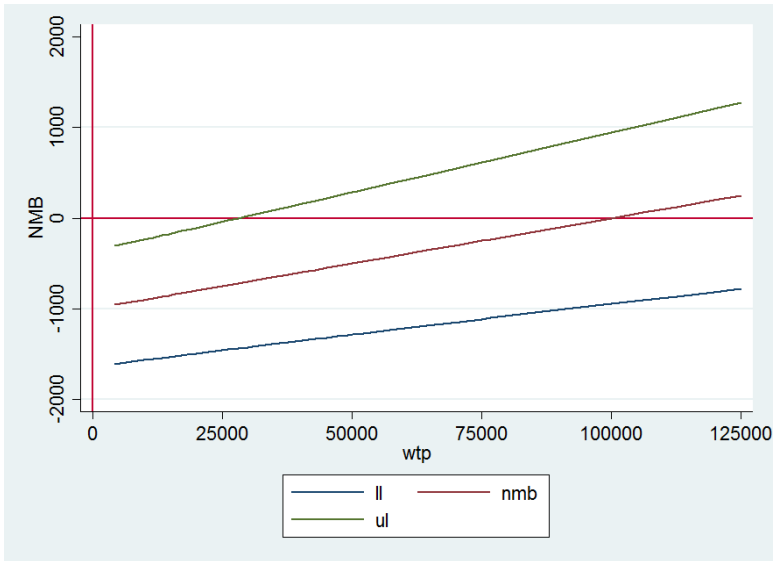
Confidence Statements:

For WTP <28184.301, we can be 95% confident that the therapy with the larger point estimate for effect represents bad value;

For WTP >=28184.301 and <=245218.33, we can't be 95% confident that the 2 therapies differ in value;

For WTP > 245218.33, we can be 95% confident that the therapy with the larger point estimate for effect represents good value compared with the alternative

nmbgraph



```
graph export explnmbugraph.png,replace
(file explnmbugraph.png written in PNG format)
```

*** STEP 9. Calculate NMB and its CI for a single value of WTP

```
nmbclu cost qaly treat 90000 0.95
```

Summary Statistics

```
Difference in cost:          1000
SE, difference in cost:     324.99927
Difference in effect:       .010000001
SE, difference in effect:   .00192499
Correlation of differences: -.71000917
Degrees of freedom:        498
```

| WTP | NMB | 95 % Lower limit | 95 % Upper limit | P-value |
|-------|------|------------------------|------------------------|---------|
| 90000 | -100 | -1012 | 812 | 0.8296 |

Confidence Statements:

We can't be 95% confident that the therapies differ in value

```
nmbclgraph,ellipse
```

NMB 95% confidence limits

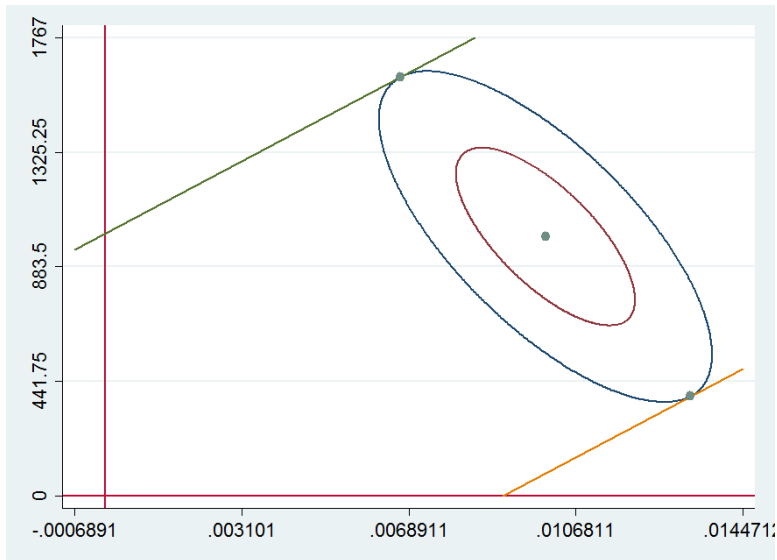
```
Lower limit: -1012.27
Upper limit: 812.27
```

Ellipse estimates

```
Lower limit: -1012.2735
Cost at tangency: 1616.1066
Effect at tangency: .00670926

Upper limit: 812.27344
Cost at tangency: 383.93304
Effect at tangency: .01329118
```

Ellipse estimates are approximations.
 Mismatches between CER limits and ellipse limits
 are due to the fact that the program estimates
 approximate tangencies with the ellipse



```
graph export explnmblograph.png,replace
(file explnmblograph.png written in PNG format)
```

*** STEP 10. Calculate the points defining the acceptability curve

```
acceptu cost qaly treat
```

Summary Statistics

```
Difference in cost:          1000
SE, difference in cost:     324.99927
Difference in effect:       .01000001
SE, difference in effect:   .00192499
Correlation of differences: -.71000917
Degrees of freedom:        498
```

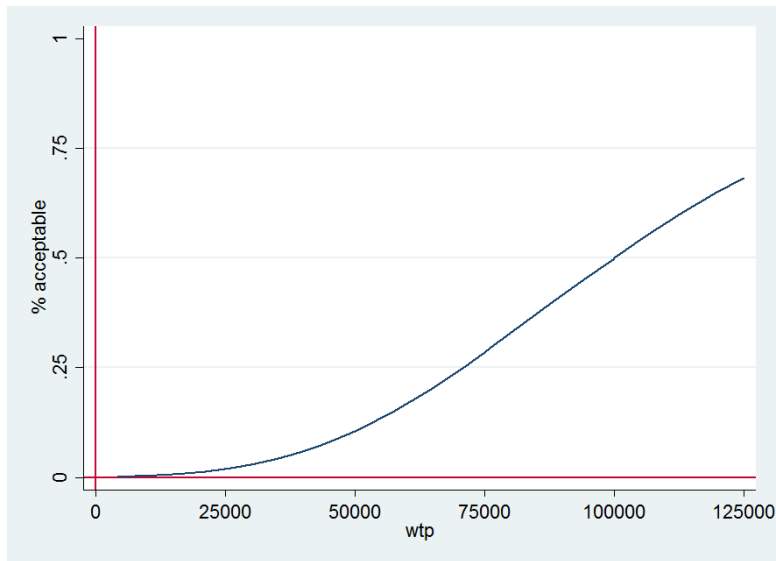
WTP, % Acceptable, and P-Value

| WTP | % Accept | P-value |
|--------|----------|---------|
| -42079 | 0.00000 | 0.0000 |
| -28588 | 0.00001 | 0.0000 |
| -25652 | 0.00001 | 0.0000 |
| -23852 | 0.00002 | 0.0000 |
| -22537 | 0.00002 | 0.0000 |
| -21495 | 0.00003 | 0.0001 |
| -20629 | 0.00003 | 0.0001 |
| -19886 | 0.00004 | 0.0001 |
| -19234 | 0.00004 | 0.0001 |
| -18653 | 0.00005 | 0.0001 |
| -14557 | 0.00010 | 0.0002 |
| -10732 | 0.00020 | 0.0004 |
| -8368 | 0.00030 | 0.0006 |
| -6627 | 0.00040 | 0.0008 |
| -5237 | 0.00050 | 0.0010 |
| -4075 | 0.00060 | 0.0012 |
| -3073 | 0.00070 | 0.0014 |
| -2189 | 0.00080 | 0.0016 |
| -1397 | 0.00090 | 0.0018 |

| | | |
|--------|---------|--------|
| -679 | 0.00100 | 0.0020 |
| 4306 | 0.00200 | 0.0040 |
| 7458 | 0.00300 | 0.0060 |
| 9817 | 0.00400 | 0.0080 |
| 11724 | 0.00500 | 0.0100 |
| 13338 | 0.00600 | 0.0120 |
| 14744 | 0.00700 | 0.0140 |
| 15994 | 0.00800 | 0.0160 |
| 17124 | 0.00900 | 0.0180 |
| 18156 | 0.01000 | 0.0200 |
| 19109 | 0.01100 | 0.0220 |
| 20000 | 0.01201 | 0.0240 |
| 26111 | 0.02100 | 0.0420 |
| 28184 | 0.02500 | 0.0500 |
| 30000 | 0.02895 | 0.0579 |
| 30872 | 0.03100 | 0.0620 |
| 34606 | 0.04100 | 0.0820 |
| 37740 | 0.05100 | 0.1020 |
| 40476 | 0.06100 | 0.1220 |
| 42928 | 0.07100 | 0.1420 |
| 45166 | 0.08100 | 0.1620 |
| 47237 | 0.09100 | 0.1820 |
| 49174 | 0.10100 | 0.2020 |
| 50000 | 0.10545 | 0.2109 |
| 51002 | 0.11100 | 0.2220 |
| 57374 | 0.15000 | 0.3000 |
| 64436 | 0.20000 | 0.4000 |
| 70803 | 0.25000 | 0.5000 |
| 75000 | 0.28483 | 0.5697 |
| 76787 | 0.30000 | 0.6000 |
| 82576 | 0.35000 | 0.7000 |
| 88302 | 0.40000 | 0.8000 |
| 94076 | 0.45000 | 0.9000 |
| 99984 | 0.49987 | 0.9997 |
| 100000 | 0.50000 | 1.0000 |
| 106181 | 0.55000 | 0.9000 |
| 112747 | 0.60000 | 0.8000 |
| 119860 | 0.65000 | 0.7000 |
| 125000 | 0.68325 | 0.6335 |
| 127746 | 0.70000 | 0.6000 |
| 136748 | 0.75000 | 0.5000 |
| 147438 | 0.80000 | 0.4000 |
| 150000 | 0.81057 | 0.3789 |
| 160895 | 0.85000 | 0.3000 |
| 174790 | 0.88900 | 0.2220 |
| 179134 | 0.89900 | 0.2020 |
| 179592 | 0.90000 | 0.2000 |
| 183933 | 0.90900 | 0.1820 |
| 189298 | 0.91900 | 0.1620 |
| 195390 | 0.92900 | 0.1420 |
| 202443 | 0.93900 | 0.1220 |
| 210825 | 0.94900 | 0.1020 |
| 211757 | 0.95000 | 0.1000 |
| 221160 | 0.95900 | 0.0820 |
| 234635 | 0.96900 | 0.0620 |
| 245218 | 0.97500 | 0.0500 |
| 253954 | 0.97900 | 0.0420 |
| 287829 | 0.98900 | 0.0220 |
| 293048 | 0.99000 | 0.0200 |
| 298892 | 0.99100 | 0.0180 |
| 305523 | 0.99200 | 0.0160 |
| 313172 | 0.99300 | 0.0140 |
| 322184 | 0.99400 | 0.0120 |
| 333110 | 0.99500 | 0.0100 |
| 346903 | 0.99600 | 0.0080 |
| 365428 | 0.99700 | 0.0060 |
| 393119 | 0.99800 | 0.0040 |
| 445517 | 0.99900 | 0.0020 |
| 454125 | 0.99910 | 0.0018 |
| 463974 | 0.99920 | 0.0016 |
| 475438 | 0.99930 | 0.0014 |

| | | |
|---------|---------|--------|
| 489088 | 0.99940 | 0.0012 |
| 505844 | 0.99950 | 0.0010 |
| 527319 | 0.99960 | 0.0008 |
| 556725 | 0.99970 | 0.0006 |
| 601894 | 0.99980 | 0.0004 |
| 691403 | 0.99990 | 0.0002 |
| 819650 | 0.99995 | 0.0001 |
| 841565 | 0.99996 | 0.0001 |
| 867505 | 0.99996 | 0.0001 |
| 899005 | 0.99997 | 0.0001 |
| 938604 | 0.99997 | 0.0001 |
| 990899 | 0.99998 | 0.0000 |
| 1065425 | 0.99998 | 0.0000 |
| 1186807 | 0.99999 | 0.0000 |
| 1454224 | 0.99999 | 0.0000 |

accgraph



graph export explaccugraph.png,replace
(file explaccugraph.png written in PNG format)

*** STEP 11. Calculate the % acceptable for a single value of WTP

acceptlu cost qaly treat 90000

Summary Statistics

| | |
|-----------------------------|------------|
| Difference in cost: | 1000 |
| SE, difference in cost: | 324.99927 |
| Difference in effect: | .01000001 |
| SE, difference in effect: | .00192499 |
| Correlation of differences: | -.71000917 |
| Degrees of freedom: | 498 |

| WTP | % Accept | P-value |
|-------|----------|---------|
| 90000 | 0.41478 | 0.8296 |

*** STEP 12. Calculate the points defining the per-person VOI curve

voiu cost qaly treat

Summary Statistics

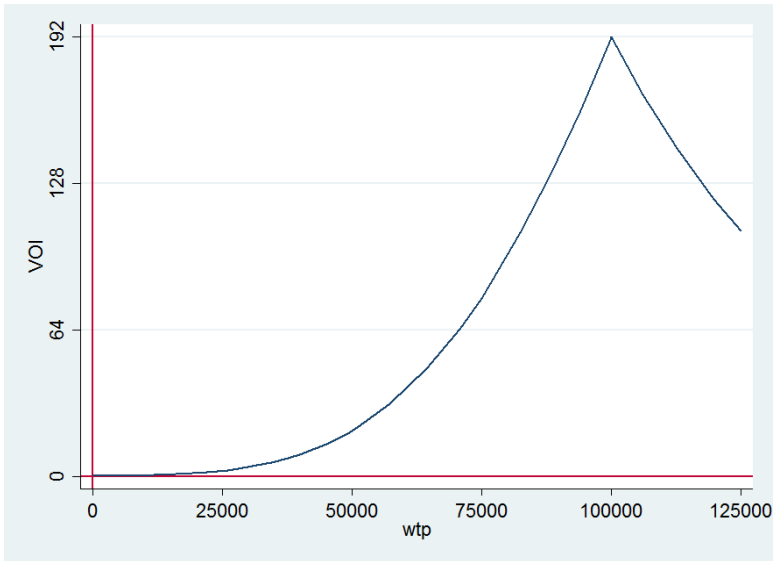
| | |
|-----------------------------|------------|
| Difference in cost: | 1000 |
| SE, difference in cost: | 324.99927 |
| Difference in effect: | .01000001 |
| SE, difference in effect: | .00192499 |
| Correlation of differences: | -.71000917 |
| Degrees of freedom: | 498 |

WTP and VOI

| WTP | Value of Information |
|----------|----------------------|
| -1000000 | 0.00 |
| -750000 | 0.00 |
| -500000 | 0.00 |
| -250000 | 0.00 |
| -100000 | 0.00 |
| -42079 | 0.00 |
| -28588 | 0.00 |
| -25652 | 0.00 |
| -23852 | 0.00 |
| -22537 | 0.00 |
| -21495 | 0.00 |
| -20629 | 0.00 |
| -19886 | 0.00 |
| -19234 | 0.00 |
| -18653 | 0.00 |
| -14557 | 0.00 |
| -10732 | 0.01 |
| -8368 | 0.02 |
| -6627 | 0.02 |
| -5237 | 0.03 |
| -4075 | 0.04 |
| -3073 | 0.04 |
| -2189 | 0.05 |
| -1397 | 0.06 |
| -679 | 0.07 |
| 0 | 0.08 |
| 4306 | 0.16 |
| 7458 | 0.26 |
| 9817 | 0.36 |
| 11724 | 0.47 |
| 13338 | 0.59 |
| 14744 | 0.70 |
| 15994 | 0.83 |
| 17124 | 0.95 |
| 18156 | 1.08 |
| 19109 | 1.21 |
| 20000 | 1.35 |
| 26111 | 2.65 |
| 28184 | 3.28 |
| 30000 | 3.92 |
| 30872 | 4.26 |
| 34606 | 6.01 |
| 37740 | 7.89 |
| 40476 | 9.87 |
| 42928 | 11.96 |
| 45166 | 14.14 |
| 47237 | 16.42 |
| 49174 | 18.79 |
| 50000 | 19.87 |
| 51002 | 21.24 |
| 57374 | 31.65 |
| 64436 | 46.89 |
| 70803 | 64.30 |
| 75000 | 77.79 |
| 76787 | 84.03 |
| 82576 | 106.29 |

| | |
|-------------|--------|
| 88302 | 131.39 |
| 94076 | 159.73 |
| 99984 | 191.77 |
| 100000 | 191.86 |
| 106181 | 166.69 |
| 112747 | 143.18 |
| 119860 | 121.15 |
| 125000 | 107.24 |
| 127746 | 100.44 |
| 136748 | 80.93 |
| 147438 | 62.54 |
| 150000 | 58.79 |
| 160895 | 45.22 |
| 174790 | 32.43 |
| 179134 | 29.25 |
| 179592 | 28.93 |
| 183933 | 26.12 |
| 189298 | 23.03 |
| 195390 | 19.98 |
| 202443 | 16.99 |
| 210825 | 14.04 |
| 211757 | 13.75 |
| 221160 | 11.14 |
| 234635 | 8.30 |
| 245218 | 6.62 |
| 253954 | 5.52 |
| 287829 | 2.82 |
| 293048 | 2.55 |
| 298892 | 2.29 |
| 305523 | 2.02 |
| 313172 | 1.76 |
| 322184 | 1.50 |
| 333110 | 1.24 |
| 346903 | 0.99 |
| 365428 | 0.73 |
| 393119 | 0.48 |
| 445517 | 0.23 |
| 454125 | 0.21 |
| 463974 | 0.19 |
| 475438 | 0.16 |
| 489088 | 0.14 |
| 505844 | 0.11 |
| 527319 | 0.09 |
| 556725 | 0.07 |
| 601894 | 0.04 |
| 691403 | 0.02 |
| 819650 | 0.01 |
| 841565 | 0.01 |
| 867505 | 0.01 |
| 899005 | 0.01 |
| 938604 | 0.00 |
| 990899 | 0.00 |
| 1065425 | 0.00 |
| 1186807 | 0.00 |
| 1454224 | 0.00 |
| 2.30552e+13 | 641.38 |

voigraph



```
graph export explvoiugraph.png,replace
(file explvoigraphu.png written in PNG format)
```

```
*** STEP 13. Calculate the per-person VOI for a single value of WTP
```

```
voilu cost qaly treat 90000
```

Summary Statistics

```
Difference in cost:          1000
SE, difference in cost:     324.99927
Difference in effect:       .01000001
SE, difference in effect:   .00192499
Correlation of differences: -.71000917
Degrees of freedom:        498
```

| WTP | Value of Information |
|-------|----------------------|
| 90000 | 139.41 |

```
.
. log close
  name: <unnamed>
  log: C:\henry\HGBOOKee\secondedition\webmat\uprogslog.log
  log type: text
  closed on: 21 Jul 2015, 09:54:52
```
