Resultssets, resultsspreadsheets and resultsplots in Stata

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Presented at the 4th German Stata Users' Group Meeting on 31 March 2006

This presentation, and the do–files containing the examples, can be downloaded from the conference website at
http://ideas.repec.org/s/boc/dsug06.html

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- The tables may be in .pdf, .html, word processor, spreadsheet or paper documents.
- The plots may be produced using Stata or non–Stata software.
- This presentation will introduce ways of producing these plots and tables in Stata.

Results (1): Countries of origin of cars in the `auto` data

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```
. tab country, gene(c_)

 Country of |
  origin of |
       firm |      Freq.     Percent        Cum.
------------+-----------------------------------
         US |         52       70.27       70.27
      Japan |         11       14.86       85.14
    Germany |          7        9.46       94.59
     France |          2        2.70       97.30
      Italy |          1        1.35       98.65
     Sweden |          1        1.35      100.00
------------+-----------------------------------
      Total |         74      100.00
```

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      weight |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         c_1 |   3317.115   88.26823    37.58   0.000     3140.979    3493.252
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```

Very few end users will understand this output!

Resultsset of frequencies and mean weights

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This resultsset is a Stata dataset created using `xcontract`, `parmest`, `descsave` and `factext` (downloadable from SSC). It has one observation per country, and data on frequencies, and on estimates and 95% confidence limits for mean weights (in US pounds), for cars made by firms based in that country.

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```
. list country _freq estimate min95 max95, clean noobs
```

country	_freq	estimate	min95	max95
US	52	3317.12	3140.98	3493.25
Japan	11	2248.18	1865.22	2631.14
Germany	7	2238.57	1758.50	2718.64
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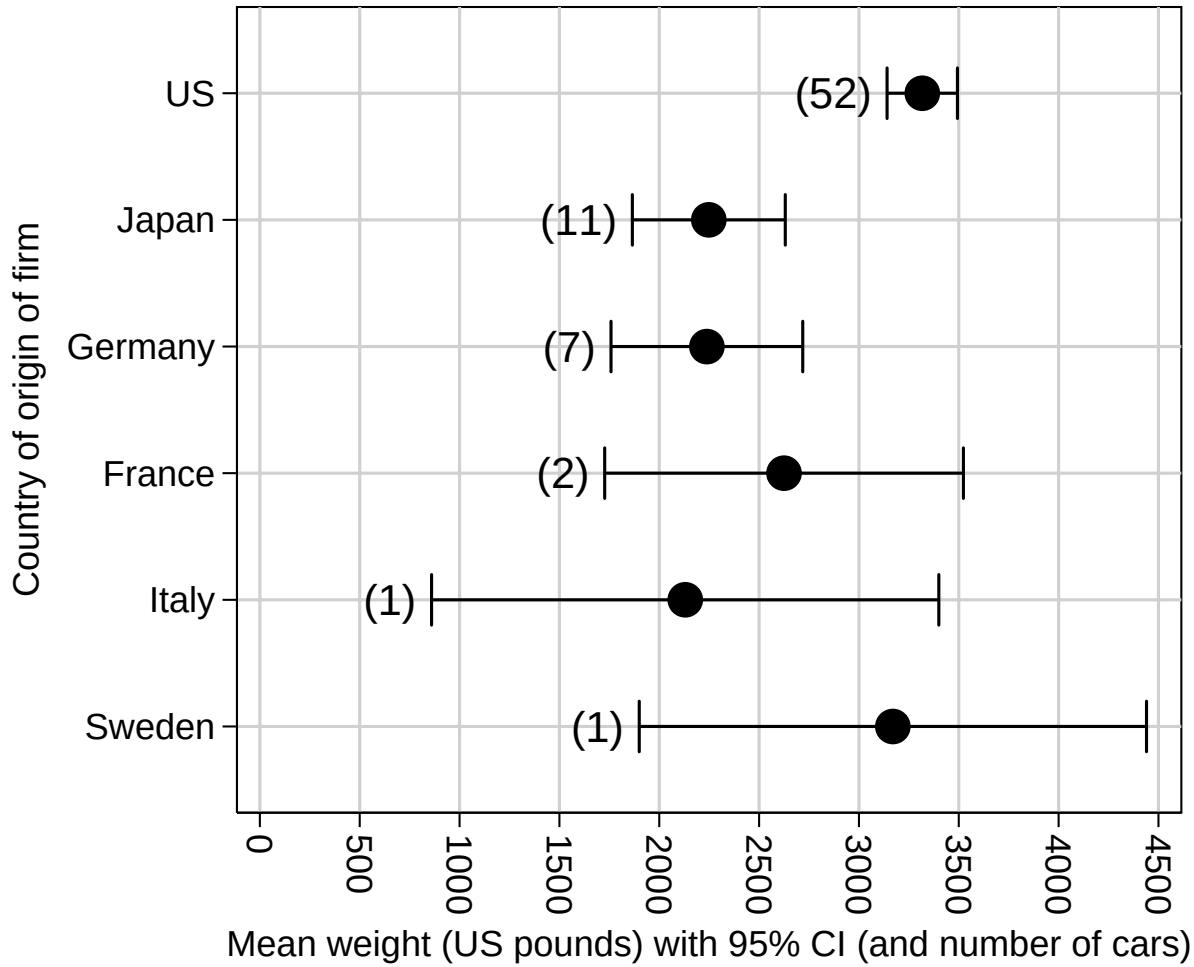
This is easier to understand than the previous output. *However* ...

A resultsplot of the resultsset



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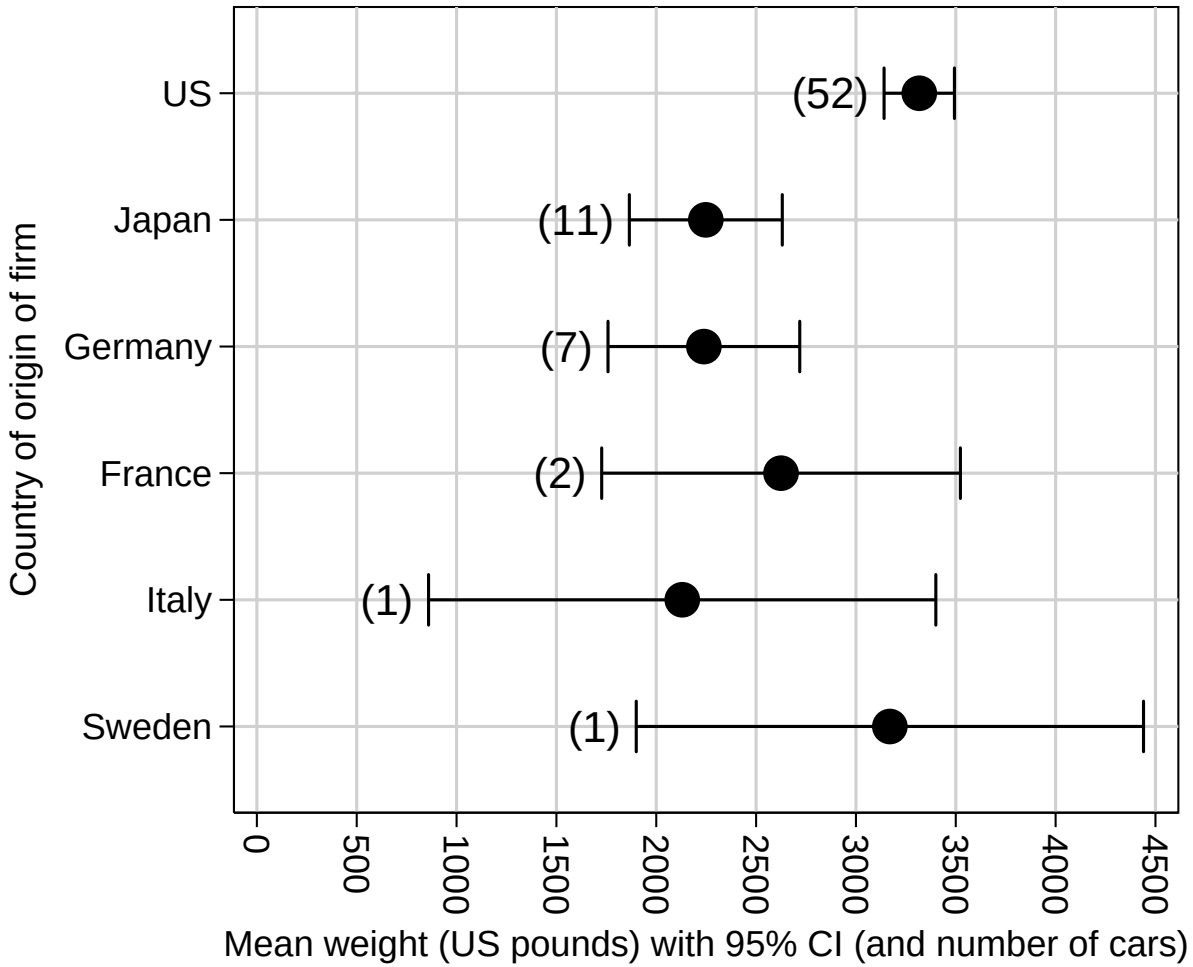
- ... this plot was produced from the resultsset, using `eclplot` (downloadable from SSC).



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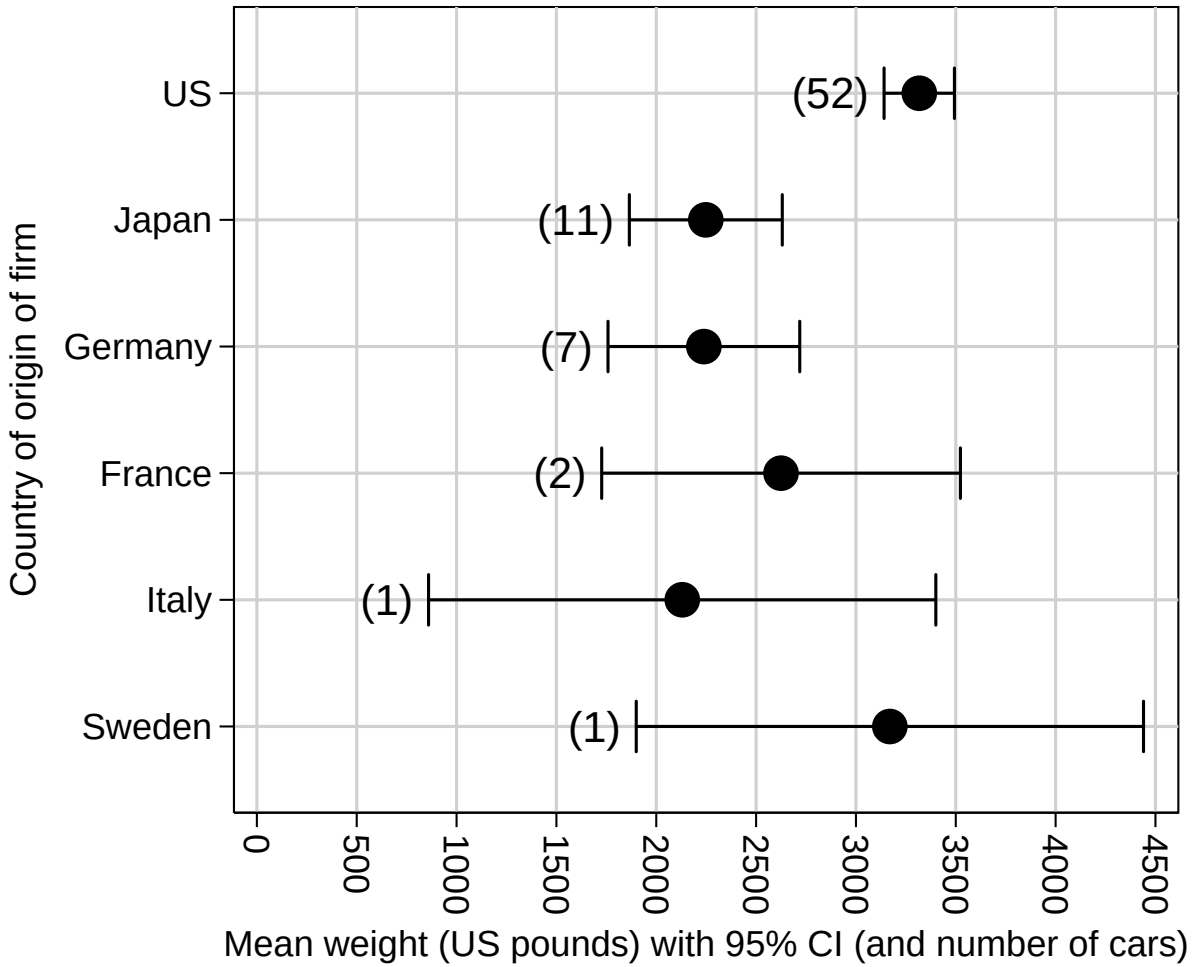
- ... this plot was produced from the resultsset, using `eclplot` (downloadable from SSC).
- `eclplot` requires an input dataset with one observation per confidence interval and data on estimates and confidence limits.



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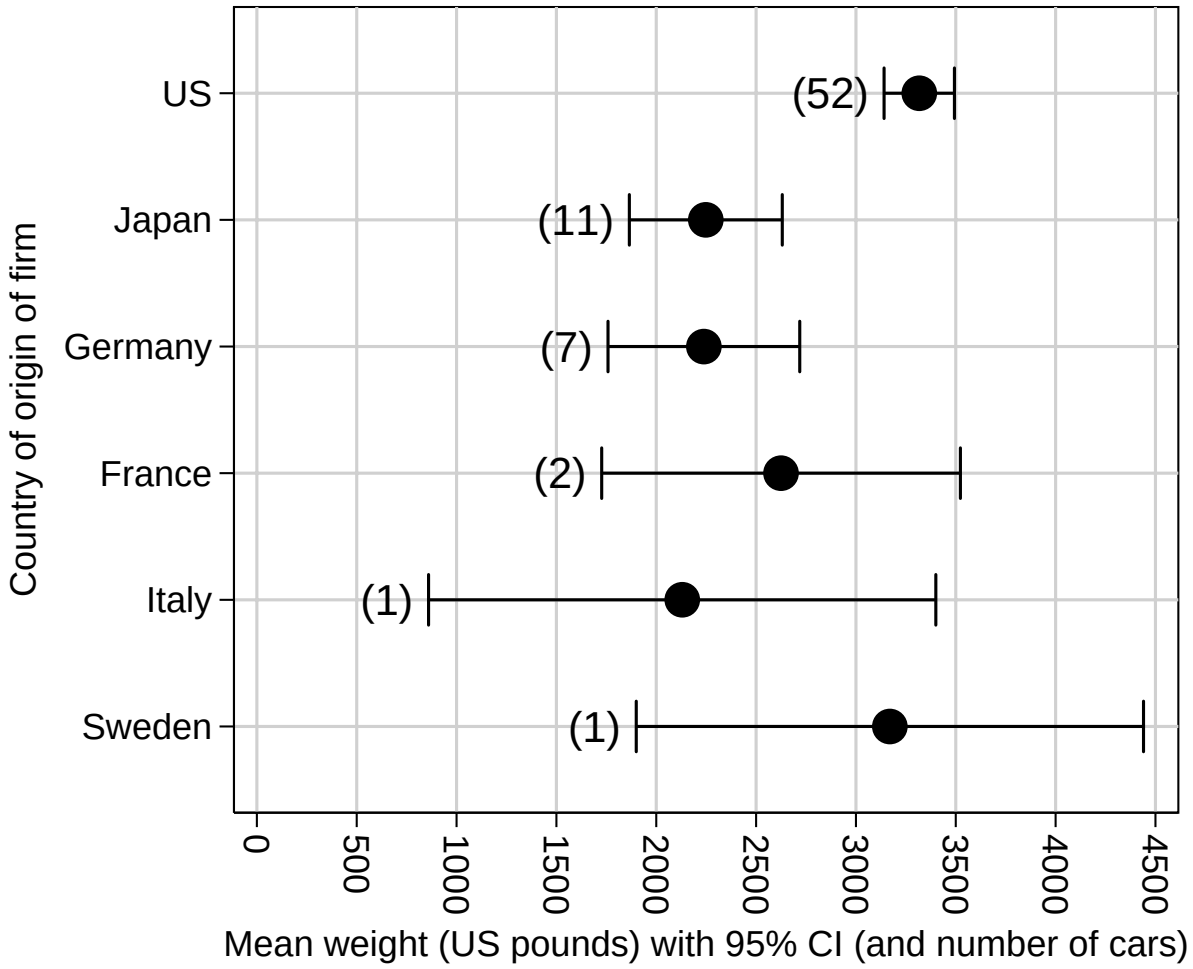
- ... this plot was produced from the resultsset, using `eclplot` (downloadable from SSC).
- `eclplot` requires an input dataset with one observation per confidence interval and data on estimates and confidence limits.
- The frequencies were added using the `plot()` option of `eclplot`.



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We convert the confidence limits to string, adding commas and parentheses, using the SSC package `sdecode`. Then we use the SSC package `listtex` to output the resultsset to a resultsspreadsheet in the LaTeX `tabular` row style:

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```
. listtex country _freq estimate min95 max95, rstyle(tabular) type ///
>   head( ///
>     "\begin{tabular}{rrrrr}" ///
>     "\textit{Country}&\textit{N}&\textit{Mean}&\textit{(95\%}&\textit{CI)}\\" ///
>   ) ///
>   foot("\end{tabular}")
\begin{tabular}{rrrrr}
\textit{Country}&\textit{N}&\textit{Mean}&\textit{(95\%}&\textit{CI)}\\
US&52&3317.12&(3140.98,&3493.25)\\
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This is not very easy to understand. *However* ...

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`listtex` (and also another SSC package `estout`) can also produce resultsspreadsheets in other generic text formats, such as plain TeX, HTML, or tab-separated (for easy conversion to Microsoft Excel spreadsheets or Word tables).

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- A **resultsplot** is a plot, with plotted points corresponding to the observations of a resultsset (or to the rows of a resultsspreadsheet).

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- For instance, the resultsset in the previous example has one observation per *country*, and data on frequencies and confidence intervals.

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- A resultsset may be listed to the Stata log and/or saved to a disk file and/or written to the memory, replacing any existing dataset.
- *However*, resultssets exist mainly as a means of creating resultsplots and/or resultsspreadsheets.

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In the `auto` data with the added variable `country`, we use `xcontract` to create a resultsset with one observation per country, and data on frequencies and percentages, which is listed to the Stata log and saved to a temporary file:

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```
. tempfile tf1

. xcontract country, saving(‘tf1’) list(, clean noobs)

Listing of results:

    country   _freq   _percent
         US      52      70.27
      Japan      11      14.86
    Germany       7       9.46
     France       2       2.70
      Italy       1       1.35
     Sweden       1       1.35
file C:\DOCUME~1\rnewson\LOCALS~1\Temp\ST_000000m1.tmp saved
```

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We then use `parmest` to create a resultsset with one observation per country, and data on mean weights and confidence limits. This is listed to the Stata log, and also written to the memory, replacing the existing data:

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```
. parmest, label norestore  format(estimate min95 max95 %8.2f) ///
>   list(parm label estimate min95 max95, clean noobs)

    parm                  label   estimate     min95     max95
     c_1   country==     1.0000    3317.12   3140.98   3493.25
     c_2   country==     2.0000    2248.18   1865.22   2631.14
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Note the variable `label`, which contains, for each observation, the variable label of the X–variable of the parameter for that observation. The X–variables here are indicators (dummies) for values of `country` (from 1 to 6).

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- *However*, `country` is *not* a by–variable, but a categorical predictor variable in the regression model.
- And *many* users want to plot confidence intervals against predictor variables!

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- This do–file, if run in another dataset, will reconstruct the storage types, display formats, value labels and variable labels for any variables of the same names and modes (numeric or string) which may exist in that dataset.
- The SSC package `factext` can reconstruct categorical factors such as `country` from the `label` variable in a `parmest` resultsset.
- It can then run a do–file created by `descsave` to reconstruct the storage types, display formats, value labels and variable labels.

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In the extended `auto` dataset, we run `descsave` on the added variable `country`, writing the do–file to a temporary file:

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. tempfile df1

. descsave country, do(‘df1’)

              storage  display     value
variable name   type   format      label      variable label
------------------------------------------------------------------------------
country         byte   %8.0g       country    Country of origin of firm
```

Running `descsave` in the extended `auto` data

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```
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. descsave country, do(‘df1’)

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variable name   type   format      label      variable label
------------------------------------------------------------------------------
country         byte   %8.0g       country    Country of origin of firm
```

`descsave` describes the storage type, display format, value label and variable label of `country`, and creates a temporary do–file ‘`df1`’ to reconstruct these attributes in another dataset.

The do–file created by `descsave`

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We `type` the temporary do–file:

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```
. type ‘df1’
cap la de country 1 ‘"US"’, modify
cap la de country 2 ‘"Japan"’, modify
cap la de country 3 ‘"Germany"’, modify
cap la de country 4 ‘"France"’, modify
cap la de country 5 ‘"Italy"’, modify
cap la de country 6 ‘"Sweden"’, modify
cap recast byte country
cap form country %8.0g
cap la val country country
cap la var country ‘"Country of origin of firm"’
```

The do–file created by `descsave`

We `type` the temporary do–file:

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cap recast byte country
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cap la val country country
cap la var country ‘"Country of origin of firm"’
```

If this do–file is run in another dataset, and a numeric variable `country` exists in that dataset, then that numeric variable `country` will have the storage type, display format, value labels and variable label of the variable `country` in the `auto` data.

Reconstructing `country` in the `parmest` resultsset

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```
. factext, do(‘df1’)

. list parm label country estimate min95 max95, clean noobs
```

parm		label	country	estimate	min95	max95
c_1	country==	1.0000	US	3317.12	3140.98	3493.25
c_2	country==	2.0000	Japan	2248.18	1865.22	2631.14
c_3	country==	3.0000	Germany	2238.57	1758.50	2718.64
c_4	country==	4.0000	France	2625.00	1726.88	3523.12
c_5	country==	5.0000	Italy	2130.00	859.86	3400.14
c_6	country==	6.0000	Sweden	3170.00	1899.86	4440.14

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parm		label	country	estimate	min95	max95
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c_5	country==	5.0000	Italy	2130.00	859.86	3400.14
c_6	country==	6.0000	Sweden	3170.00	1899.86	4440.14

The variable `country` has been reconstructed from the variable `label`, with its variable labels. So we can now identify the countries of the confidence intervals.

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```
. sort country

. merge country using ‘tf1’
(label country already defined)

. sort country

. list country _freq estimate min95 max95, clean noobs

    country   _freq   estimate      min95      max95
         US      52    3317.12    3140.98    3493.25
      Japan      11    2248.18    1865.22    2631.14
    Germany       7    2238.57    1758.50    2718.64
     France       2    2625.00    1726.88    3523.12
      Italy       1    2130.00     859.86    3400.14
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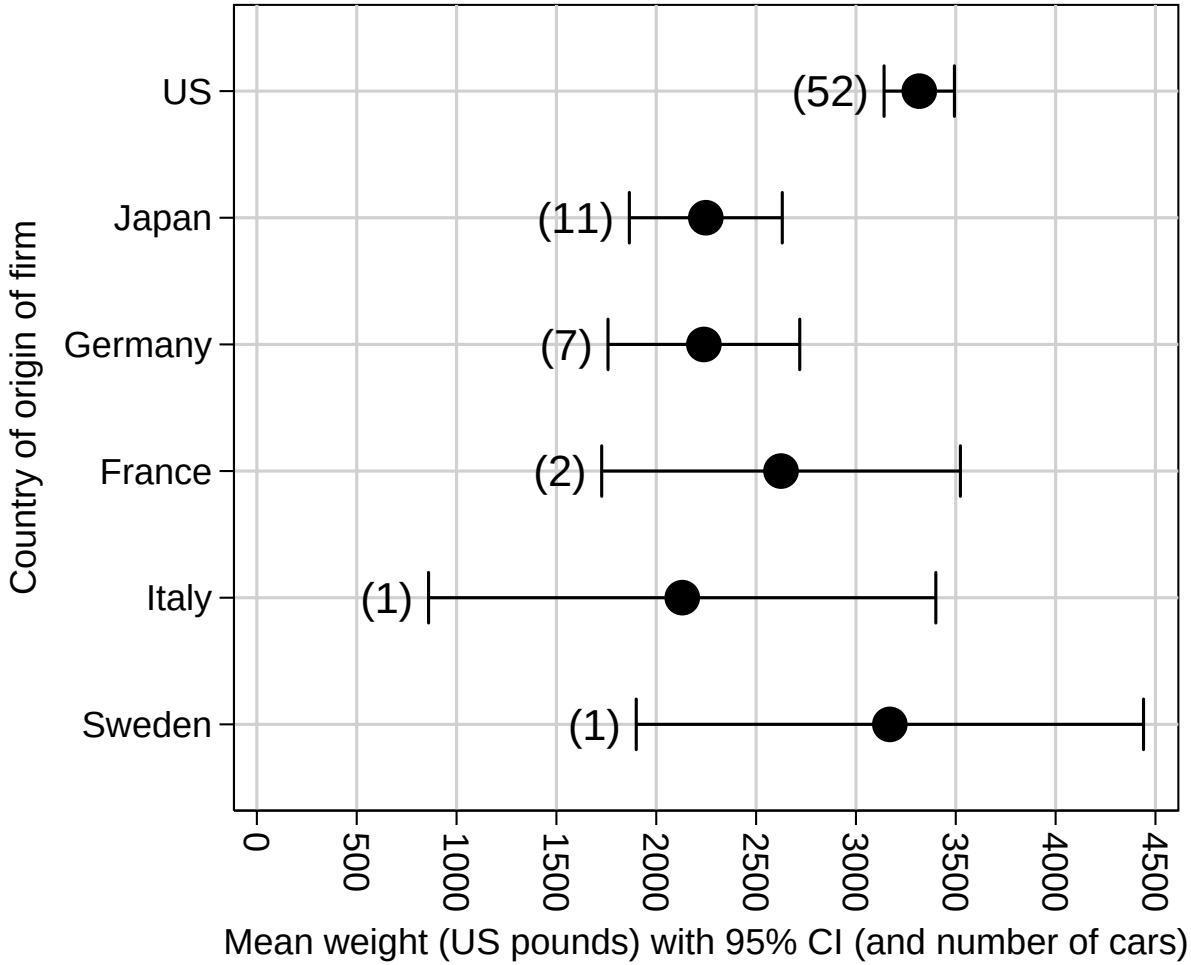
     Sweden       1    3170.00    1899.86    4440.14
```

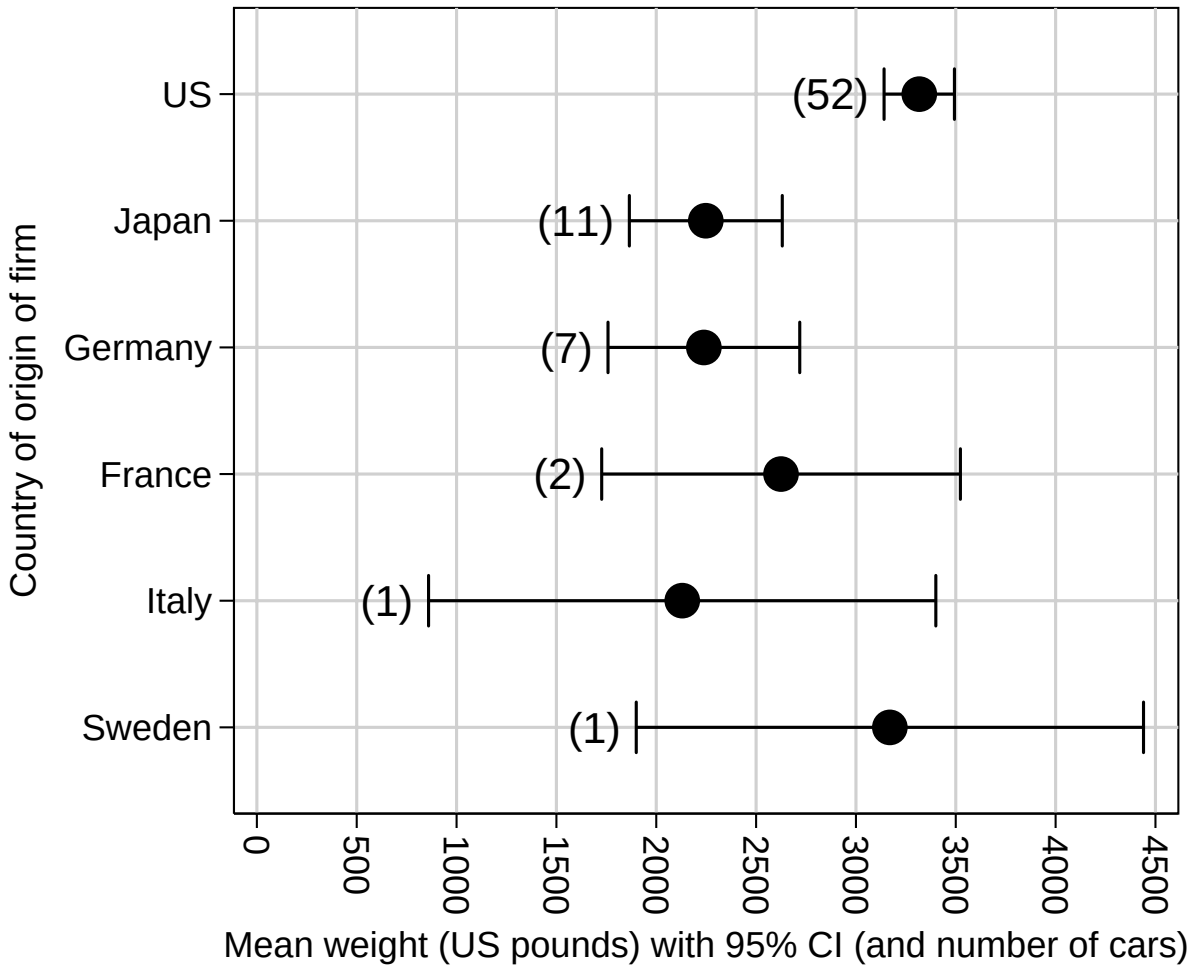
We now have the resultsset which created the resultsplot that we saw earlier.

The power of resultssets



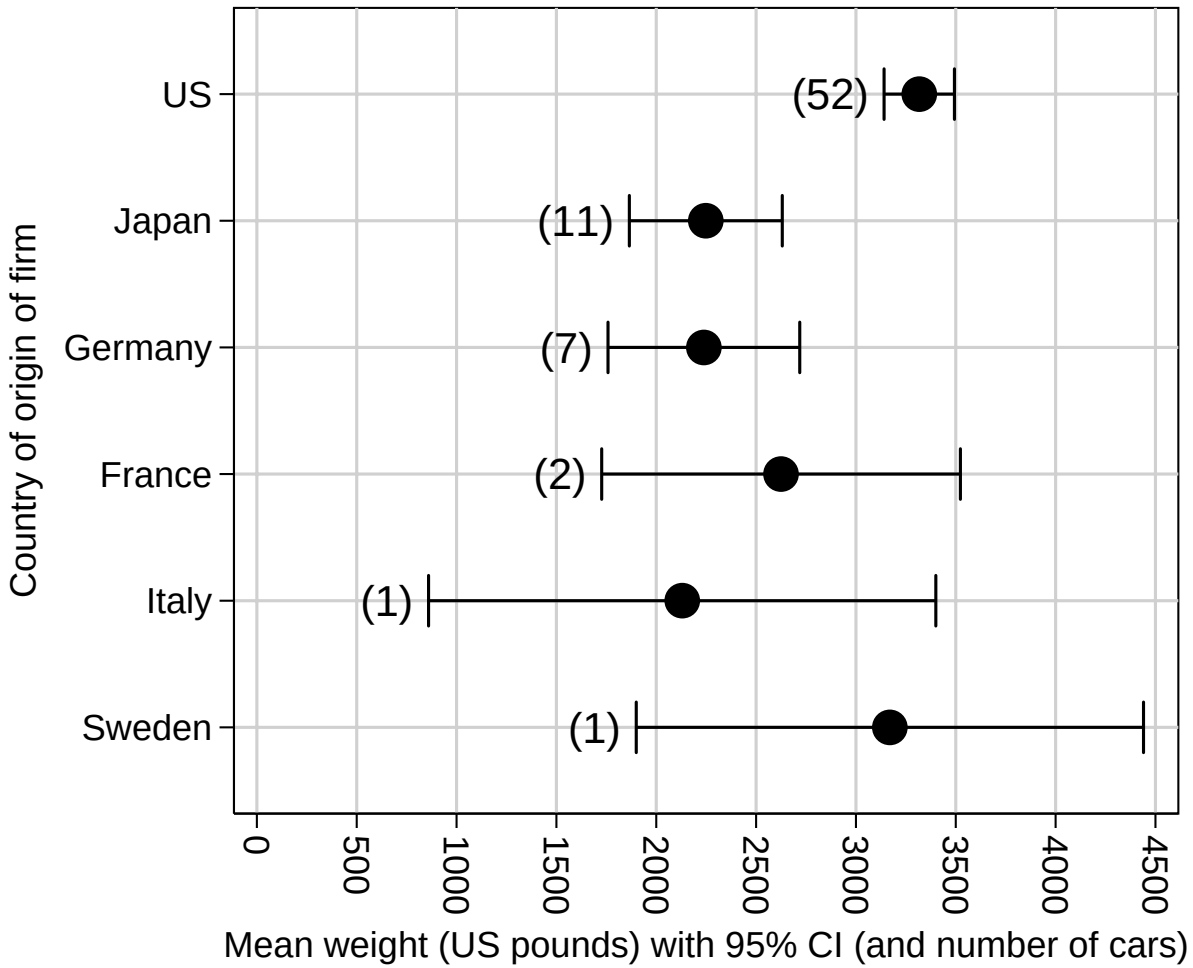
The power of resultssets

- We used `parmest` to produce a resultsset of confidence intervals.



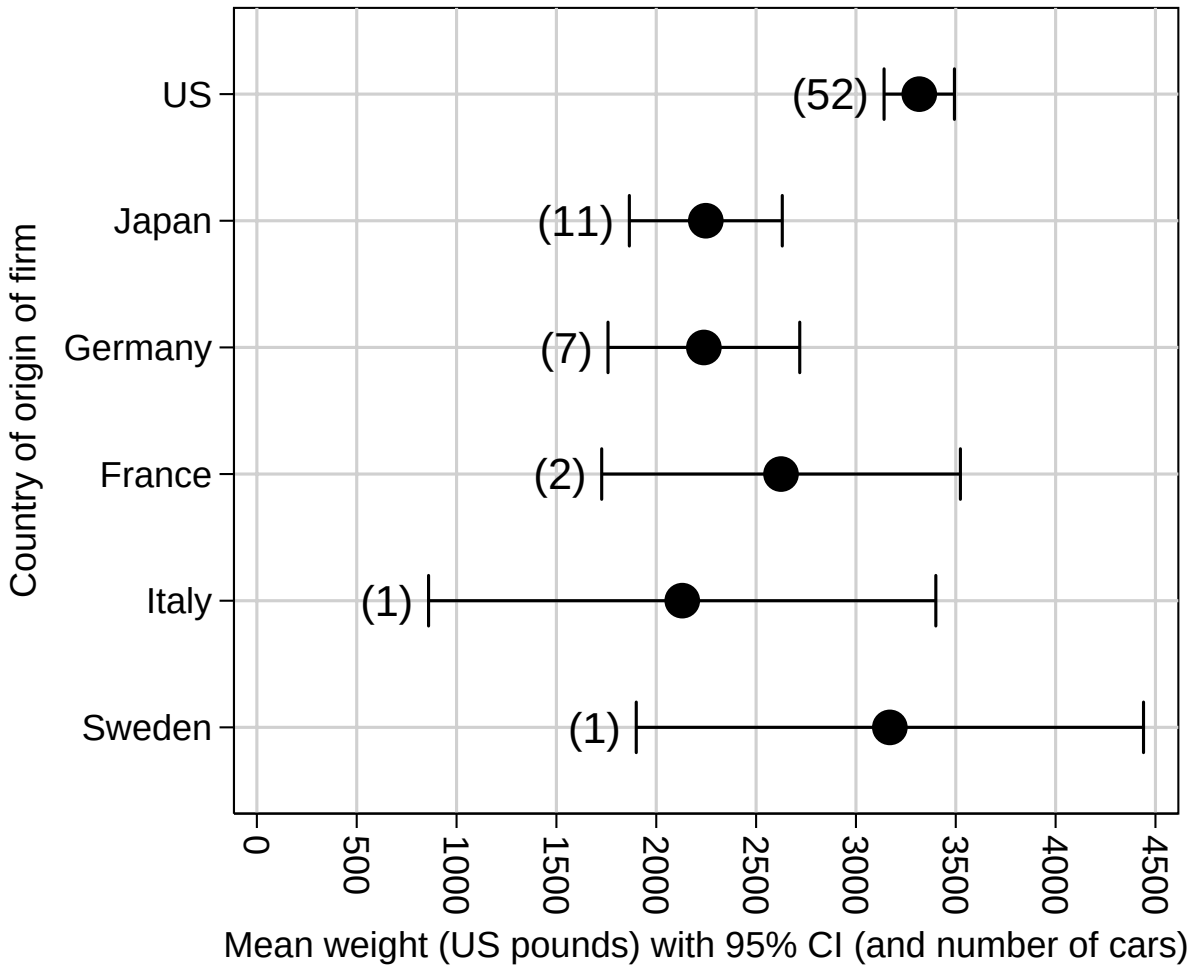
The power of resultssets

- We used `parmest` to produce a resultsset of confidence intervals.
- We reconstructed the vertical–axis variable `country`, using `descsave` and `factext`.



The power of resultssets

- We used `parmest` to produce a resultsset of confidence intervals.
- We reconstructed the vertical–axis variable `country`, using `descsave` and `factext`.
- We then added the frequences by merging in a resultsset produced by `xcontract`.



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- Resultsspreadsheets can be copied (or linked) into TEX or HTML documents, or converted into Microsoft Excel spreadsheets or Word tables.

Common table formats (or row styles) for resultsspreadsheets

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Each of these table row styles has a row–begin string, a column–delimiter string and a row–end string, given here as Stata expressions. The row–begin and row–end strings may be empty strings.

Row style	*Row–begin*	*Column–delimiter*	*Row–end*
Tab–delimited	`""`	`char(9)`	`""`
HTML table	`"<tr><td>"`	`"</td><td>"`	`"</td></tr>"`
LaTeX `tabular`	`""`	`"&"`	`"\\"`
Plain TeX `halign`	`""`	`"&"`	`"\cr"`

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Note that resultsspreadsheets of all styles are generic text tables. Therefore, any text can appear between the row–begin, column–delimiter and row–end strings, except for row–begin, column–delimiter and row–end strings.

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The `estout` package (Jann, 2005a; Jann, 2005b) is very powerful indeed. It produces a very wide range of resultsspreadsheets from the results of any estimation command. We will demonstrate a very simple example. First, we run the regression command that we used earlier:

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```
. regress weight c_*, noconst nohead
------------------------------------------------------------------------------
      weight |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
         c_1 |   3317.115   88.26823    37.58   0.000     3140.979    3493.252
         c_2 |   2248.182   191.9154    11.71   0.000     1865.221    2631.143
         c_3 |   2238.571   240.5786     9.30   0.000     1758.504    2718.639
         c_4 |        2625   450.0814     5.83   0.000     1726.877    3523.123
         c_5 |        2130   636.5112     3.35   0.001     859.8616    3400.138
         c_6 |        3170   636.5112     4.98   0.000     1899.862    4440.138
------------------------------------------------------------------------------
```

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```
. estout using estout1.txt, ///
>   cells("b(fmt(%8.2f)) ci_l(fmt(%8.2f)) ci_u(fmt(%8.2f))") ///
>   replace label collabels(, lhs(label)) mlabels(, none)

label   b       min95   max95
country==US     3317.12 3140.98 3493.25
country==Japan  2248.18 1865.22 2631.14
country==Germany        2238.57 1758.50 2718.64
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```

The resultsspreadsheet is output to the Stata log, and also to a disk file `estout1.txt`, where it can be accessed and edited by a spreadsheet package (possibly even Microsoft Excel). *However* ...

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```
. insheet using estout1.txt, clear
(4 vars, 6 obs)

. list, clean noobs
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label	b	min95	max95
country==US	3317.12	3140.98	3493.25
country==Japan	2248.18	1865.22	2631.14
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Or, alternatively, the user may edit `estout1.txt` manually in a spreadsheet package, and *then* convert it to a resultsset. We can then produce . . .

Resultsplots

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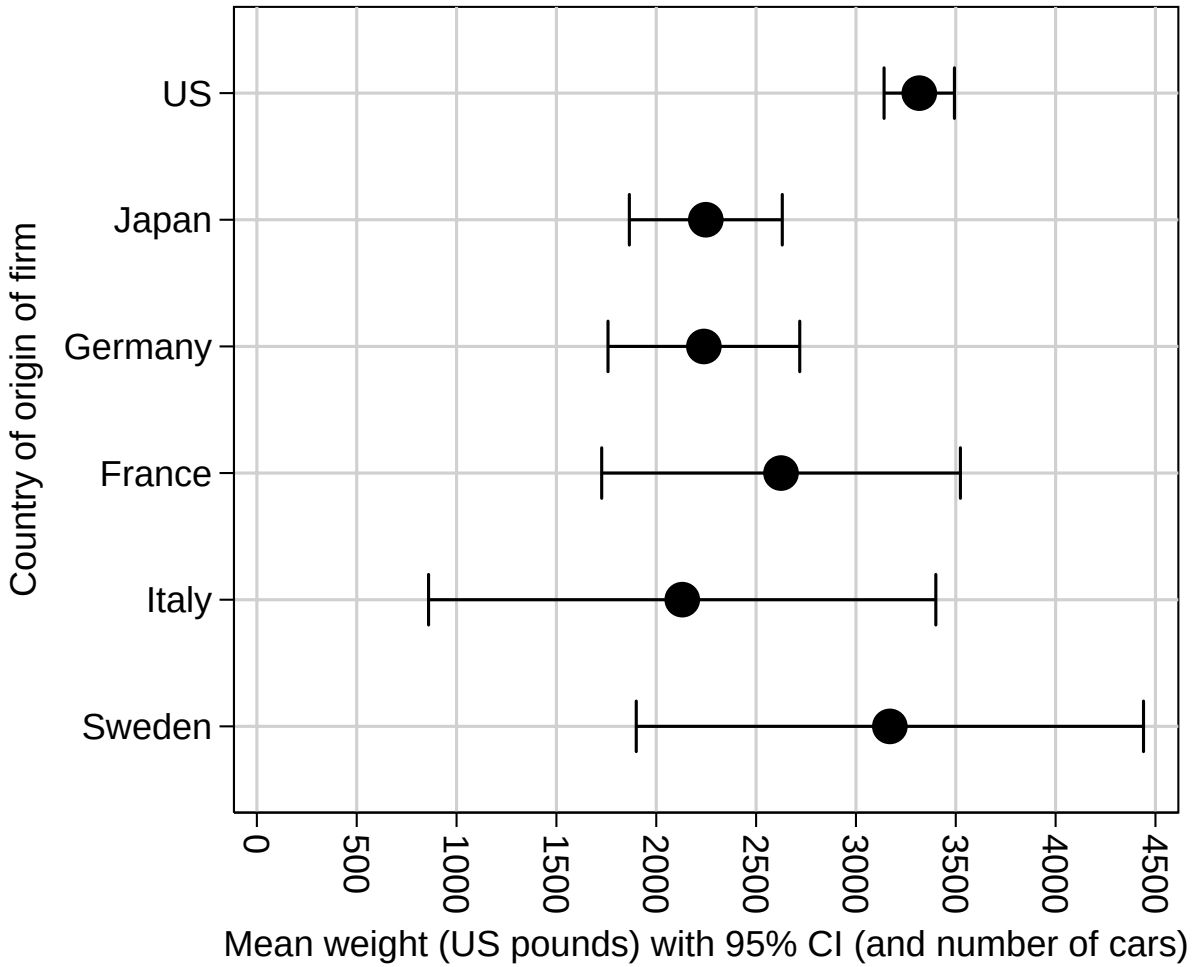
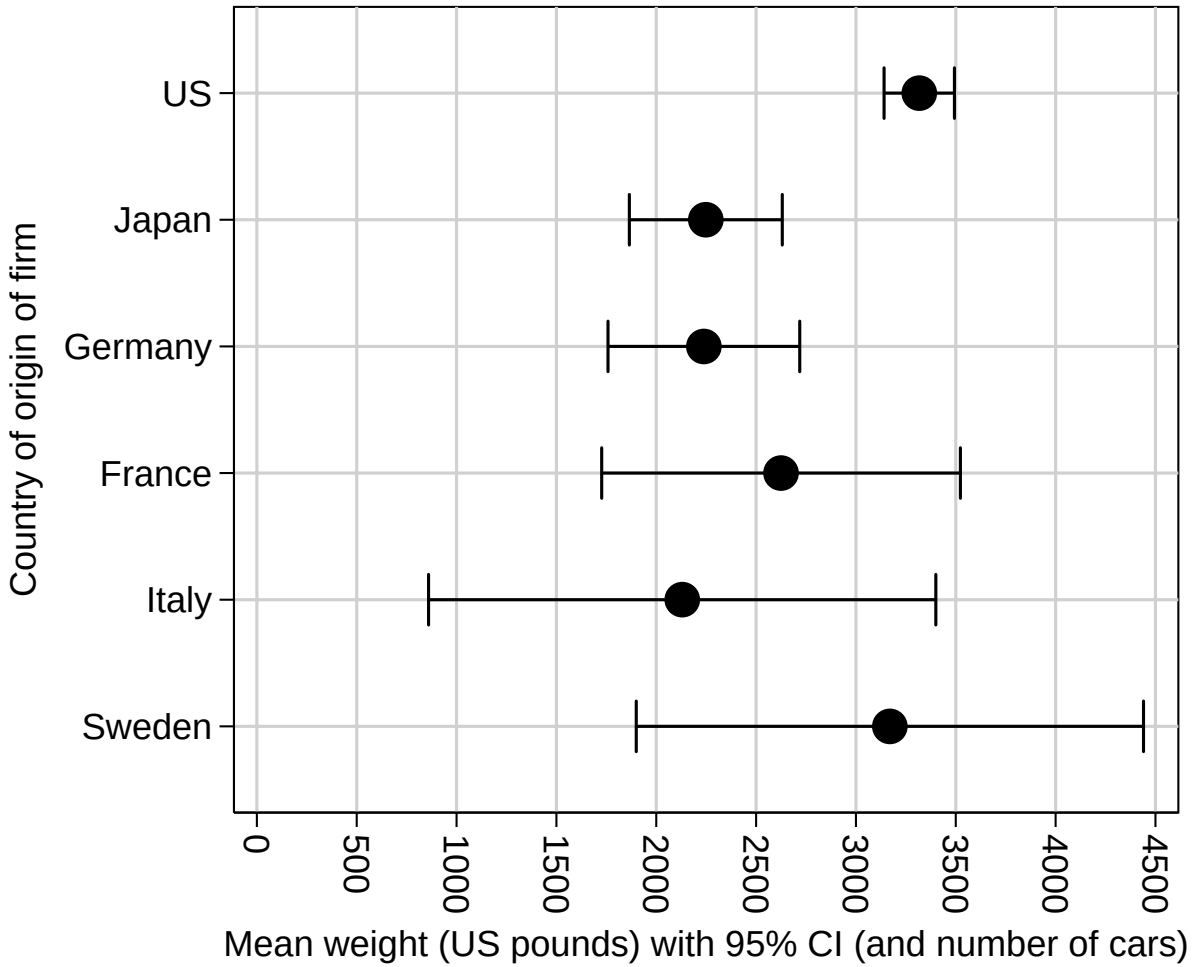
- In Stata (at present), a resultsplot can be produced *only* from a resultsset (and *not* directly from a resultsspreadsheet).
- *However*, as we have seen, it is easy to produce a resultsset from a resultsspreadsheet.
- This makes life much easier for Stata users who do not like to do a lot of programming.

A resultsplot of the resultsset from the resultsspreadsheet



A resultsplot of the resultsset from the resultsspreadsheet

- This plot was produced by `eclplot` from the resultsset generated from the `estout` resultsspreadsheet.



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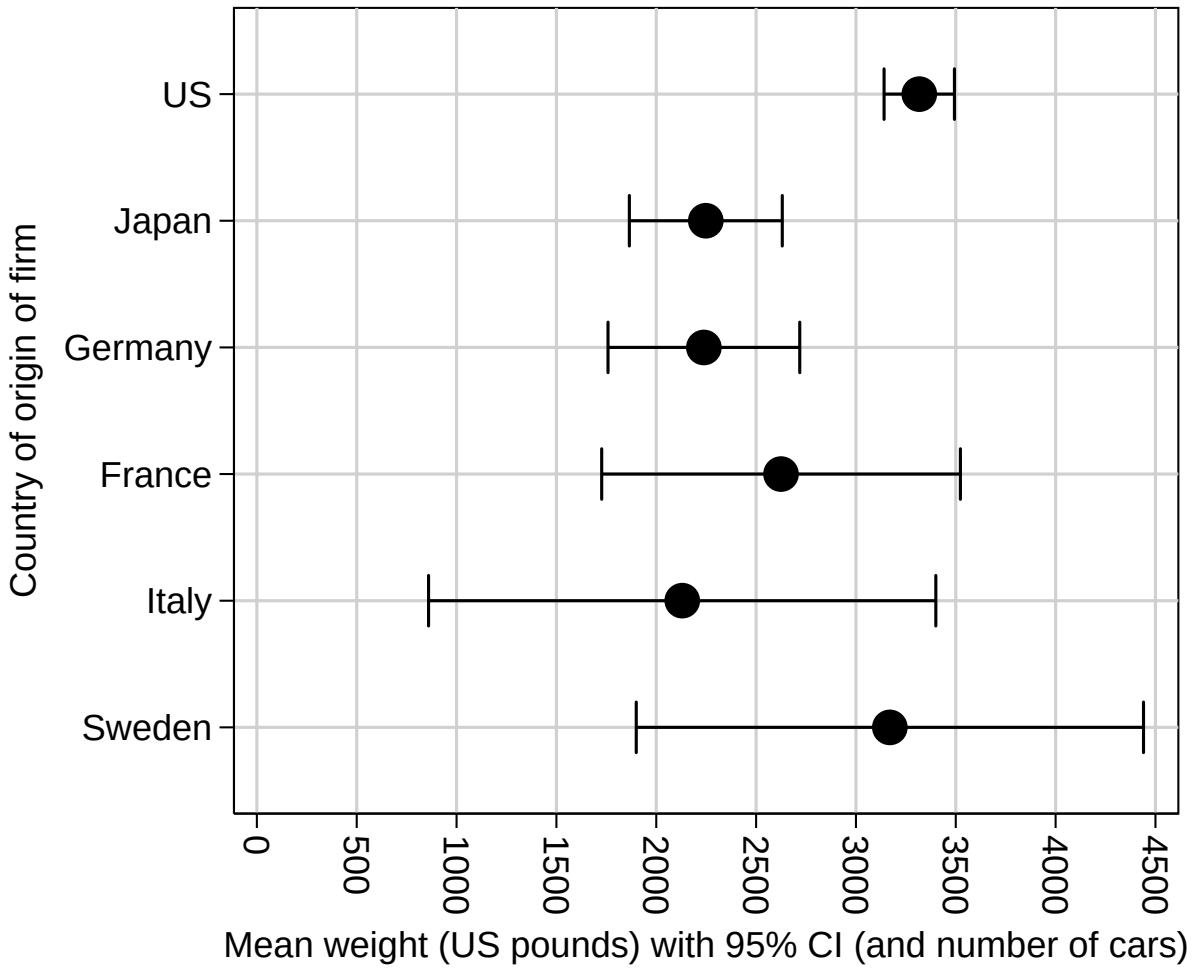

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- This plot was produced by `eclplot` from the resultsset generated from the `estout` resultsspreadsheet.
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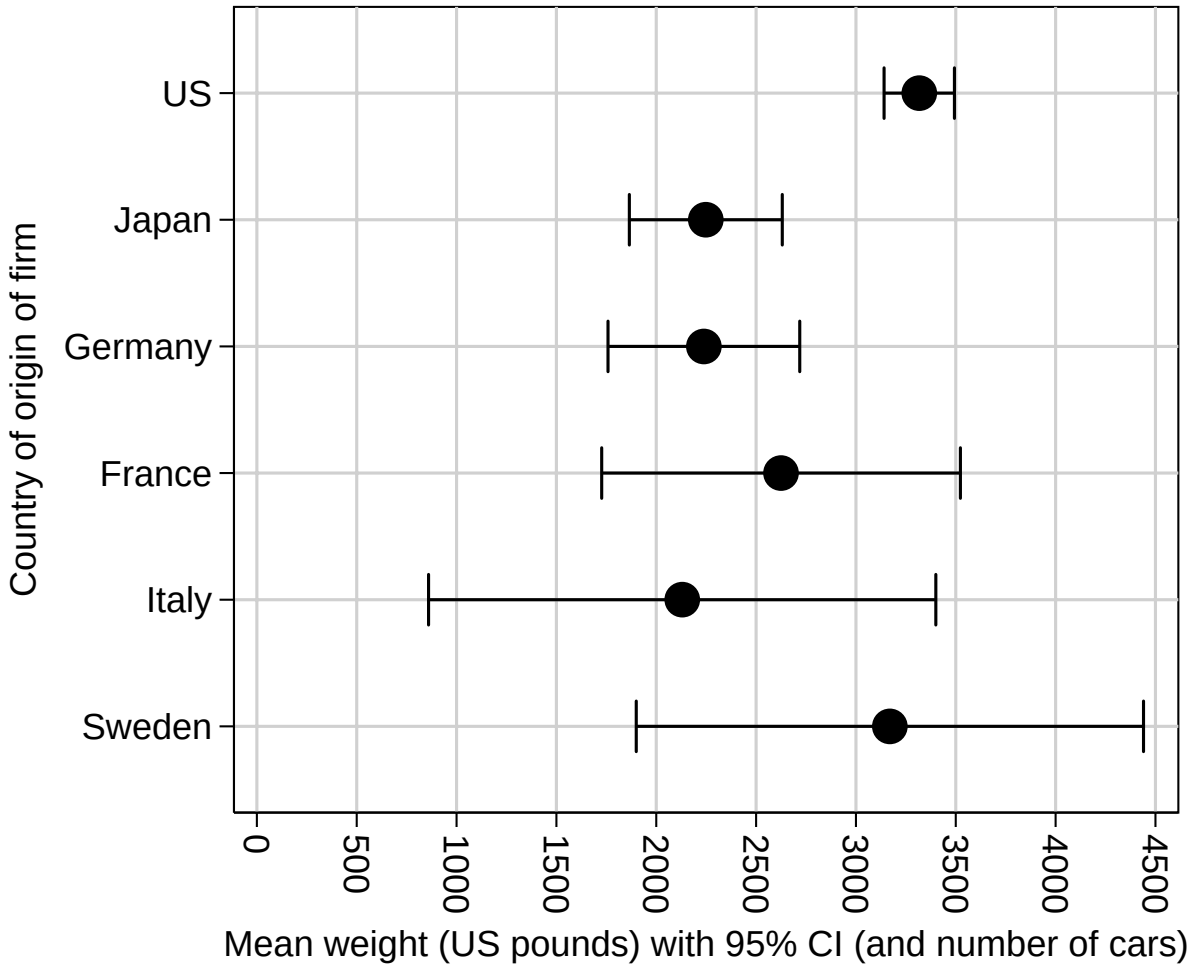
- (And these could have been added using Ben Jann's SSC package `estadd`.)



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This is a destructive process, and is usually programmed in a do–file between a `preserve` and a `restore`. *However*, it produces the range of tables that I want to produce.

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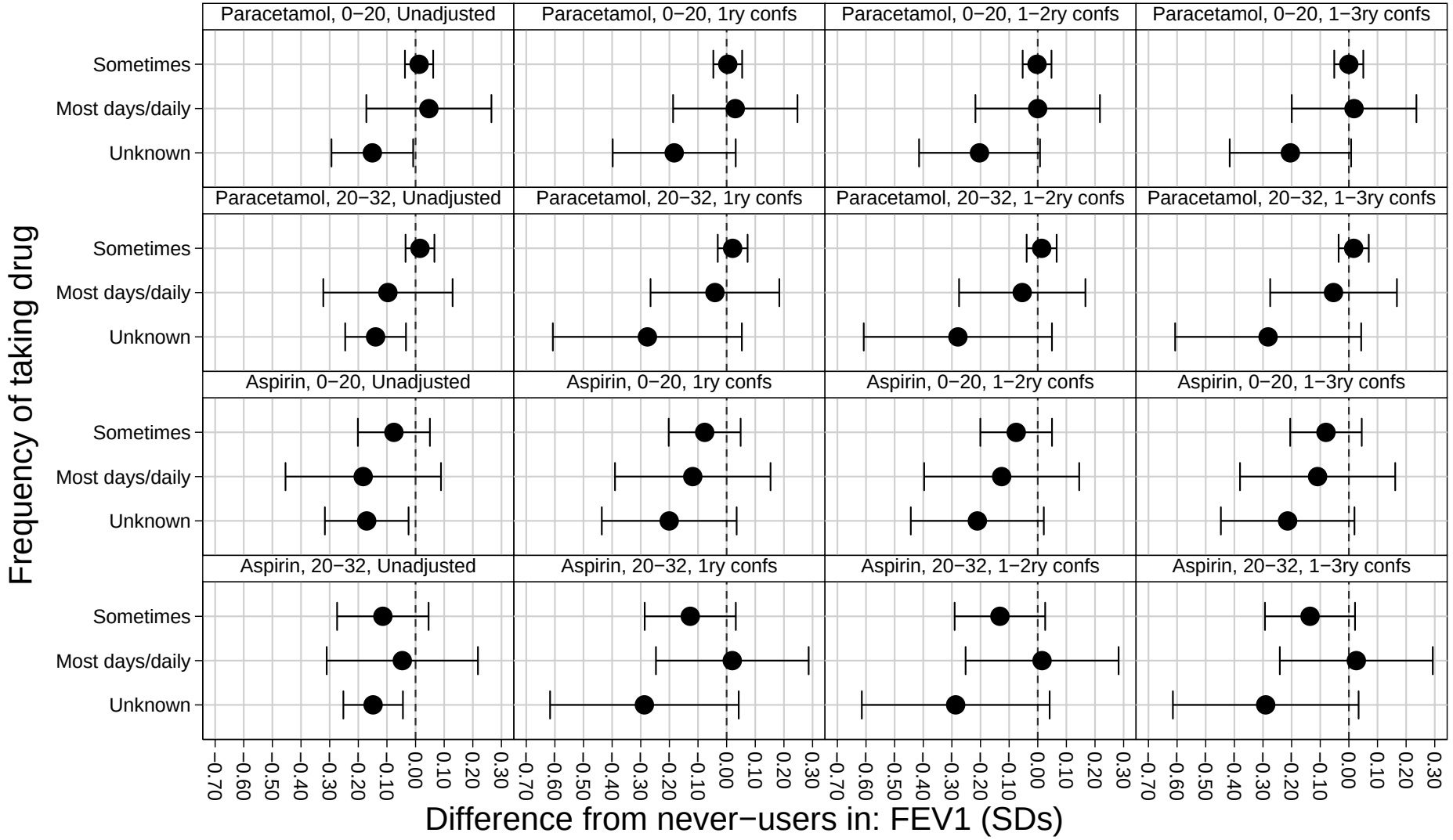
- Analgesic exposure levels were "Never", "Some days", "Most days" and "Unknown". We measured differences in mean FEV1, compared to the reference category of never–users.
- These differences could be unadjusted, *or* adjusted for one of 3 non–empty nested sets of confounders.
- We therefore calculated confidence intervals for $2 \times 2 \times 3 \times 4 = 48$ differences, generated by 2 analgesics, 2 stages of pregnancy, 3 non–reference exposure levels, and 4 confounder sets.

A resultsplot with $2 \times 2 \times 3 \times 4 = 48$ confidence intervals



Graphs by drug, Gestation week, and Confounder set

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- Or even for interactions, defined as differences between differences (or ratios between ratios) between parameters.

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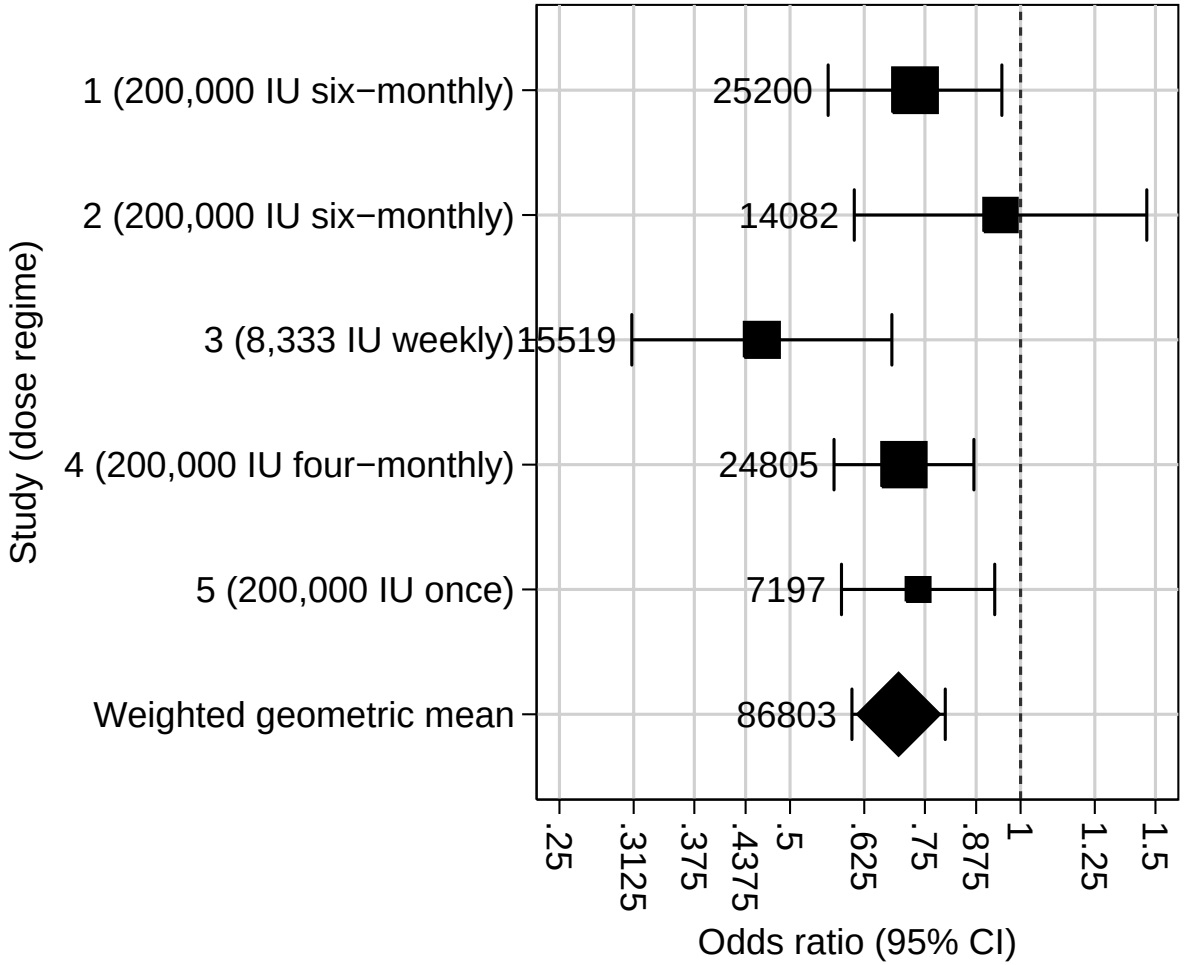
- We meta–analysed the data using `parmby`, `metaparm` and `eclplot`.

A Cochrane forest plot produced using `metaparm` and `eclplot`



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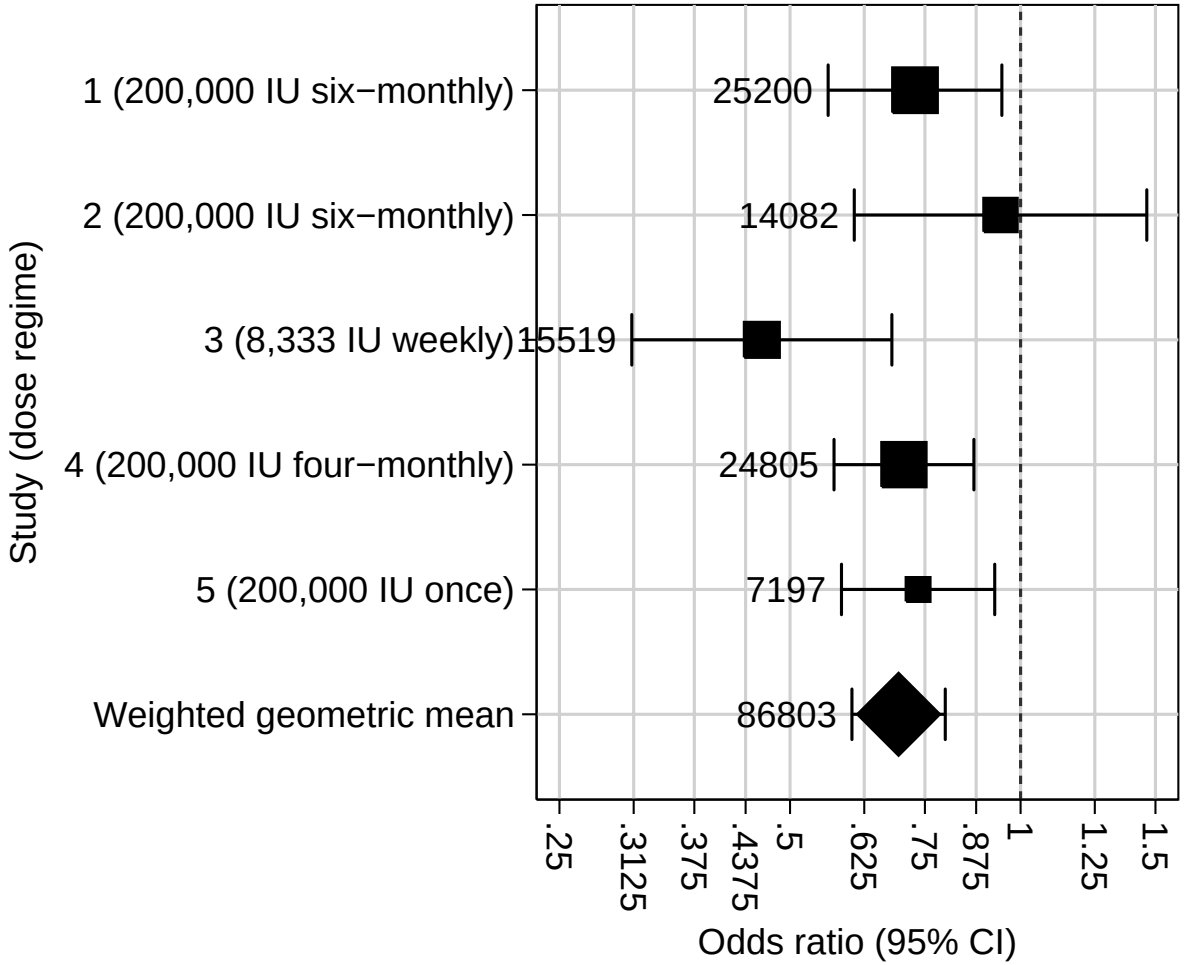

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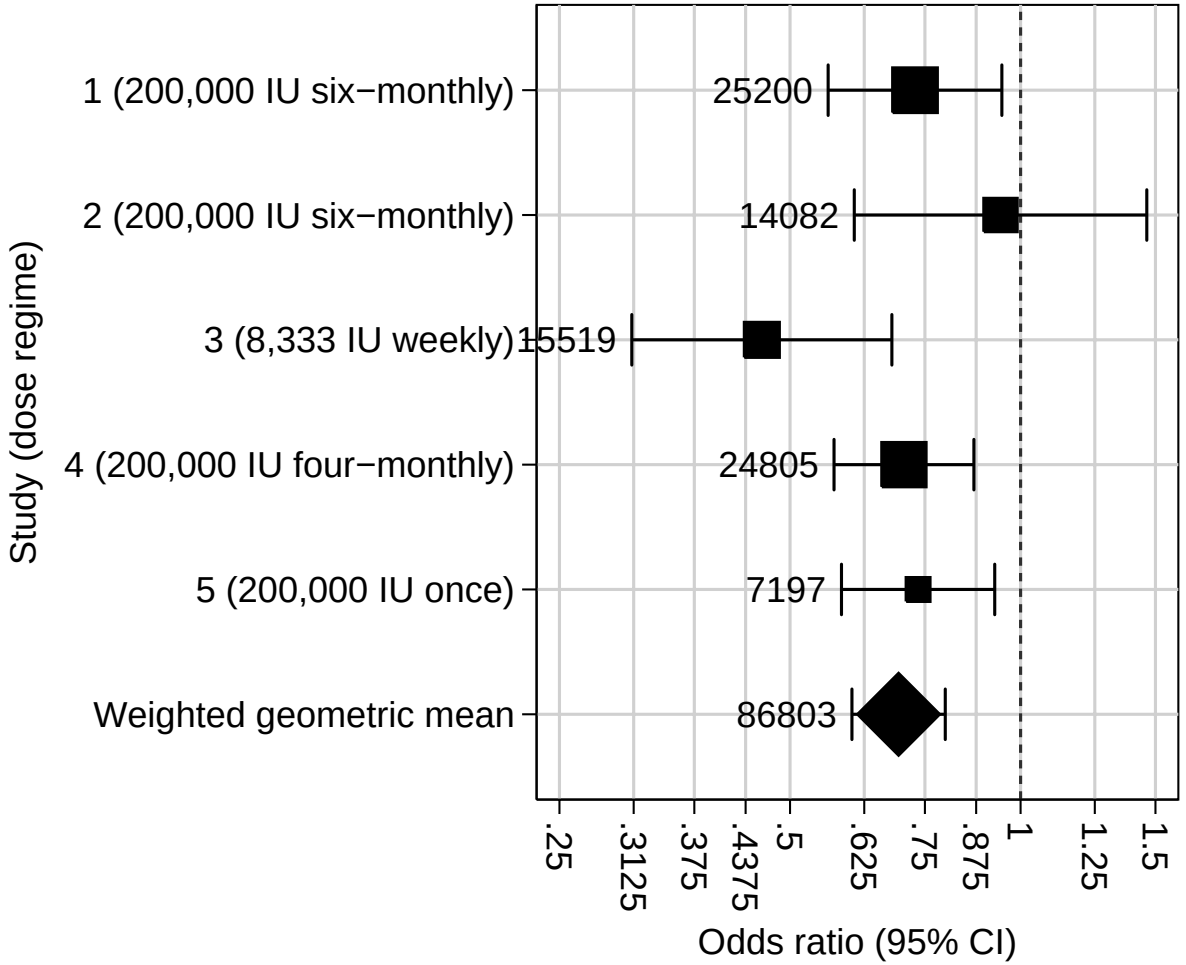

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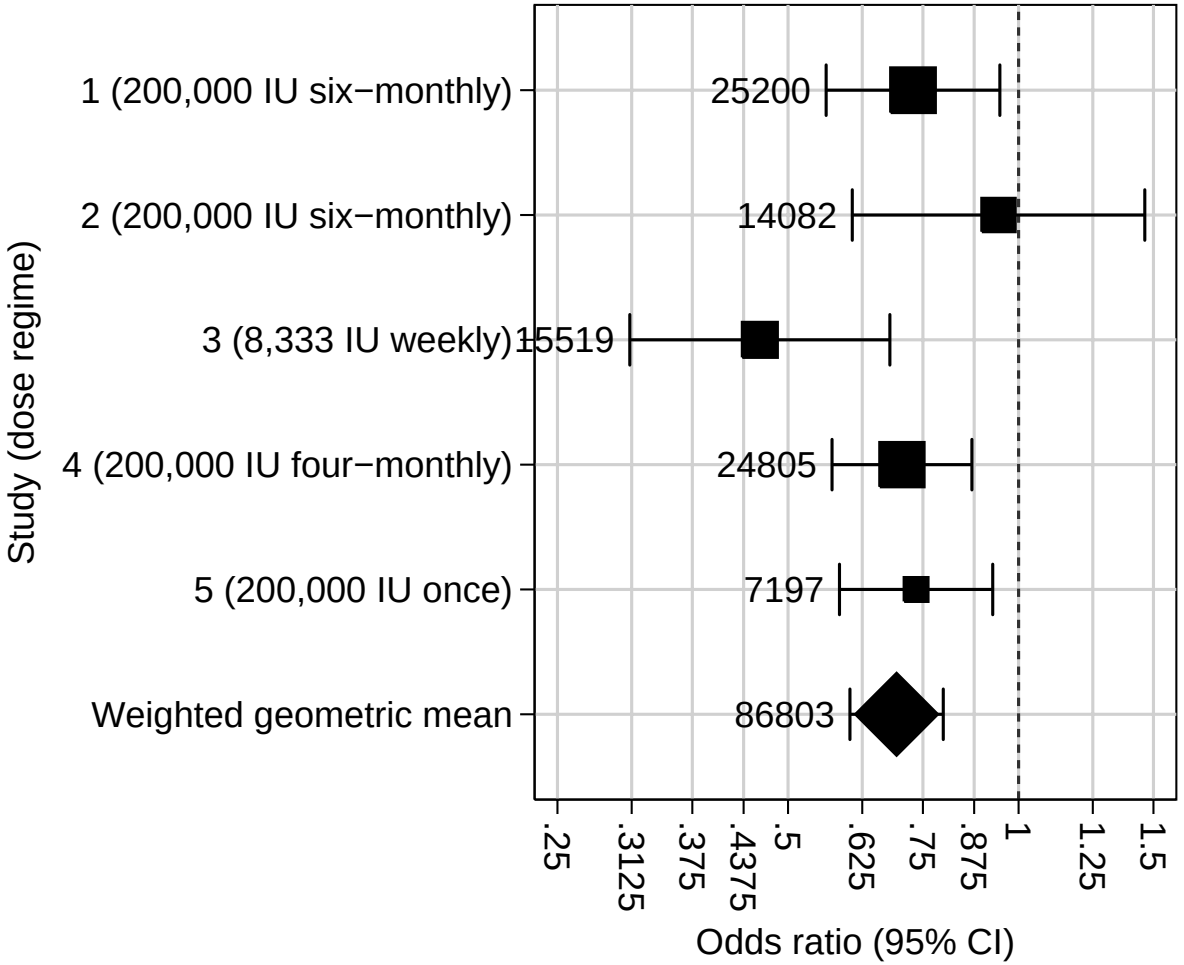
- Note that `eclplot` can weight symbols by study size.



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- The two resultsprocessing dogmas are complementary, and each one has advantages and disadvantages.

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- For instance, variables in a resultsset have storage types, display formats, variable labels and value labels, often inherited from variables of the same names in the original dataset.
- Resultssets are most useful when plots and tables are being mass–produced, as in the child cohort example.

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- The resultsset–central dogma is followed by a minority of programmers, who want to write a do–file to do *everything*, with little or no manual intervention.
- And the same packages are often useful under either dogma!

References (1)

Bland M. 2000. *An introduction to medical statistics. 3rd ed.* Oxford: Oxford University Press.

Glasziou P.P. and Mackerras D. E. M. 1993. Vitamin A supplementation in infectious disease: a meta–analysis. *British Medical Journal* **306**: 366-370.

Jann B. 2005a. From regression estimates to document tables: output formatting using `estout`. Presented at the 11th UK Stata User Meeting, 17–18 May, 2005.

Jann B. 2005b. Making regression tables from stored estimates. *The Stata Journal* **5(3)**: 288–308.

Newson R. 2002. Creating plots and tables of estimation results using `parmest` and friends. Presented at the 8th UK Stata User Meeting, 20–21 May, 2002.

Newson R and the ALSPAC Study Team. 2003. Multiple–test procedures and smile plots. *The Stata Journal* **3(2)**: 109–132.

References (2)

Newson R. 2003. Confidence intervals and p–values for delivery to the end user. *The Stata Journal* **3(3)**: 245–269.

Newson R. 2004. From datasets to resultssets in Stata. Presented at the 10th UK Stata User Meeting, 28–29 June, 2004.

Newson R. 2005. Generalized confidence interval plots using commands or dialogs. Presented at the 11th UK Stata User Meeting, 17–18 May, 2005.

All Stata User Meeting presentations referenced (and this one) can be downloaded from *http://www.stata.com/meeting/proceedings.html*

The packages `descsave`, `estadd`, `estout`, `factext`, `listtex`, `metaparm`, `parmest`, `regaxis`, `scheme_rbn1mono`, `sencode`, `sdecode`, `xcollapse` and `xcontract` (mentioned and/or used in this presentation) can be downloaded from SSC using the `ssc` command in Stata.