# CLEAR-PLOT: Automating Clarify & Predicted Values for Chart Generation

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The CLEAR-PLOT package includes a modified version of the CLARIFY program created by King, Tomz and Wittenberg (2000) and Tomz, Wittenberg and King (2003), which was combined with the automated .do file featured in "Understanding Interaction Models" of Brambor, Clark and Golder (2006).

## Utilization

The .ado and .do files allow STATA users to create marginal effect/predicted probability plots for all models covered by Tomz et al.'s CLARIFY software. Users must replace the existing "simqi.ado" file with the provided file of the same name before running the .do file.[1] To do this follow the steps below:

- First, download the Clarify package from Gay King's website $< \texttt{http://gking.harvard.edu/clarify} >$ or find the program within STATA by using "`net search clarify`"

- Next, replace the simqi.ado file with the one featured on Travis Braidwood's website. This can be achieved by typing the following command into STATA: $< \texttt{copy http://travisbraidwood.altervista.org/simqi.ado}$ $\texttt{simqi.ado, replace} >$. This command should appear on one line, as a single command. Note that often STATA will return the message "`(note: file simqi.ado not found)`". If that is the case simply retype the command a second time, and that should clear the message. If the original simqi.ado has been successfully replaced, you should simply see a "." on the line below the command. Note: if you are a machine running a 64-bit Windows system, or on a newer version of Windows (Windows 7 onward), you may have to manually tell STATA where simqi.ado is located. As of STATA 13.0 it is stored at $< \texttt{C:\textbackslash ado\textbackslash plus\textbackslash s} >$ on your machine. If on a Windows operating system, type $< \texttt{cd C:\textbackslash ad\textbackslash plus\textbackslash s} >$ into STATA. This will change the working directory. Next, repeat the step above.

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- Alternatively, you can manually copy and save the .ado file from the website into the appropriate folder, thus replacing the original simqi.ado file. The simqi.ado file is typically stored (for windows) within the STATA program files folder. For example, $< C:\ado\plus >$ or $< C:\Program\ Files\Stata XX\ado\updates\s >$ (where "$XX$" is the STATA version number). If you can't find it, simply search for it by name.

- You're done! The replaced file does not change the functionality of Clarify, rather it instructs Clarify to store additional information after model estimation.

Once the simqi.ado file is replaced, use automatedCLARIFY.do (featured on Braidwood's website) as a template. The .do file can be modified to accommodate any of the models and options available for use with Clarify (see $<$ `http://gking.harvard.edu/clarify` $>$ for a complete list and instructions for use)

The original simqi.ado file has been slightly modified to allow for the automatic storage of the generated results. This is accomplished by modifying the output routines to include STATA r-class scalars. The scalars saved are as follows: lo, hi, PrL, PrU, Pr, Pr0, Pr0L, Pr0U, sderr. These are the lower and upper bounded confidence intervals, predicted probability 95% confidence intervals, the predicted mean outcome/$Pr(y = 1)$, $Pr(Y = 0)$, the 95% confidence intervals for the $Pr(Y = 0)$, and the standard error, respectively. See the examples on Braidwood's website.

## For Models with Multiple Outcomes

Currently the CLEAR-PLOT modifications do not directly capture multiple predicted outcomes (eg. mlogit and sureg), rather it only captures the last outcome. For example, in a multinomial model where $Pr(Y = 1, 2, or\ 3)$ CLEAR-PLOT only reports $Pr(Y = 3)$. However, Braidwood's website currently features a work-around until the program can be modified (see `Automated CLARIFY, Ex. MLogit.do`). This .do file allows users to generate predicted probabilities for $n$ outcomes, where $n$ is the number of values $Y$ can assume (in the example file $Y$ may assume three values: 1, 2, or 3). This work-around also applies to STATA's Seeming Unrelated Regression model (`sureg`). Users should modify the example to conform to their data.

## Limitations

Currently the CLEAR-PLOT modifications do not allow for the consideration or ordered outcomes (oprobit and ologit). Modifications are ongoing. Check back in the future for a solution.

# References

Brambor, Thomas, William Clark and Matt Golder. 2006. "Understanding Interaction Models: Improving Empirical Analyses." *Political Analysis* 14:62–82.

King, Gary, Tomz Michael and Jason Wittenberg. 2000. "Making the Most of Statistical Analyses: Improving Interpretation and Presentation." *American Journal of Political Science* 44(2):347–61.

Tomz, Michael, Jason Wittenberg and Gary. King. 2003. "Clarify: Software for Interpreting and Presenting Statistical Results." *Journal of Statistical Software* 8(1):245–46. Abstract published in Journal of Computational and Graphical Statistics 12, no. 1 (2003): 245-46.