Agnostic about functional form? Poisson or negative binomial? Cubic or quadratic on a covariate? **No problem.** Fit your model. Graph it. Make inferences.

**Kernel regression**
- Local linear and local constant estimators
- Eight kernels for continuous covariates
- Two kernels for discrete covariates
- Graph results
  - With one covariate, plot the nonparametric function and your data
  - With multiple covariates, plot a slice of the function across values of covariates
- Optimal bandwidth computation
  - Cross-validation
  - Improved AIC
- Estimate means, derivatives, and contrasts
- Interface to **margins**
  - Population and subpopulation means and effects
  - Fully conditional means and effects
  - Confidence intervals
- **marginsplot**

**Series regression**
- B-spline, natural-spline, and polynomial basis functions
- Estimates of mean derivatives and contrasts
- Additively separable nonparametric and semiparametric models
- Optimal knot and polynomial selection
  - Cross-validation
  - Generalized cross-validation
  - AIC
  - BIA
  - Mallows’s Cp
- Estimate means, derivatives, and contrasts
- Interface to **margins**
  - Population and subpopulation means and effects
  - Fully conditional means and effects
  - Confidence intervals
- **marginsplot**
EASY MODEL SPECIFICATION

Local-linear kernel regression with continuous $x_1$ and discrete $a$
  . `npregress kernel y x1 i.a`

B-spline regression
  . `npregress series y x1 i.a`

Local-linear regression and Gaussian kernel for $x_1$
  . `npregress kernel y x1 i.a, kernel( gaussian )`

Cubic spline regression
  . `npregress series y x1 i.a, splines`

User-specified bandwidth vector
  . `npregress kernel y x1 i.x2, bwidth(H)`

User-specified knot matrix
  . `npregress series y x1 i.x2, knotsmat(K)`

Additively separable model
  . `npregress series y x1 x2 x3, nointeract(x2 x3)`

Semiparametric estimation ($y = g(x_1) + \beta x_2 + \epsilon$
  . `npregress series y x1, asis(x2)`

LET’S SEE IT WORK

We fit a nonparametric model with two continuous covariates ($x_1$ and $x_2$) and one discrete covariate with three levels ($a$). We type:
  . `npregress series y x1 x2 i.a`

Then we plot them using `marginsplot`.

Here we looked at the mean function for values of $a$ and $x_1$ and averaged values of $x_2$. We might explore the function for different values of $x_2$.
  . `margins a, at(x1=1(1.1)) at(x2=1(1.1))`

We may also compute contrasts (differences) across the counterfactual levels of $a$.
  . `margins r.a`

and then evaluate them at different values of the covariates.
  . `margins r.a, at(x1=1(1.1)) at(x2=1(1.1))`

We belabor. The point is you have no ex-ante knowledge of the functional form and yet your nonparametric estimates allow you to obtain a consistent estimates and answer many questions of interest. This is exciting and it is unique to Stata.