Tutorial 3 HT

Research Methods for Political Science - PO3110

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HM1

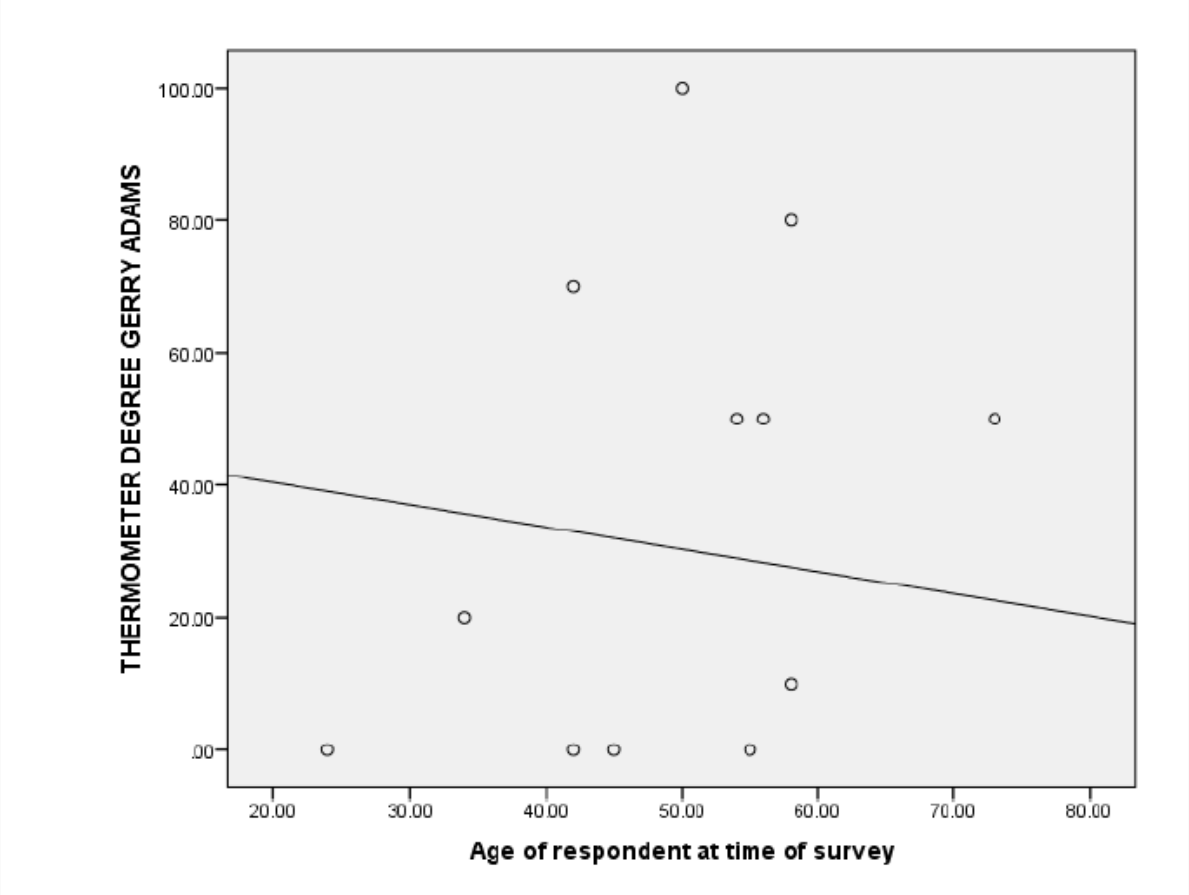
Review of Homework 1

- Have the data ready

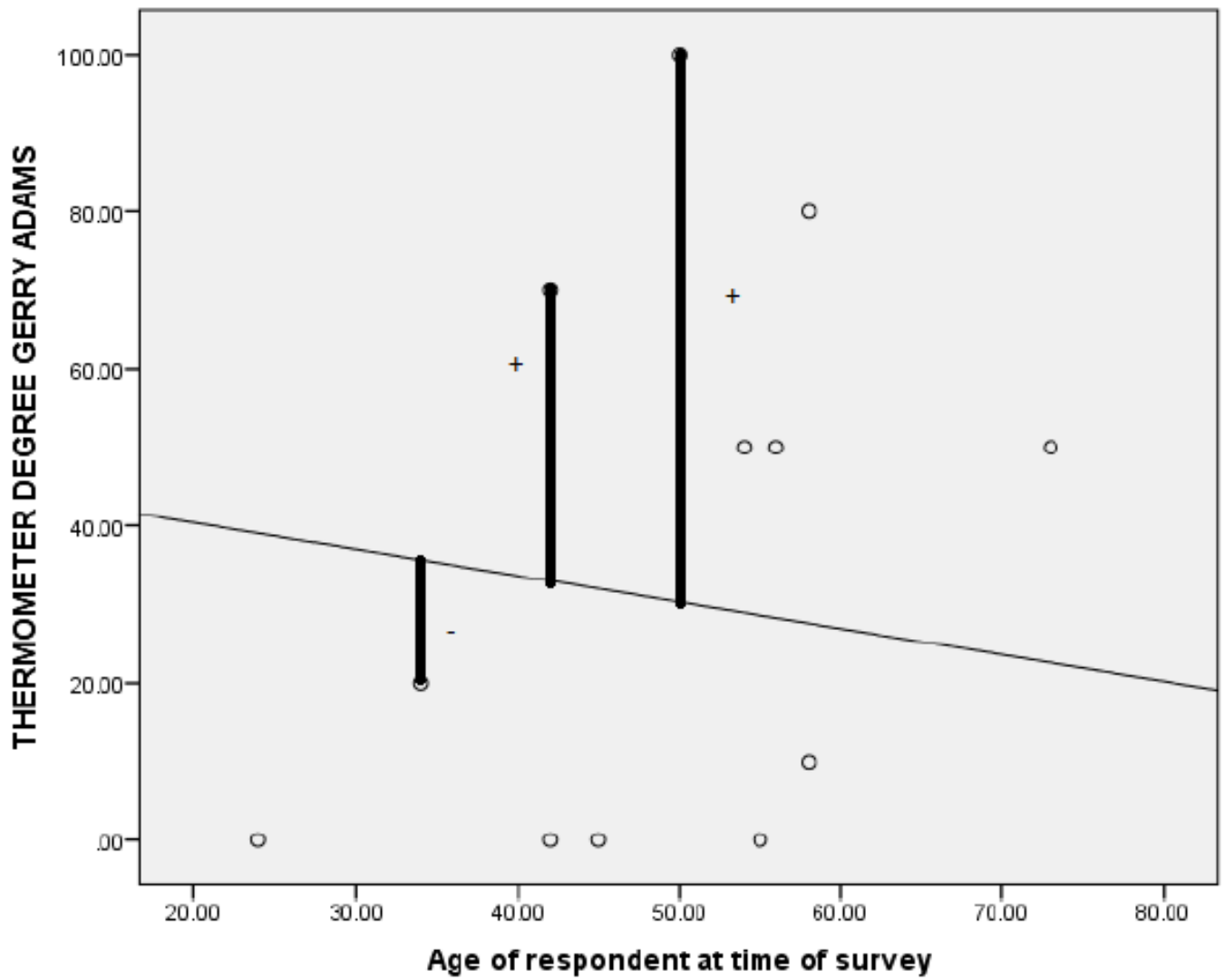
Expanding on HM1

Working with the residuals

The residuals are defined as the deviance between the observed and the predicted values. The graph below displays a selection of cases from the dataset and the regression line. Draw the residuals in the graph:



Working with the residuals: solution



Generate Residuals in SPSS

Use Transform ... Compute Variable to calculate the residual for each of your cases in the dataset. Check using SPSS:

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- Go to Analyze - Regression - Linear and specify the regression model.
- Click the ‘Save’ button on the Right. And select ‘Residuals - Unstandardized’. Click ‘Continue’.
- Run the regression model. A new variable RES_1 should be created in your dataset.

Residual Sum of Squares

Look at the ANOVA Table reproduced below. Look at the values for the Regression, Residual and Total Sum of Squares. How can we calculate the Residual Sum of Squares from the residuals we already calculated?

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	29045.763	1	29045.763	31.650	.000[b]
	Residual	942504.215	1027	917.726		
	Total	971549.979	1028			

a. Dependent Variable: THERMOMETER DEGREE GERRY ADAMS

b. Predictors: (Constant), Age of respondent at time of survey

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Hint:

$$RSS = \sum_{i=1}^{n} (y_i - \hat{y}_i)^2 \qquad TSS = \sum_{i=1}^{n} (y_i - \bar{y})^2$$

$$R^2 = 1 - \frac{RSS}{TSS}$$

Look up the formula for the R^2. Calculate the R2 from the information in the ANOVA table. Check your answer in the Model Summary table.

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Some Applied Research

Conflict Research from Fearon and Laitin

Let's keep working on the dataset from James D. Fearon and David D. Laitin, "Ethnicity, Insurgency, and Civil War," American Political Science Review 97, 1 (March 2003): 75-90.

- `https://tinyurl.com/method-conflict`

1. Briefly review your aim from last time.
2. Produce at least two graphs. What is the message you are trying to convey?
3. Run a statistical test and illustrate the results.

I am available for further questions/feedback!