

Beamer Template

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Today's Topics

1. Basic Slides Stuff
2. Code
3. Tables and Figures

Basic Slides Stuff

What is this

- ▶ \LaTeX is a system for compiling documents from markup
- ▶ That means the same markup can be compiled more than one way
- ▶ This template creates two versions of the same slide deck
- ▶ One to be projected during a classroom lecture
- ▶ And one to give to students as a handout

Colors

- ▶ The classroom version of the slides use a light-on-dark theme, which is kind to eyes
- ▶ The handouts use dark-on-white, to avoid wasting ink
- ▶ A set of colors names beginning with "x" is defined differently in the two modes, to have appropriate contrast with light or dark backgrounds
- ▶ Colors: `xred`, `xorange`, `xyellow`, `xgreen`, `xblue`, `xpurple`, `xbrown`, `xmono`. “`xbg`” will use the background color.

Overlays

- ▶ Use overlays to reveal stuff in the classroom

Overlays

- ▶ Use overlays to reveal stuff in the classroom
- ▶ Bit

Overlays

- ▶ Use overlays to reveal stuff in the classroom
- ▶ Bit
- ▶ By by bit

Overlays

- ▶ Use overlays to reveal stuff in the classroom
- ▶ Bit
- ▶ By by bit
- ▶ Only the final, complete slide will be in the handout version

Solution frames

- ▶ Sometimes we don't want students to have the answer to in-class exercises
- ▶ ...yet we also want them to have the handout to follow along
- ▶ Can you guess what the solutionframe environment does?

Solution frames

- ▶ The `solutionframe` environment only creates a slide in classroom mode
- ▶ Handout mode ignores its contents and keeps going
- ▶ Similarly, there is a command, `\theendframe`, that makes an empty slide at the end of class, but not the handout

References

- ▶ Regular citation commands like \cite will work normally
 - ▶ Duquette (2016) is a paper you can read if you want to
- ▶ Sometimes we want to cite a claim, but don't want a heap of words on the slide
- ▶ Command \citep{...} will deemphasize a parenthetical citation
 - ▶ Scholars are known to make claims about things (Duquette 2016)
- ▶ The references slide at the end of the deck automatically puts the reference list in small text and breaks up across frames as needed.

Math

- ▶ The general preamble defines a variety of common operators that are tricky to code manually, such as \expect for the expectation operator. For example,
- ▶ $\mathbb{E}[\varepsilon_i \varepsilon_j | X] = \sigma_i^2$ if $i = j$, σ_{ij} if $i \neq j$, and

$$\mathbb{V}[\varepsilon_i | X_i] = \mathbb{E}[\varepsilon' \varepsilon | X_i] = \boldsymbol{\Omega} = \begin{bmatrix} \sigma_1^2 & \sigma_{1,2} & \cdots & \sigma_{1,m} \\ \sigma_{1,2} & \sigma_2^2 & \cdots & \sigma_{2,m} \\ \vdots & \ddots & \ddots & \vdots \\ \sigma_{1,m} & \sigma_{2,m} & \cdots & \sigma_m^2 \end{bmatrix}$$

More buttons

- ▶ One of the best Beamer tricks is to use a \beamergotobutton to hyperlink to a hidden slide with supplementary content,  Like this button
- ▶ I also use buttons to include hyperlinks to files and resources outside of the slides, using \href and custom commands
 - ▶  File on Google Drive
 - ▶  Code on Github
 - ▶  Link to a generic web site

Slide aesthetics

- ▶ Beamer clutter, like navigation controls and headers, are deliberately omitted
- ▶ These slides use Paul Goldsmith-Pinkham's wide-itemize and 16-9 aspect ratio to space bullet points out  The Goldsmith-Pinkham Beamer Template
- ▶ \sectionframe adds colorful frames defining sections
- ▶ \transition frame the colorful frame, but does not add a section to the table of contents

Code

Insert and color bits of code

- ▶ To use code highlighting with the same color scheme as the rest of the presentation, copy the style files included with the template to your Pygments styles directory
- ▶ See directions in the README for more detail
- ▶ Code is only highlighted if the slides are compiled using the options in the shell script
- ▶ Otherwise, the slides default to “draft” mode (monospace font, no color).

Stata code

- ▶ Individual fragments of Stata code can be inserted using `\stata{code text}`
 - ▶ `regress Y X, vce(cluster id)`
- ▶ Or, an entire frame of Stata code can be created from an external file using `\InsertStataFrame{frametitle}{filepath.do}`

A Stata Frame

```
di "hello"

forval i=1(3)7 {

    // Print the value of i
    display "`i'"
}
```

Python code

- ▶ Similarly, individual fragments of Python code can be inserted using
 \python{*code text*}
 - ▶ `print("Hello World")`
- ▶ Or, an entire frame of Python code can be created from an external file using
 \InsertPythonFrame{*frametitle*}{*filepath.py*}

A Python Frame

```
# Use the "statsmodels" package of econometric commands with "sm" shortcut
import statsmodels as sm

# Define a model regressing y on X using OLS from the sm module
ols_model = sm.OLS(y, X)

# Estimate the model using the .fit attribute
ols_results = ols_model.fit()

# Report the results to the terminal
print(ols_results.summary())
```

Tweak the code slides

- ▶ The `\Insert...Frame` commands will take an optional argument to adjust the text size, e.g. `\InsertPythonFrame[\scriptsize]{Title}{Filepath}`
- ▶ You can fit up to 30-ish lines of code on a slide, max, using `\tiny`
- ▶ Aim for 20 or fewer lines for readability

Doing something else

- ▶ Adding other languages is straightforward
 1. Define a new minted environment in both preambles for your favorite language
 Supported languages
 2. Copy the new command definitions for Stata or Python and adapt them as needed
- ▶ What about other tweaks to code blocks? You may get frustrated.
- ▶ Beamer and verbatim text (like code) often don't get along; expect bugs.

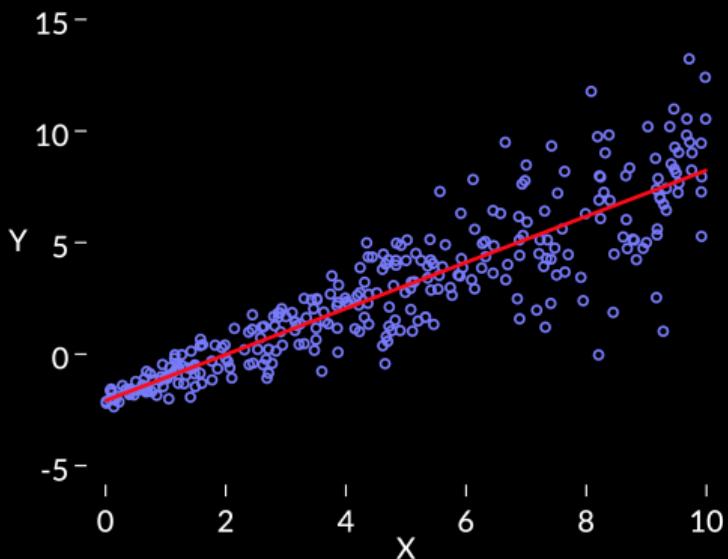
Tables and Figures

\LaTeX tables

| | (1) | (2) | (3) |
|-----------|---------------------|---------------------|---------------------|
| Income | 0.298*** (0.026) | 0.638*** (0.050) | 0.488*** (0.042) |
| Education | 0.092*** (0.015) | 0.077*** (0.016) | 0.082*** (0.015) |

- ▶ Insert .tex tables from statistical software using `\input{}`
- ▶ `\tablepath` defines the relative path to the table directory
- ▶ The `begin{column}` environment makes it easy to put comments alongside your float

Images can change with the slide style



- ▶ The macro \figpath points to images in the `figs_dark` directory in classroom mode
- ▶ But it points to `figs_light` in handout mode
- ▶ Automate this process by using the color profiles in this template to create two versions of your charts

Tell Stata the color profiles

```

global ishandout=1
if ${ishandout}==1 {                                // Set globals this way if it's for a handout
    global xmono "black"                         // Colors
    global xred=~"255 30 30"""
    global xgreen=~"0 158 85"""
    global xblue =~"0 114 178"""
    global xpurple=~"163 82 143"""
    global xyellow=~"240 228 66"""
    global xorange=~"213 111 62"""
    global xbrown=~"76 35 10"""
    global xbg "white"

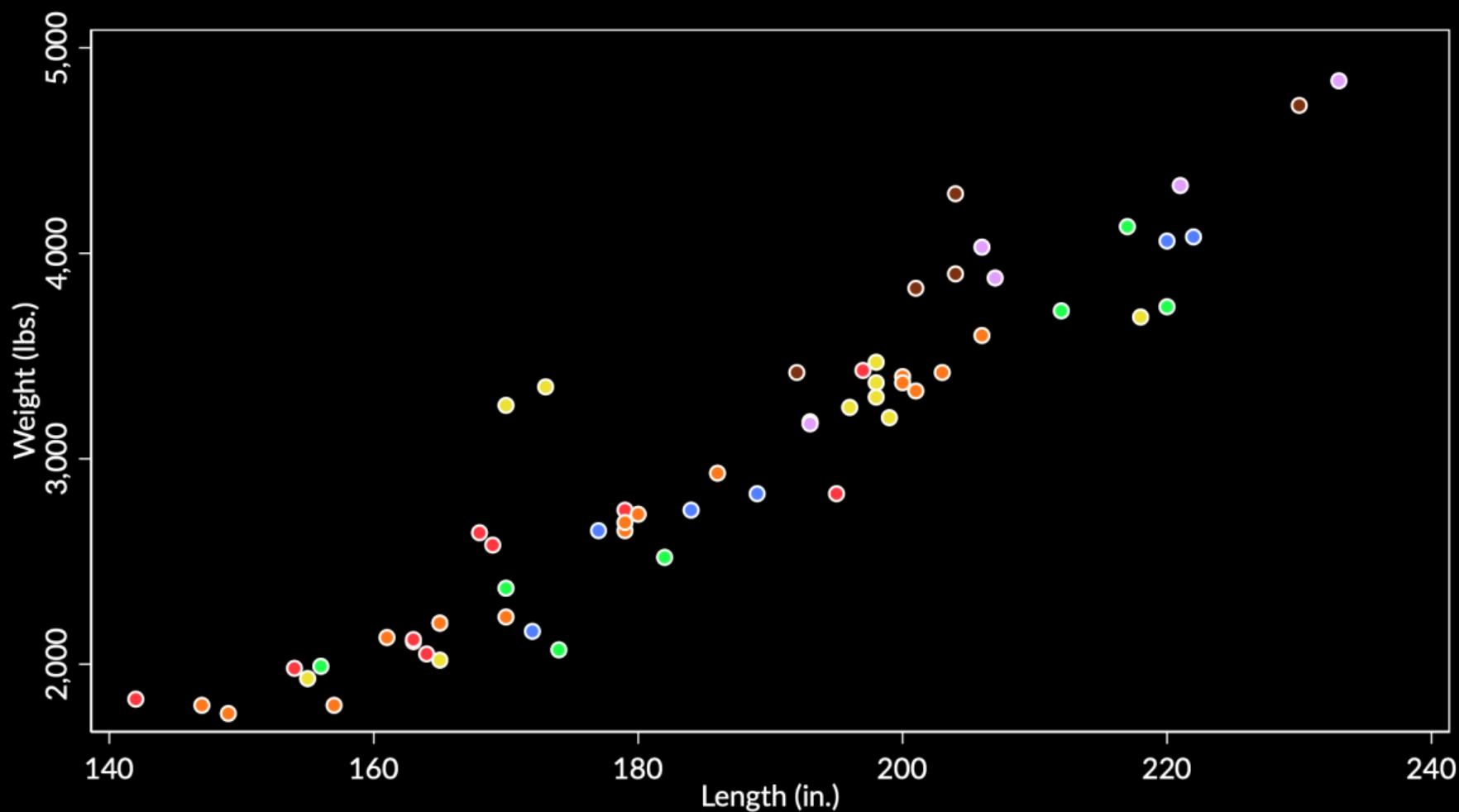
    global xscheme "s1color"                     // Twoway plot theme

    global figsave "../figs_light"                // Where to save the figure
}
else {
    global xmono "white"                       // Classroom globals
    global xred=~"255 81 81"""
    global xgreen=~"0 250 95"""
    global xblue=~"100 150 255"""
    global xpurple=~"232 179 252"""
    global xyellow=~"240 228 66"""
    global xorange=~"255 140 33"""
    global xbrown=~"144 67 19"""
    global xbg "black"
    global xscheme "s1rcolor"
    global figsave "../figs_dark"
}

```

Use them in a chart

```
// An example graph
webuse auto, clear
twoway (scatter weight length if price<4000, mcolor(${xred}) mlcolor(${xmono})) ///
(scatter weight length if price<4500 & price>=4000, mcolor(${xorange}) mlcolor(${xmono})) ///
(scatter weight length if price<5000 & price>=4500, mcolor(${xyellow}) mlcolor(${xmono})) ///
(scatter weight length if price<7000 & price>=6000, mcolor(${xgreen}) mlcolor(${xmono})) ///
(scatter weight length if price<10000 & price>=7000, mcolor(${xblue}) mlcolor(${xmono})) ///
(scatter weight length if price<12000 & price>=10000, mcolor(${xpurple}) mlcolor(${xmono})) ///
(scatter weight length if price>=12000, mcolor(${xbrown}) mlcolor(${xmono})) ///
, scheme(${xscheme}) legend(off)
graph display, xsize(16) ysize(9)
graph export "${figsave}/auto.png", as(png) replace
```



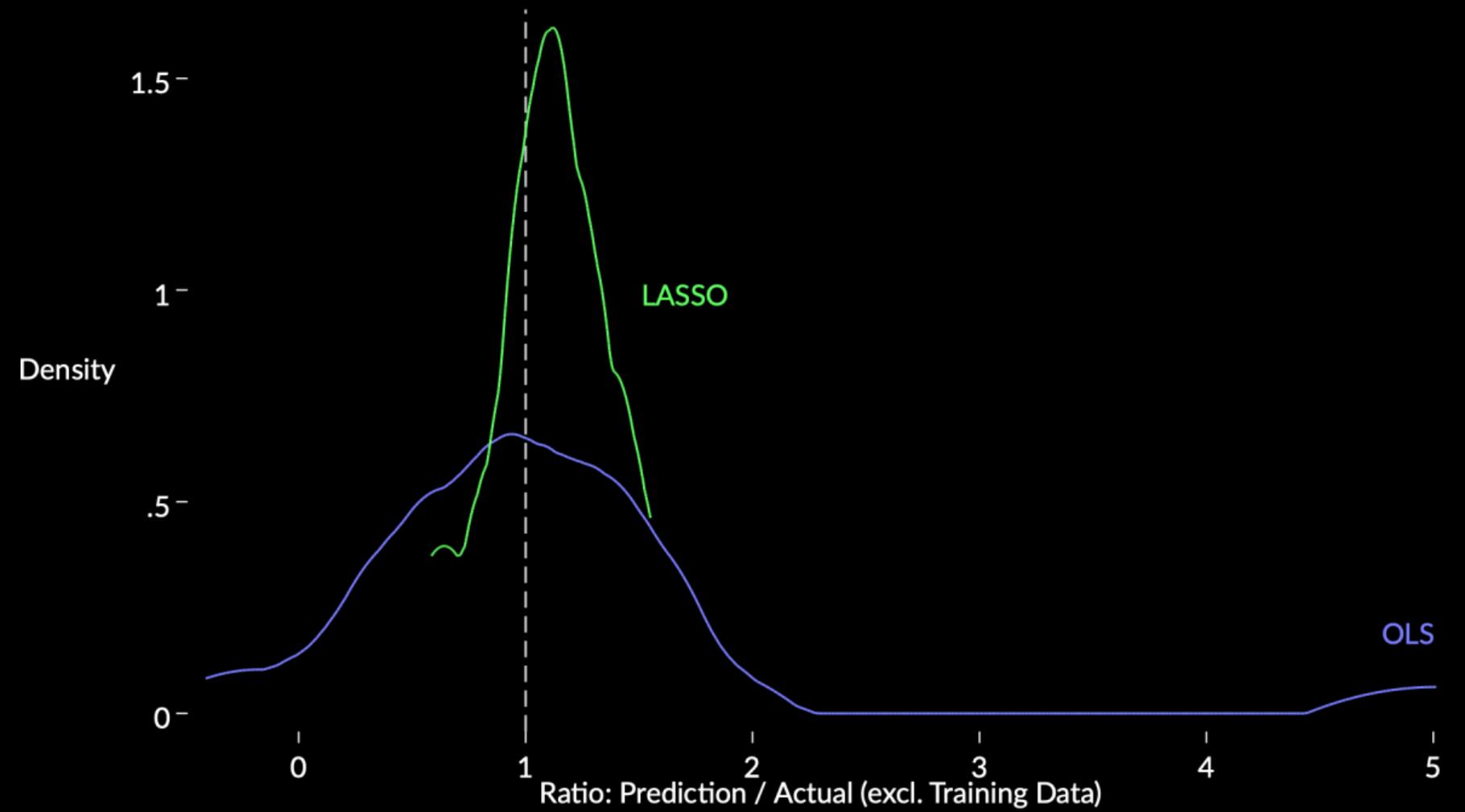
Images can also be the same



- ▶ Sometimes you want to include an image that is the same for both versions of the slides
- ▶ These are stored in the `figs_both` folder
- ▶ Use the filepath `\figboth/myimage.jpg` to load the image.

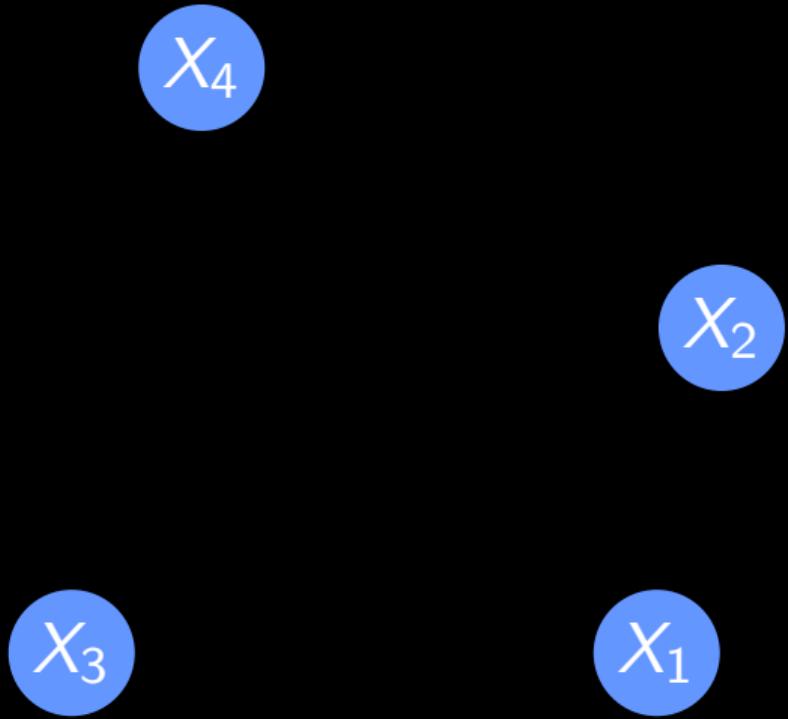
Big images

- ▶ Sometimes, you don't want text next to your picture
- ▶ You want a big image you can see details of
- ▶ `\pictureframe{filepath}` will create a slide with one image filling as much space as it can
- ▶ Must be compiled twice for correct placement



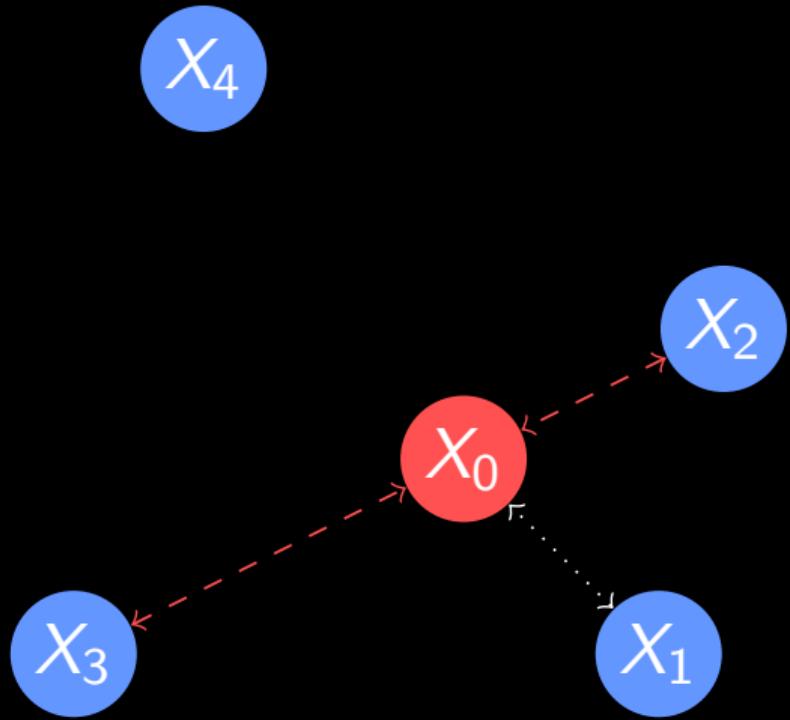


Diagrams



- ▶ If you use the theme color names, your tikz diagrams will change with the slide palette
- ▶ Overlays work! Add the `visible on` property to elements of the figure.

Diagrams



- ▶ If you use the theme color names, your tikz diagrams will change with the slide palette
- ▶ Overlays work! Add the `visible on` property to elements of the figure.

End

References

References I

Duquette, Nicolas J., "Do Tax Incentives Affect Charitable Contributions? Evidence from Public Charities' Reported Revenues," *Journal of Public Economics*, May 2016, 137, 51–69.

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Hidden Slides

You found the hidden slide!

IT'S A SECRET
TO EVERYBODY.

