

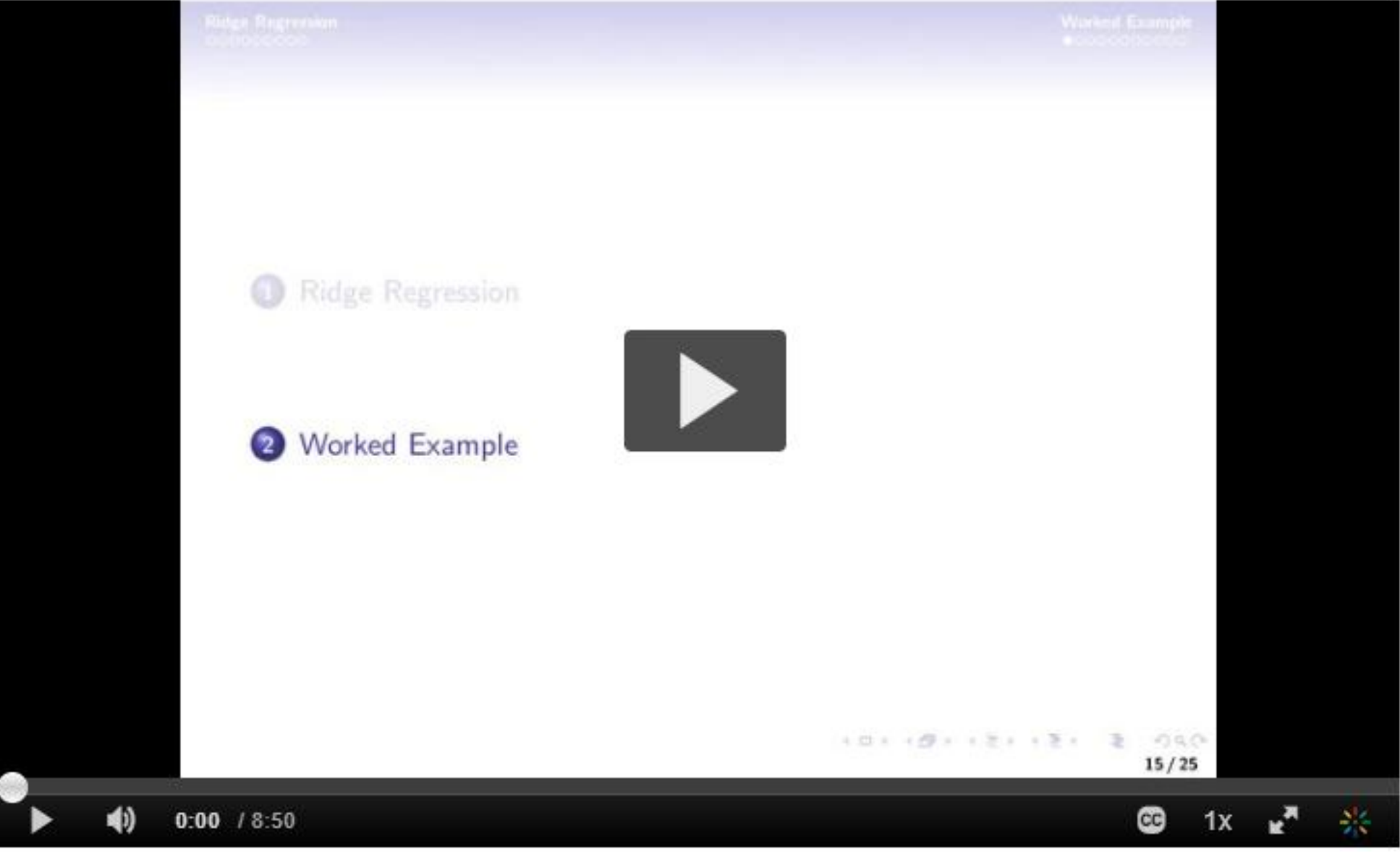
12.2: Ridge Regression


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12.2: Ridge Regression

View the videos below. The corresponding slides can be downloaded below the videos. As you view them, take notes on the following.

- 1
- In your own words, describe what happens to least-squares regression when the predictors exhibit multicollinearity.
- 2
- How is the mean-squared error (MSE) of an estimator related to its bias and variance?
- 3
- What quantity are we minimizing in ridge regression?
- 4
- Write out the ridge estimator,  $\hat{\beta}_R$ , in terms of the vector of responses, the design matrix, and the tuning parameter.
- 5
- How do we choose the tuning parameter,  $\lambda$ , in terms of the bias-variance trade-off?
- 6
- Under what circumstance is the ridge estimator equal to the least-squares estimator?
- 7
- How does the estimated test MSE vary as  $\lambda$  increases from 0?



 [mod12\\_ridge.pdf](#)  
Slides to accompany the "Ridge Regression" videos