



At lære studerende komplekse modeller

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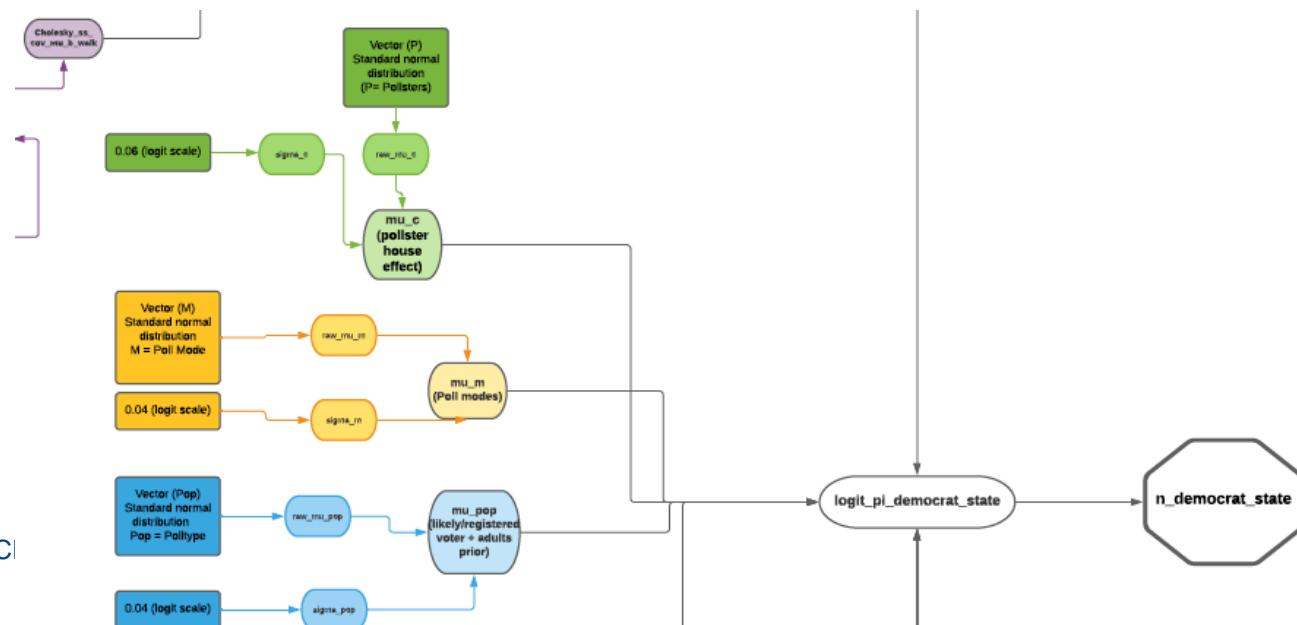


Læringsmål - kandidatseminar

- › lær at udvikle **statistiske forudsigelsesmodeller**
- › indførelse i teorier og empiri om **vælgeradfærd i præsidentvalg** i USA
- › at forstå **Bayesiansk statistiske modeller** (særlig aggregeret meningsmålinger)

Hvad er en forudsigelsesmodel?

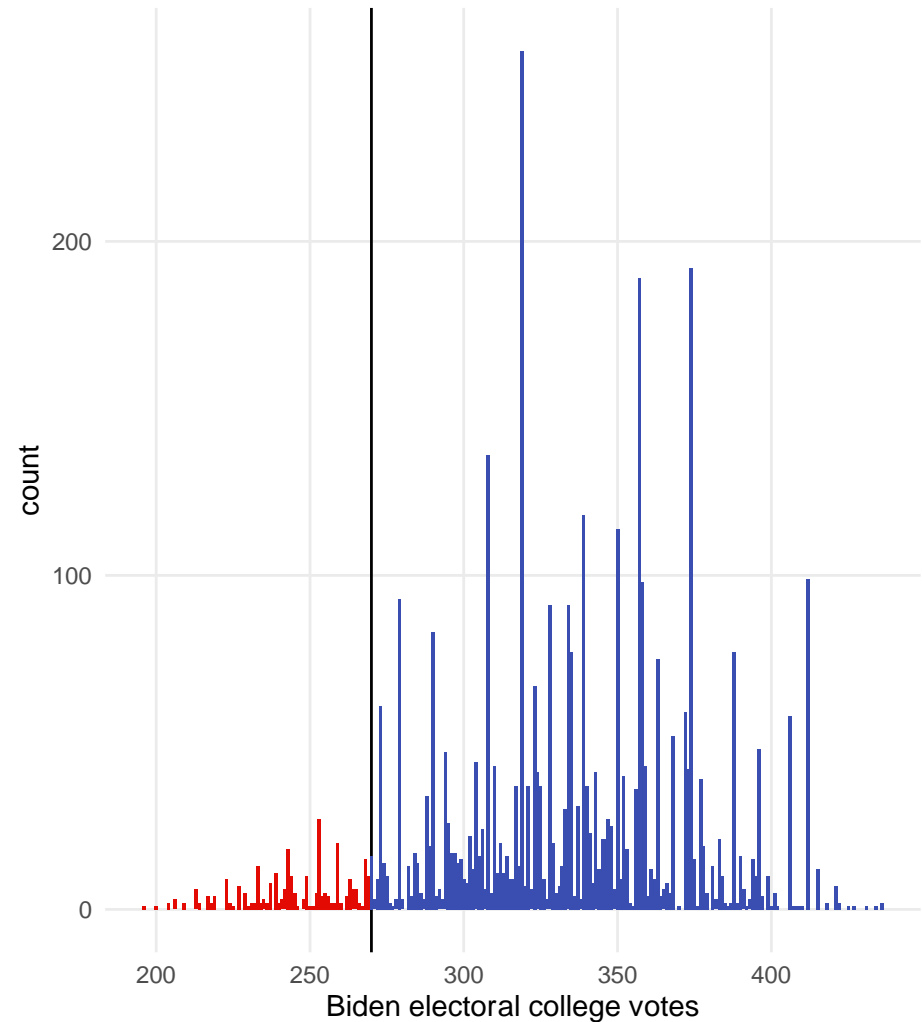
- > **Input** : strukturelle forhold (økonomi, tilslutning), meningsmålinger
- > **Output** : sandsynligheder for forskellige udfald (Biden sejr)
- > Hvordan : **simulering** baseret på data af forskellige udfald



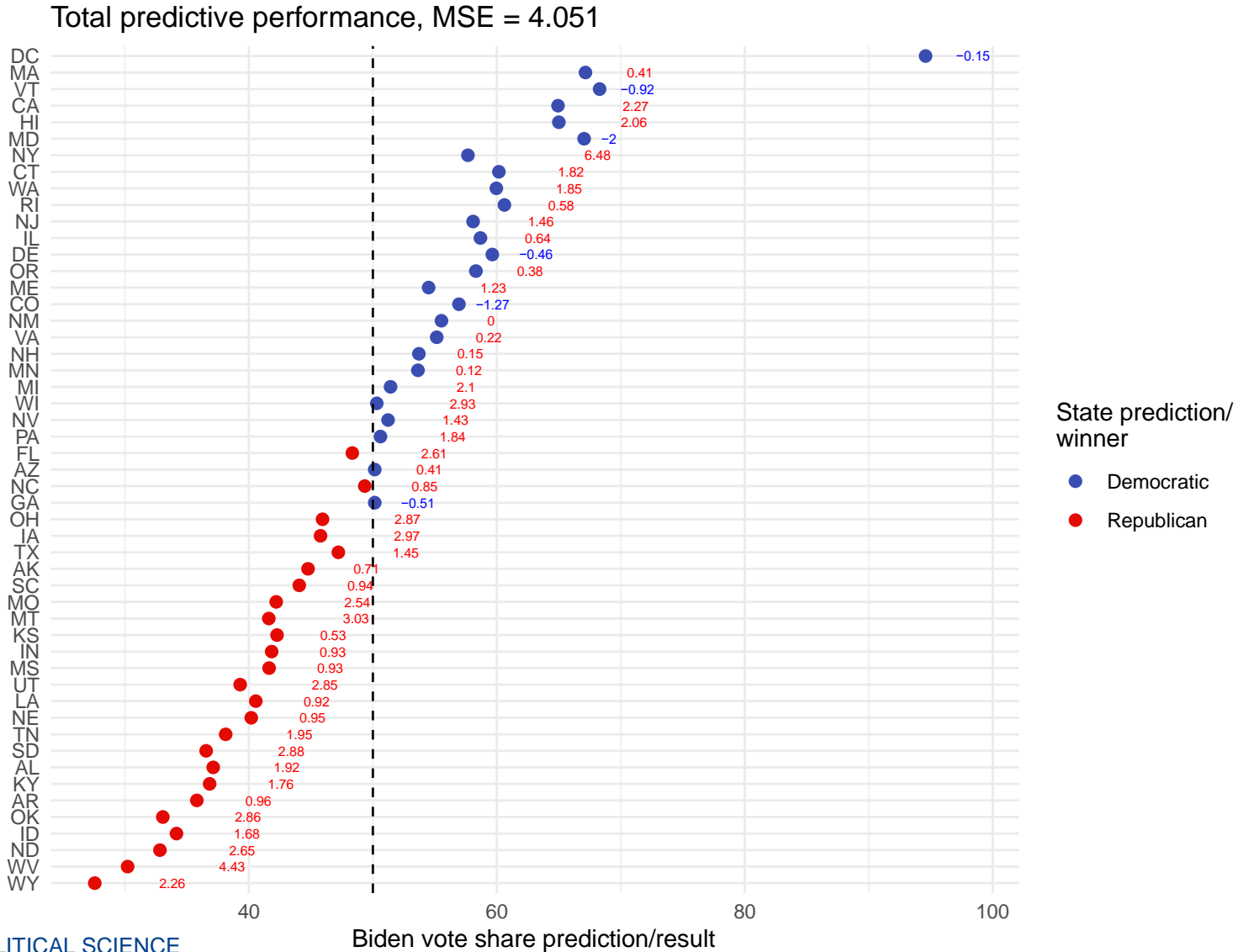
Hvad er en forudsigelsesmodel?

$p(\text{Biden win}) = 0.93$

Winner in the electoral college ■ Democratic ■ Republican



Hvad er en forudsigelsesmodel?



Hvordan?

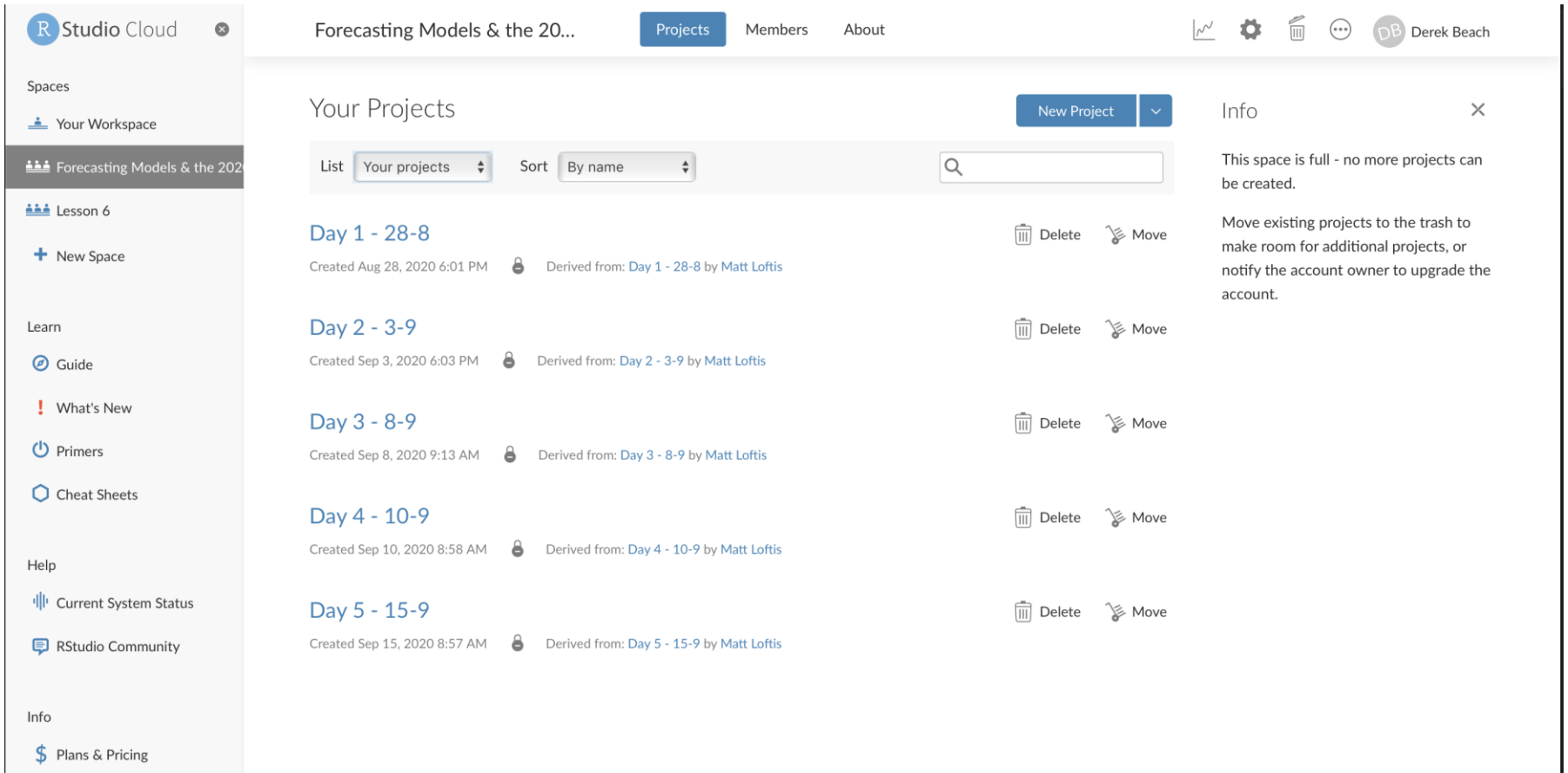
- > 15 x 3 timers **undervisning** + hjemmearbejde i grupper
- > selvstændig arbejde i **grupper** (4-5) + troubleshooting!
- > **R Studio Cloud / R Studio**, samt **Slack** til kommunikation, deling af kode osv...

Hvordan?

- > små **øvelser** i R i starten (**strukturel modeller**)
- > **teori** om vælgeradfærd
- > introduktion til **Bayesiansk statistik**
- > **øvelse** : aggregering af meningsmålinger
- > adgang til **fuld model** + **data** fra starten af oktober (open source fra *Economist*)

Hvordan?

> øvelser i RStudio Cloud



The screenshot shows the RStudio Cloud interface for a workspace named "Forecasting Models & the 20...". The interface includes a sidebar with navigation options like "Spaces", "Learn", and "Help". The main area displays a list of five projects, each with a title, creation date, and a "Derived from" note. Each project has "Delete" and "Move" icons. A "New Project" button is visible in the top right of the project list. An "Info" panel on the right indicates that the space is full and provides instructions on how to manage the space.

Forecasting Models & the 20... Projects Members About

Studio Cloud

Spaces

- Your Workspace
- Forecasting Models & the 20...
- Lesson 6
- New Space

Learn

- Guide
- What's New
- Primers
- Cheat Sheets

Help

- Current System Status
- RStudio Community

Info

- Plans & Pricing
- Terms and Conditions

Your Projects

New Project

List: Your projects Sort: By name

Project Name	Created	Derived from	Actions
Day 1 - 28-8	Aug 28, 2020 6:01 PM	Day 1 - 28-8 by Matt Loftis	Delete Move
Day 2 - 3-9	Sep 3, 2020 6:03 PM	Day 2 - 3-9 by Matt Loftis	Delete Move
Day 3 - 8-9	Sep 8, 2020 9:13 AM	Day 3 - 8-9 by Matt Loftis	Delete Move
Day 4 - 10-9	Sep 10, 2020 8:58 AM	Day 4 - 10-9 by Matt Loftis	Delete Move
Day 5 - 15-9	Sep 15, 2020 8:57 AM	Day 5 - 15-9 by Matt Loftis	Delete Move

Info

This space is full - no more projects can be created.

Move existing projects to the trash to make room for additional projects, or notify the account owner to upgrade the account.

Hvordan?

RStudio

Project: (None)

Go to file/function Addins

econ_2020.R x

```

1 ## econ_2020.R
2 ## Building on 'final_2016.R' run Econ. model on the 2020 data
3
4 ## Setup
5 rm(list = ls())
6 options(mc.cores = 4)
7 n_iter <- 1000
8 n_warmup <- 500
9 n_chains <- 4
10 n_refresh <- 50
11
12 ## Libraries
13 {
14   library(tidyverse, quietly = TRUE)
15   library(rstan, quietly = TRUE)
16   library(stringr, quietly = TRUE)
17   library(lubridate, quietly = TRUE)
18   library(gridExtra, quietly = TRUE)
19   library(pbapply, quietly = TRUE)
20   library(parallel, quietly = TRUE)
21   library(boot, quietly = TRUE)
22   library(lqmm, quietly = TRUE) # make.positive.definite
23   library(gridExtra, quietly = TRUE)
24   library(ggrepel, quietly = TRUE)

```

13:2 (Top Level) R Script

Console Terminal Jobs

```

~/Desktop/R/
+ n_two_share_state = n_two_share_state,
+ unadjusted_national = unadjusted_national,
+ unadjusted_state = unadjusted_state,
+ ss_cov_mu_b_walk = state_correlation_mu_b_walk, # something weird about these
+ ss_cov_mu_b_T = state_correlation_mu_b_T, # something weird about these
+ ss_cov_poll_bias = state_correlation_error, # something weird about these
+ mu_b_prior = mu_b_prior,
+ state_weights = state_weights, # state weight determined by state electoral vote counts
+ sigma_c = prior_sigma_c,
+ sigma_m = prior_sigma_m,
+ sigma_pop = prior_sigma_pop,
+
+ # sigma_measure_noise_national missing in the data hand-off in the Econ. code
+ # exists in the June 2020 code
+ sigma_measure_noise_national = prior_sigma_measure_noise,
+
+ # sigma_measure_noise_state missing in the data hand-off in the Econ. code

```

Environment History Connections Tutorial

Global Environment

Data

state_correlation_e...	num [1:51, 1:51]	0.0115 0.0103 0.0103 0.0103 0.0103 ...
state_correlation_m...	num [1:51, 1:51]	1e-04 9e-05 9e-05 9e-05 9e-05 9e-05...
y		Large matrix (1000000 elements, 8 MB)

Values

adjusters	chr [1:6]	"ABC" "Washington Post" "Ipsos" "Pew" "YouGo...
election_day		2020-11-03
n_chains		4
n_iter		1000
n_refresh		50
n_warmup		500

Files Plots Packages Help Viewer

New Folder Delete Rename More

Home > Desktop > R > Econ_model > model

Name	Size	Modified
..		
performance_plotx.R	5.7 KB	Nov 12, 2020, 10:31 AM
review_output_new.R	23.8 KB	Nov 12, 2020, 6:23 AM
econ_2020_model_dbadj_covo.R	23.6 KB	Nov 11, 2020, 9:47 PM
econ_2020_review_output.R	23.1 KB	Nov 11, 2020, 4:35 PM
poll_model_2020_new	2.1 MB	Nov 11, 2020, 3:50 PM
Kremp_results.R	4.6 KB	Nov 4, 2020, 10:05 AM
econ_2020_model_dbadj_nocovi.R	23.4 KB	Nov 2, 2020, 6:01 PM
econ_2020_model_dbadj.R	23.6 KB	Nov 1, 2020, 11:51 AM
econ_2020_model_run_adj.R	23.1 KB	Oct 25, 2020, 9:30 PM
model_summary_2020.R	18.7 KB	Oct 25, 2020, 6:34 PM
poll_model_2020_new.stan	5.6 KB	Oct 25, 2020, 1:50 PM
poll_model_2020_oldcovmats.stan	7.6 KB	Oct 21, 2020, 2:45 PM
econ_2020_model_run.R	25.8 KB	Oct 21, 2020, 2:45 PM
econ_2020.R	19.7 KB	Oct 19, 2020, 10:15 PM
econ_2020_review.R	19.3 KB	Oct 12, 2020, 6:56 PM
final_2016.R	34.5 KB	Oct 12, 2020, 11:10 AM
final_2016_July2020.R	36.5 KB	Oct 12, 2020, 11:10 AM
poll_model_2020.stan	5.8 KB	Oct 8, 2020, 10:40 AM

Resultater

- › alle grupper fik deres tilpassede model til at virke, med mange interessante ændringer
- › meget engageret studerende omkring selve valget
- › høje karakter (mange 12-tal!)