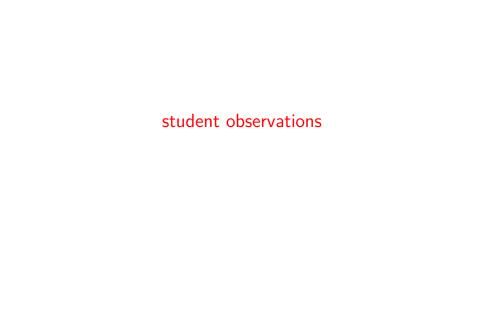
data-ppf.github.io feb 26 2019

lecture 6 of 14: data gets real: mathematical baptism

 $chris\ wiggins\ +\ matt\ jones,\ Columbia$



capabilities

Bayes

capabilities

- Bayes
- art

capabilities

- Bayes
- art
- cookbook

power

eugenics

power

- eugenics
- ▶ WWII, institutions (following GG)



historical context

▶ academic baptism

historical context

- academic baptism
- ghost of Bayes past, present, future



secondary readings

CW on Gerd Gigerenzer

F

the scientist

"Eugenics was indeed Fisher's driving motivation"

the hypothesis test

F

the scientist

- "Eugenics was indeed Fisher's driving motivation"
- Uncertainty as probability (as opposed to enumeration of cases)

the hypothesis test

the scientist

- "Eugenics was indeed Fisher's driving motivation"
- Uncertainty as probability (as opposed to enumeration of cases)

the hypothesis test

"cannot be reduced to a mechanical process"

the scientist

- "Eugenics was indeed Fisher's driving motivation"
- Uncertainty as probability (as opposed to enumeration of cases)

the hypothesis test

- "cannot be reduced to a mechanical process"
- "nuances...not picked up by Fisher's readers"

the scientist

- "Eugenics was indeed Fisher's driving motivation"
- Uncertainty as probability (as opposed to enumeration of cases)

the hypothesis test

- "cannot be reduced to a mechanical process"
- "nuances...not picked up by Fisher's readers"
- ▶ never looks at p(D|M), "statistician's imagination"

N+P

the mathematicians

N loved rigor

hybridization

Fisher's theory of significance testing, which was historically first, was merged with concepts from the Neyman-Pearson theory and taught as 'statistics' per se. We call this compromise the "hybrid theory" of statistical inference, and it goes without saying that neither Fisher nor Neyman and Pearson would have looked with favor on this offspring of their forced marriage.

N+P

the mathematicians

- N loved rigor
- "errors of the second kind"

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N+P

the mathematicians

- N loved rigor
- "errors of the second kind"
- RAF fight with KP

hybridization

Fisher's theory of significance testing, which was historically first, was merged with concepts from the Neyman-Pearson theory and taught as 'statistics' per se. We call this compromise the "hybrid theory" of statistical inference, and it goes without saying that neither Fisher nor Neyman and Pearson would have looked with favor on this offspring of their forced marriage.

Bayesians (not in the room yet)

► Sci-Am piece

Bayesians (not in the room yet)

- ► Sci-Am piece
- ► Bayesian primer

academics

- academics
- X-statistics

- academics
- X-statistics
- consultants

- academics
- X-statistics
- consultants
- expert witnesses

- academics
- X-statistics
- consultants
- expert witnesses
- math envy from RAF

- academics
- X-statistics
- consultants
- expert witnesses
- math envy from RAF
- science envy from KP "grammar of science"

primary readings

Note: these 3 readings are doing a *lot* of work, summarizing in 3 letters 50 years of, as one student put it:

active challenging of ideas between mathematicians and statisticians.

Also:

The readings for this week were very dense.

All in all, the readings from this week felt a bit dense and hard to follow,

Oh man, very dense reading

MJ on RAF's book

► F vs PN (and all bayesians): who?

MJ on RAF's book

- ► F vs PN (and all bayesians): who?
- rhetoric and posturing: why? why can't i just math it?

MJ on RAF's book

- ► F vs PN (and all bayesians): who?
- rhetoric and posturing: why? why can't i just math it?
- ▶ Bayes rule, e.g., in Bayes field of application

CW on F

1. CW on F 1955 RSSB v17#1

CW on F

- 1. CW on F 1955 RSSB v17#1
- 2. CW on P 1955 RSSB v17#2

CW on F

- 1. CW on F 1955 RSSB v17#1
- 2. CW on P 1955 RSSB v17#2
- 3. CW on N 1956 RSSB v18#2

return to secondary readings: GG section 3.7

"Statistical Laboratories":

- "Statistical Laboratories":
 - ▶ Galton, KP, . . . Neyman

- "Statistical Laboratories":
 - ▶ Galton, KP, . . . Neyman
 - lowa

- "Statistical Laboratories":
 - ► Galton, KP, ... Neyman
 - lowa
- "Statistics goes to war"



how did this capability rearrange power? who can now do what, from what, to whom?

contemporary debates:

- contemporary debates:
 - ▶ NIH elaboration

- contemporary debates:
 - ▶ NIH elaboration
 - ASA

- contemporary debates:
 - ▶ NIH elaboration
 - ASA
 - ▶ Gigerenzer 2018

- contemporary debates:
 - ▶ NIH elaboration
 - ASA
 - ▶ Gigerenzer 2018
 - XKCD

principles

role of rights, harms, justice?

