Implementing reproducibility in phonetic research: a computational workflow

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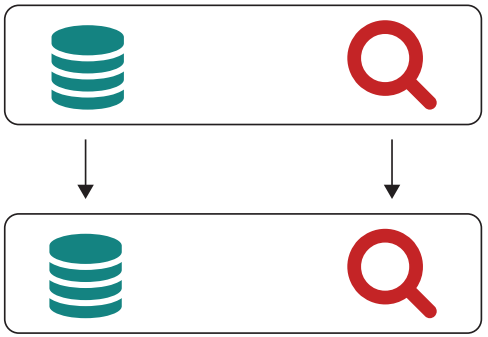
Reproducible research

[figure reproducible]

Reproducible research

REPRODUCIBILITY



Researcher A

Researcher B

REPLICABILITY

Researcher A

Researcher B

Why should we care?

The problem (Sandve et al. 2013):

- difficulty of reproduction
- difficulty of replication
- retracted papers

The solution:

- Reproducible Research (RR)

A case from linguistics

The "Yokuts vowels" case (Weigel 2002):

- about **75%** of the data is contrieved (Weigel 2005:149)
- some of the generalisations are **wrong** (Blevins 2004)

Reproducible Research in linguistics

- linked data (Bird & Simons 2003, Thieberger 2004)
- computational grammar (Maxwell & Amith 2005)
- `glossbox` (McDonnell & Hall 2017)
- RR in the Speech Sciences (Abari 2012)

RR in phonetics: the workflow

Phase A: source code and documentation

Praat scripting:

- Atom editor (syntax highlighting)
- Literate Markdown
  - tangle: `lmt`
  - weaving: `pandoc`

Phase B: the `speakr` package

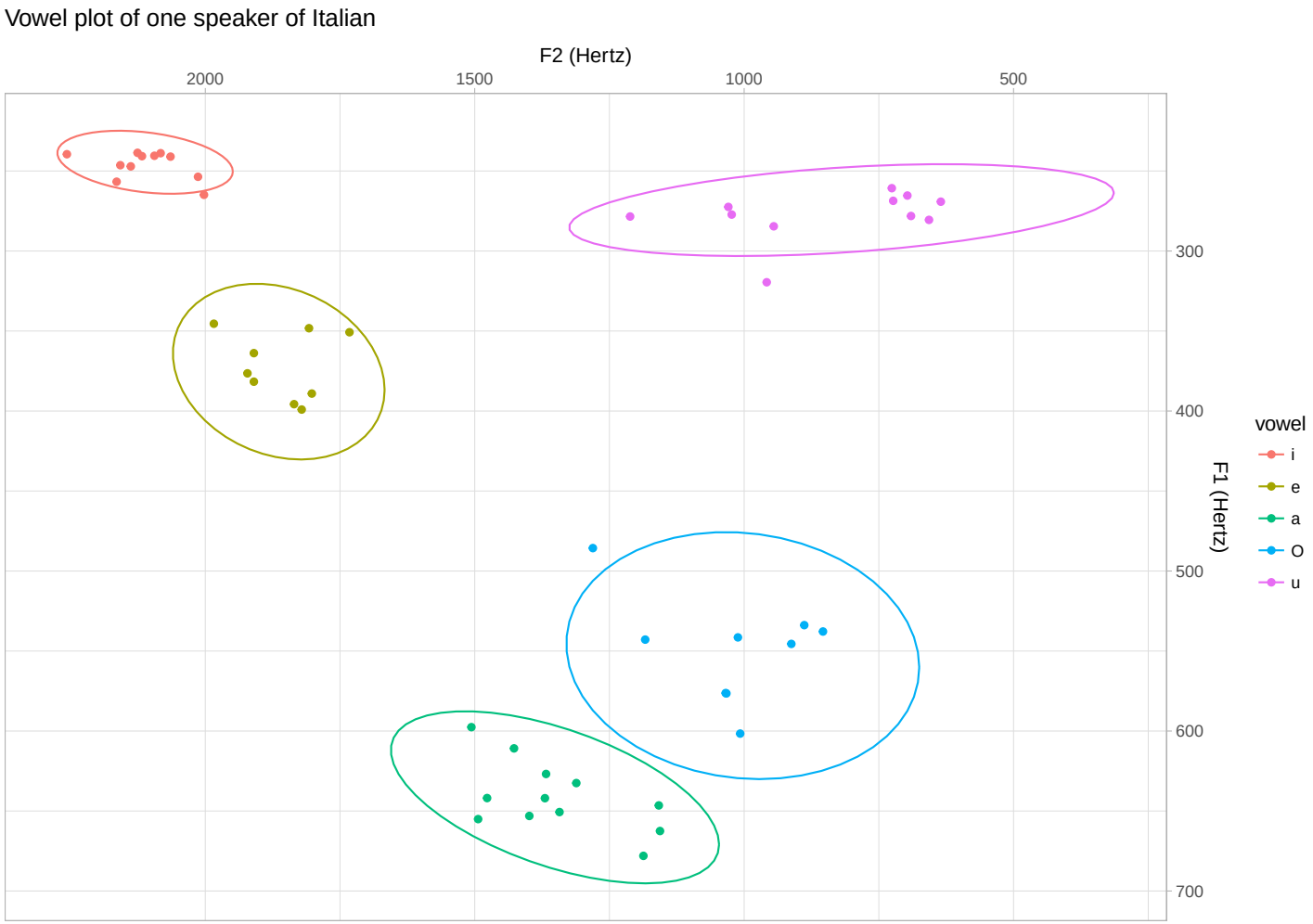
An `R` package to aid phoneticians who use Praat:

- tangle and run Praat scripts from within `R`

Phase B: the speakr package


```
lmt("code/get-measurements.praat.md")
praatRun("code/get-measurements.praat")
vowels <- read_csv("results/vowels.csv") %>%
    mutate_if(is.character, as.factor) %>%
    mutate(vowel = factor(vowel, c("i", "e", "a",
                                   "O", "u")))
```

Phase B: the speakr package



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