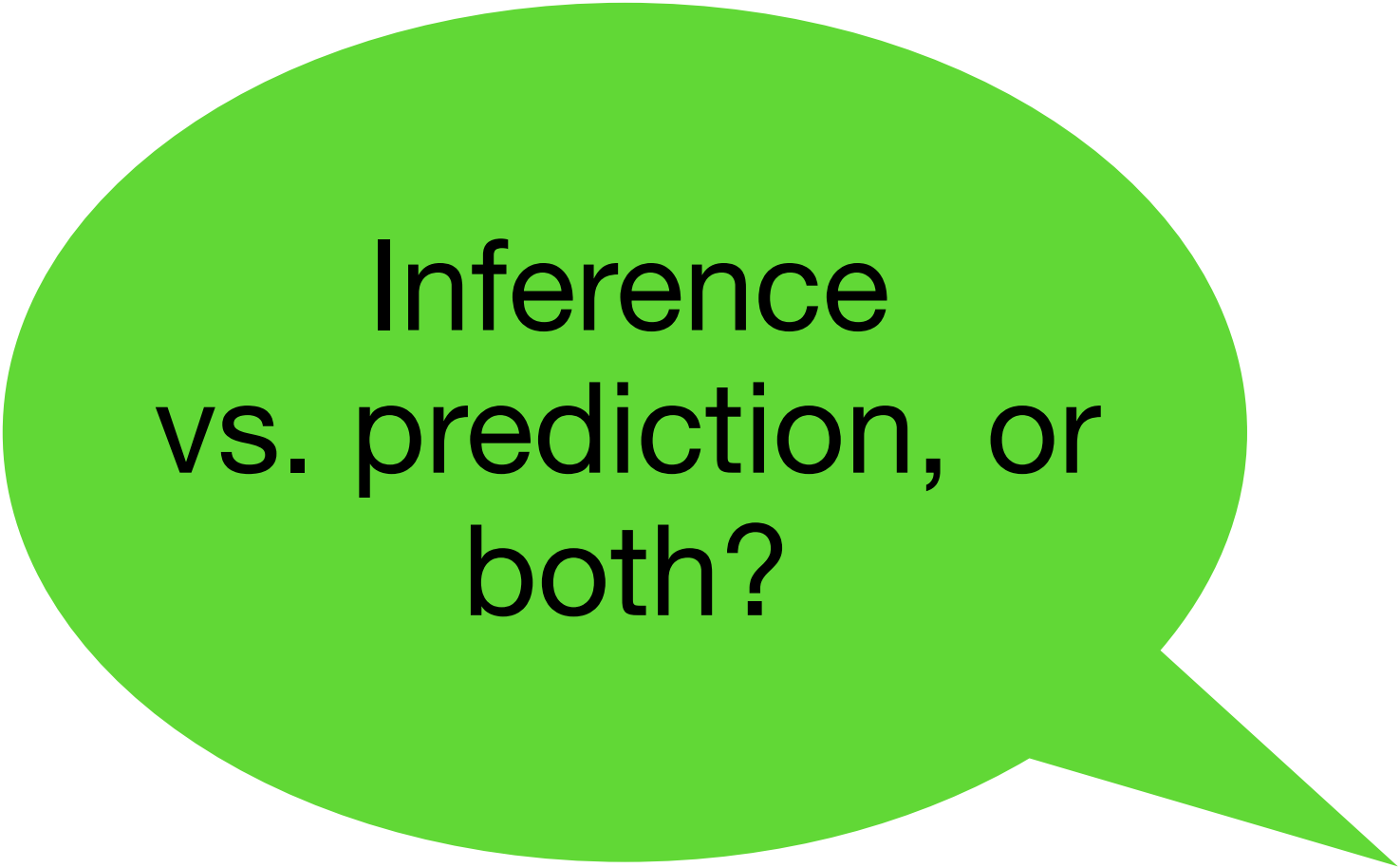
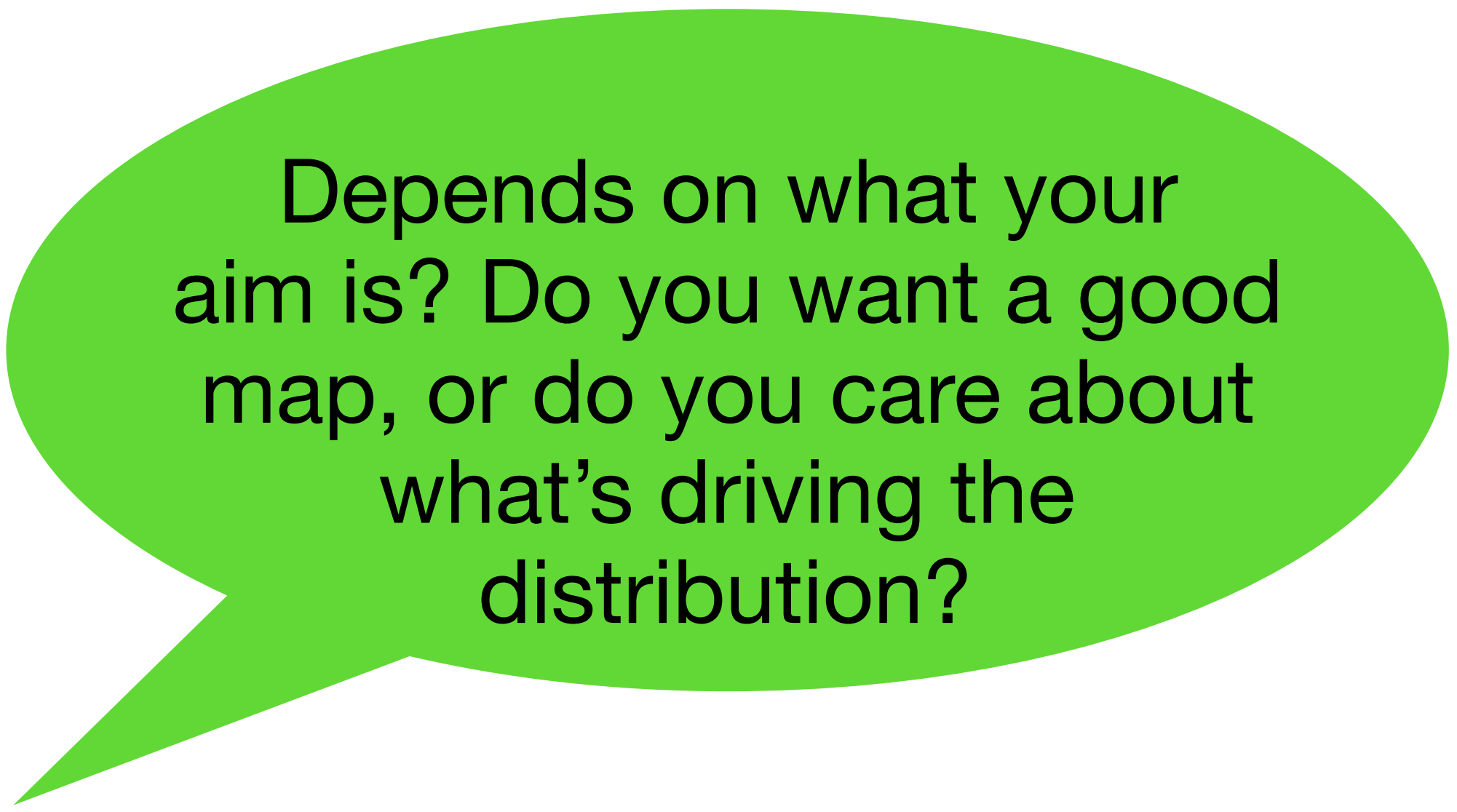
# Key themes and summary of issues

## —Inference and model purpose


Inference
vs. prediction, or
both?

Fitting everything available (SDM).

But also: dredging across multiple models.


Depends on what your aim is? Do you want a good map, or do you care about what's driving the distribution?

# Absence of well specified *a priori* hypotheses: “let’s test this too!” (Multiple models)

- Problem occurs when we cast exploratory work as confirmatory:  “the same behavior can be either EDA or p-hacking depending on how it is reported.” *(Jebb et al.)*

- “ “EDA as CDA” breaks the cardinal rule that a result cannot be discovered and validated using the same data.” (Jebb et al.)

- “Current practices with many journals that all but required a deductive approach have led to authors positioning papers as de- ductive even when the underlying research was not.” (Woo et al. 2017)

# Inference: Confirmatory vs. Exploratory Analysis

- Jebb, A. T., Parrigon, S., Woo, S. E. (2017) Exploratory data analysis as a foundation of inductive research. *Human Resource Management Review*. **27**, 265–276.

- Woo, S. E., O'Boyle, E. H., Spector, P. E. (2017) Best practices in developing, conducting, and evaluating inductive research. *Human Resource Management Review*. **27**, 255–264.

# Key themes and summary of issues

## — Bayesianism as Remedy?

- Bayesian methods have been argued as a cure to QRPs, particularly p-hacking problems:

“ many of us believe that other ways of summarizing the data, such as Bayes factors or other posterior summaries based on clearly articulated model assumptions, are preferable to P values” (Benjamin et al. 2018)

- Bayesian confidence intervals and Bayes factors are equally suscpetible and invalidated to the same degree by “p-hacking” practices as their frequentist inference equivalents. (Simonsohn 2014).

- Jury’s not out, but QAECO discussion group findings lend weight to Bayesian methods being susceptible to Researcher Degrees of Freedom

Benjamin, Daniel J, James O Berger, Magnus Johannesson, Brian A Nosek, E J Wagenmakers, Richard Berk, Kenneth A Bollen, et al. 2018. “Redefine statistical significance.” *Nature Human Behaviour*, January. Springer US, 1–5. doi:10.1038/s41562-017-0189-z.

Simonsohn, U. 2014. “Posterior-hacking: Selective reporting invalidates Bayesian results also.” *SSRN Electronic Journal*. doi:10.2139/ssrn.2374040.

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Inference vs. prediction, or both?

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