

Scientists & Women Scientists: Exploring Gender Biases in Institutional Category Systems

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Introduction

- Typicality is influenced by social biases and stereotypes.
- People = men bias:** men are the more generic or typical example of a human
- There is often an asymmetry in how **typical** versus **atypical** members of a category are labelled.
- We can measure bias towards women in a category system as an asymmetry in the explicit labelling of categories for women versus men.**

I am a ...

Student

Doctor

Doctor (Female)

We explore how typicality manifests in two real-world settings: The Library of Congress Subject Headings (LCSH) and Wikipedia.

Goal 1: Determine if these systems mirror, mitigate, or exaggerate biases found in language use and if this has changed with time.

Goal 2: Use nationality and ethnicity categories (**identities**) to understand how the people = men bias manifests in a system and **job** categories to show how frequency influences typicality.

Category Systems

The LCSH

Postmodern theology
[BT83.597]
BT Theology, Doctrinal
Postmodernism
UF Post-modernism
Postmodernism (Philosophy)

- Controlled vocabulary of terms that represent book subjects.
- First published in 1909.

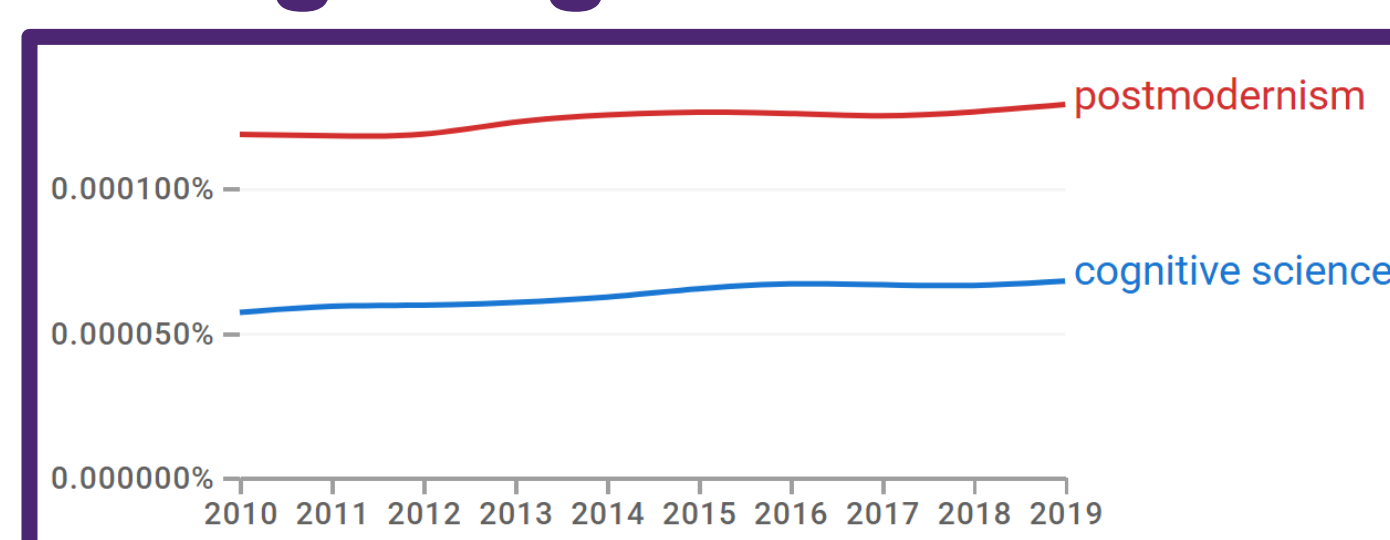
Wikipedia

Categories: Evil clowns | Black comedy | Fictional clowns | Halloween costume | Horror villains | Postmodernism | Stock characters | Urban legends

Categories: Cognition | Cognitive Science | Branches of linguistics | Applied psychology

- User-created terms for grouping related articles.
- Introduced in 2004.

Google Ngram



- Term frequencies from millions of published books.
- A proxy for (written) language use.

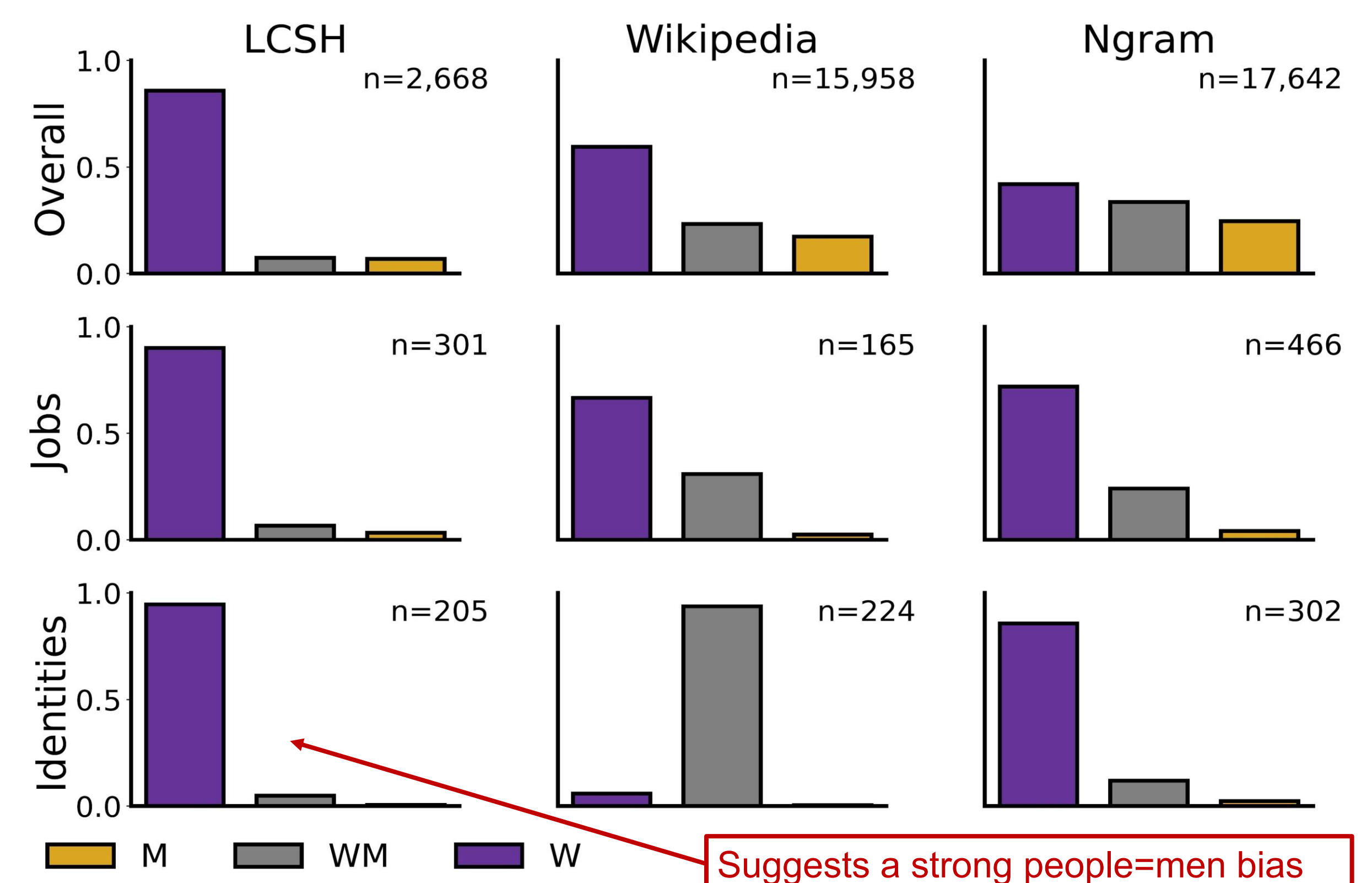
Gender Bias in Institutional Category Systems

Methods

- Find all categories and Ngrams that contain a gendered term ('men', 'women', 'male', or 'female').
- Group terms in three ways:
 - W** = terms for women, but not men (e.g., Women and war)
 - M** = terms for men, but not women (e.g., Male beauty)
 - WM** = terms for both (e.g., Young women; Young men)
- Create subsets for job categories (e.g., Male high school teachers) and identities (e.g., Canadian women).

RQ: To what extent do gender biases exist in each system? How do they compare?

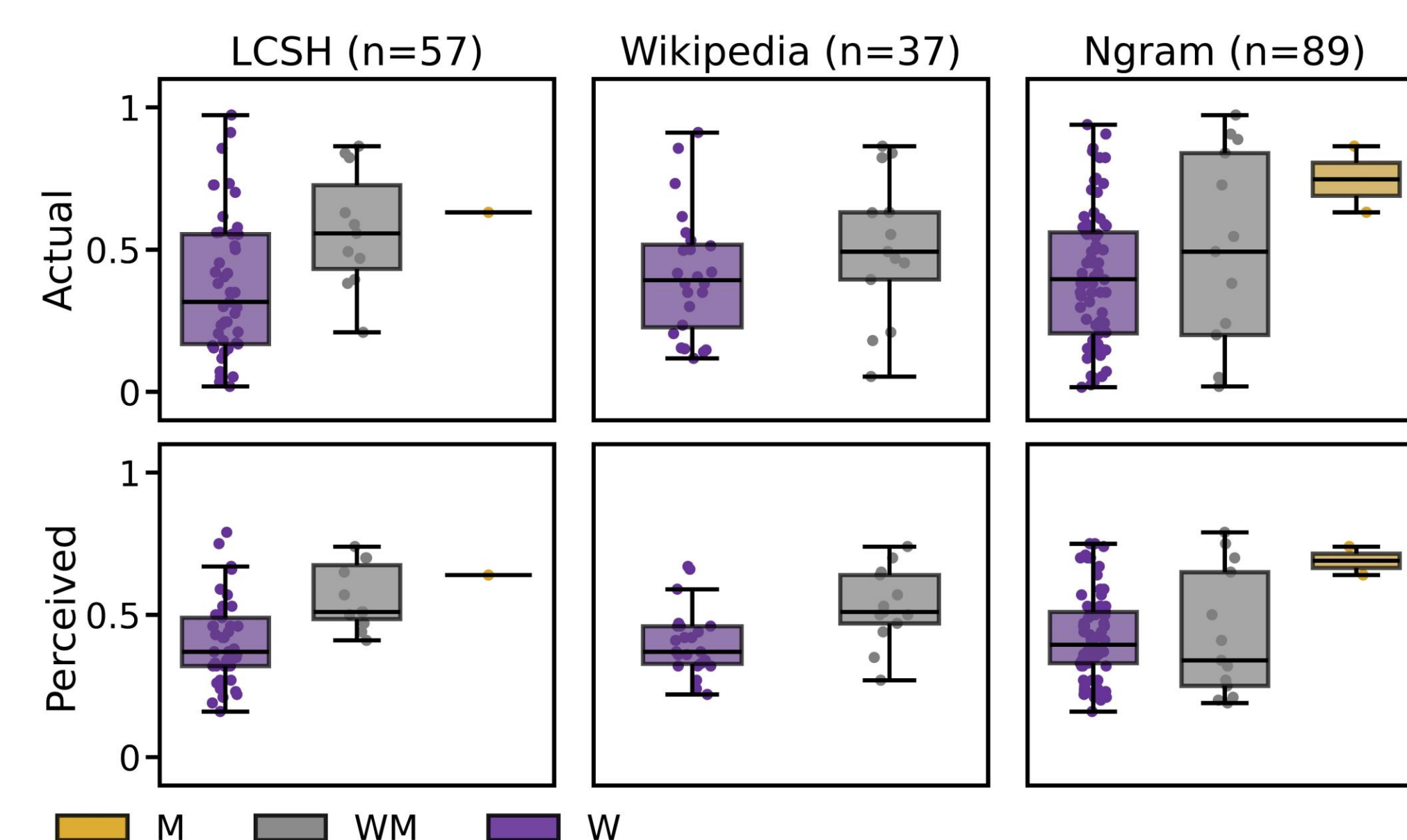
Results



- Both the LCSH and Wikipedia exhibit stronger gender biases than language use overall, with LCSH being the most biased.

Base Rates and Gender Bias

RQ: Can gender base rates (frequency) predict if jobs are grouped into W, WM, or M?



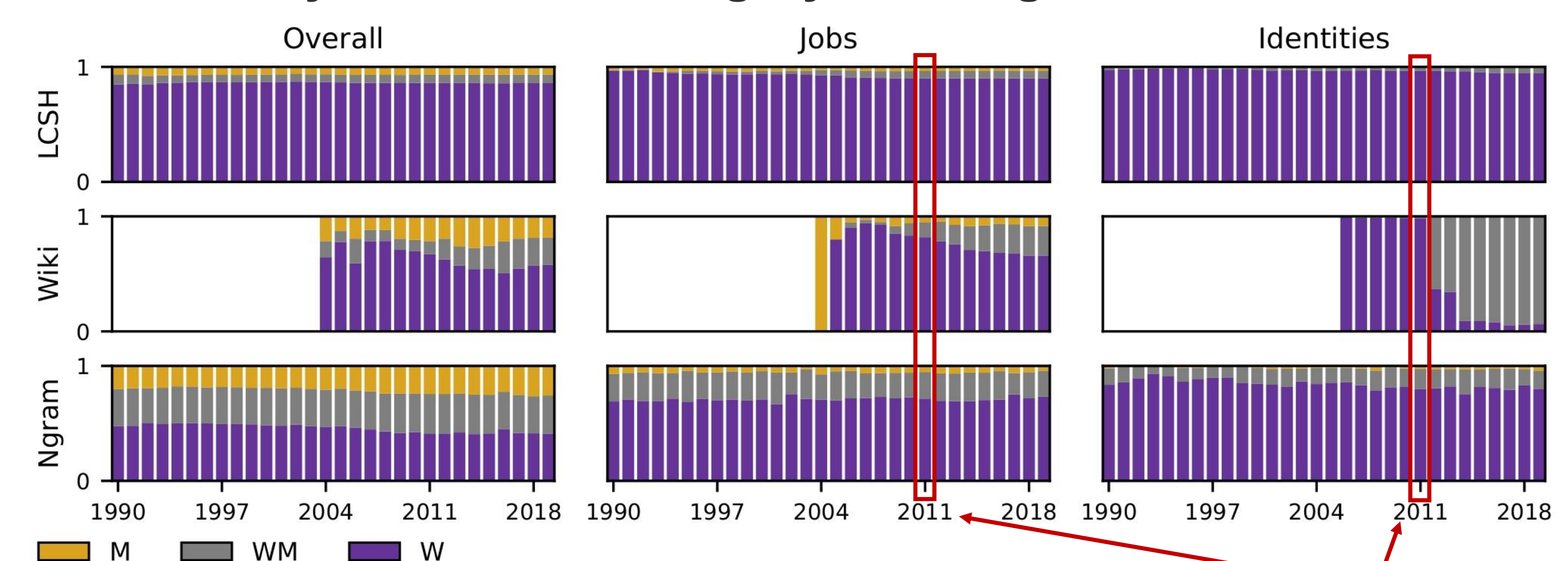
Actual:
Gender breakdown of US jobs.

Perceived:
People's beliefs about the gender breakdown of jobs.

- People's beliefs about gender base rates predict asymmetries in Wikipedia and the LCSH better than actual base rates.

Gender Bias Across Time

RQ: Have asymmetries in category labelling decreased with time?



- Excluding Wikipedia, gender biases have remained unchanged over the past 30 years.

Takeaways

- The LCSH tends to exaggerate gender bias found in language whereas Wikipedia mirrors it (jobs) or mitigates it (identities).
- People's beliefs about the gender breakdown of jobs (perceived frequency) can explain some of the asymmetries found.
- Although unequal labelling can address historical exclusion, it can also reinforce whose membership is assumed and whose is not.
- Wikipedia has done a better job than the LCSH at mitigating gender bias despite criticisms of the LCSH existing since the 70s.