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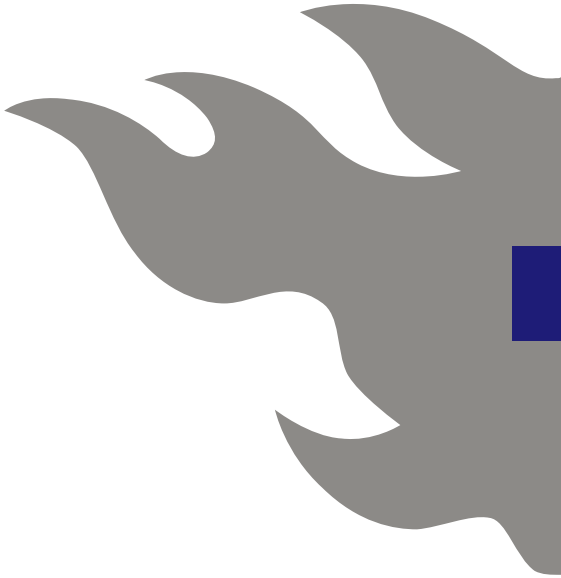
Variation in morphological productivity in the BNC:

Sociolinguistic and methodological considerations



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Introduction

- *-ness* and *-ity*
  - Roughly synonymous suffixes
  - Typically form abstract nouns from adjectives: *productive* → *productiveness*, *productivity*
- Sociolinguistics
  - Do men and women use these suffixes differently in present-day English?
- Methodology
  - Are hapax-based productivity measures valid?

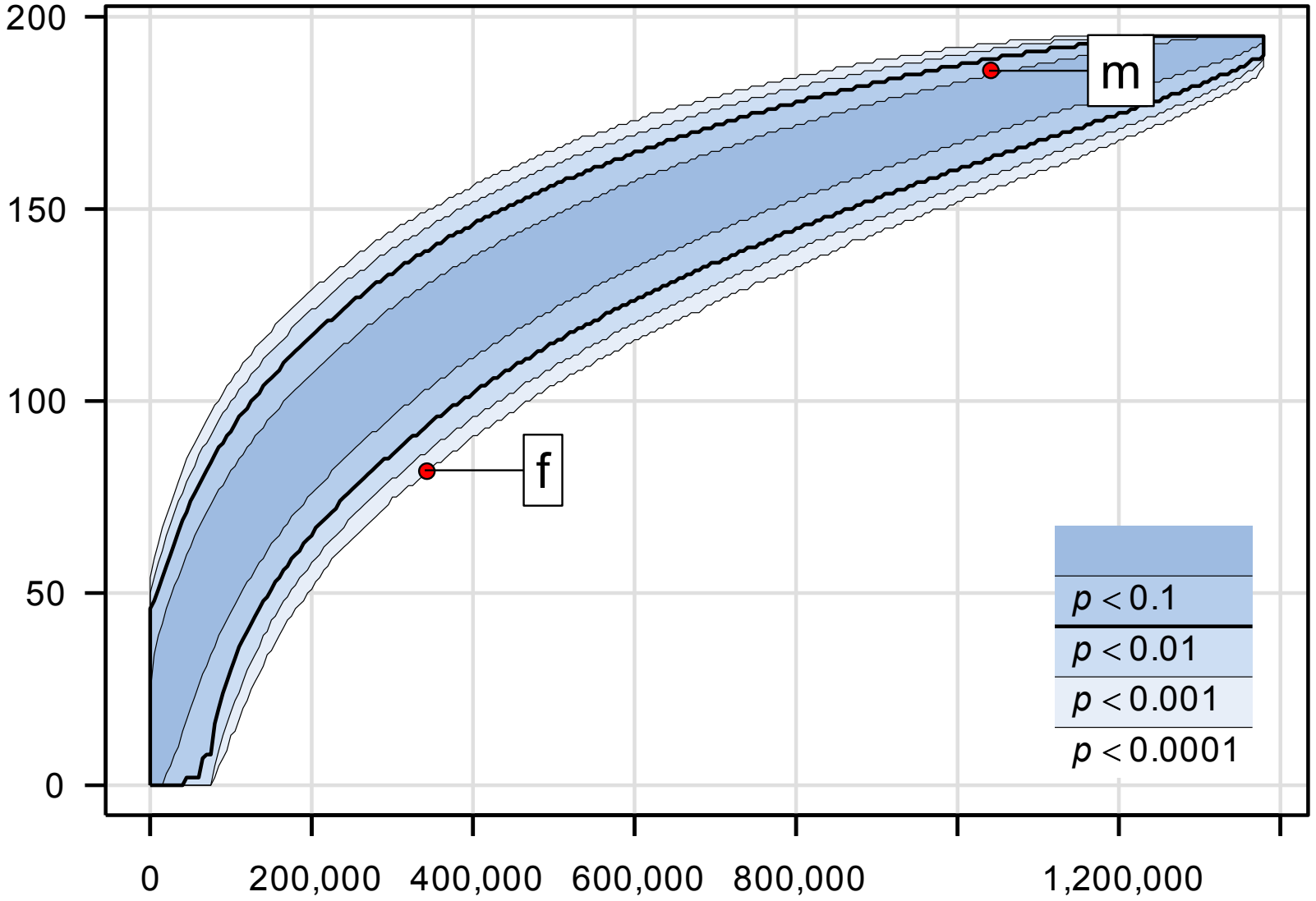
Material

- *British National Corpus* (BNC)
  - 100 million words: ~90% written, ~10% spoken
- Demographically sampled spoken component (BNC-DS)
  - 4.2 million words from early 1990s
  - Gender known for 88% of the data, social class for 62% (2.6 million words)
- Written component (BNC-W)
  - 88 million words, 1960s–1990s
  - Gender known for 51% of the data (45 Mw)

Methods

- How to measure productivity?
  - Count the number of different words (types)
  - Count the number of words occurring only once (hapax legomena, or hapaxes)
    - Approximating ‘new’ words
- Comparing type counts from subcorpora
  - Normalisation problematic, establishing statistical significance likewise
  - Permutation testing: take samples in random order and see how types accumulate, 1M times

CEEC - *ity* types vs. running words



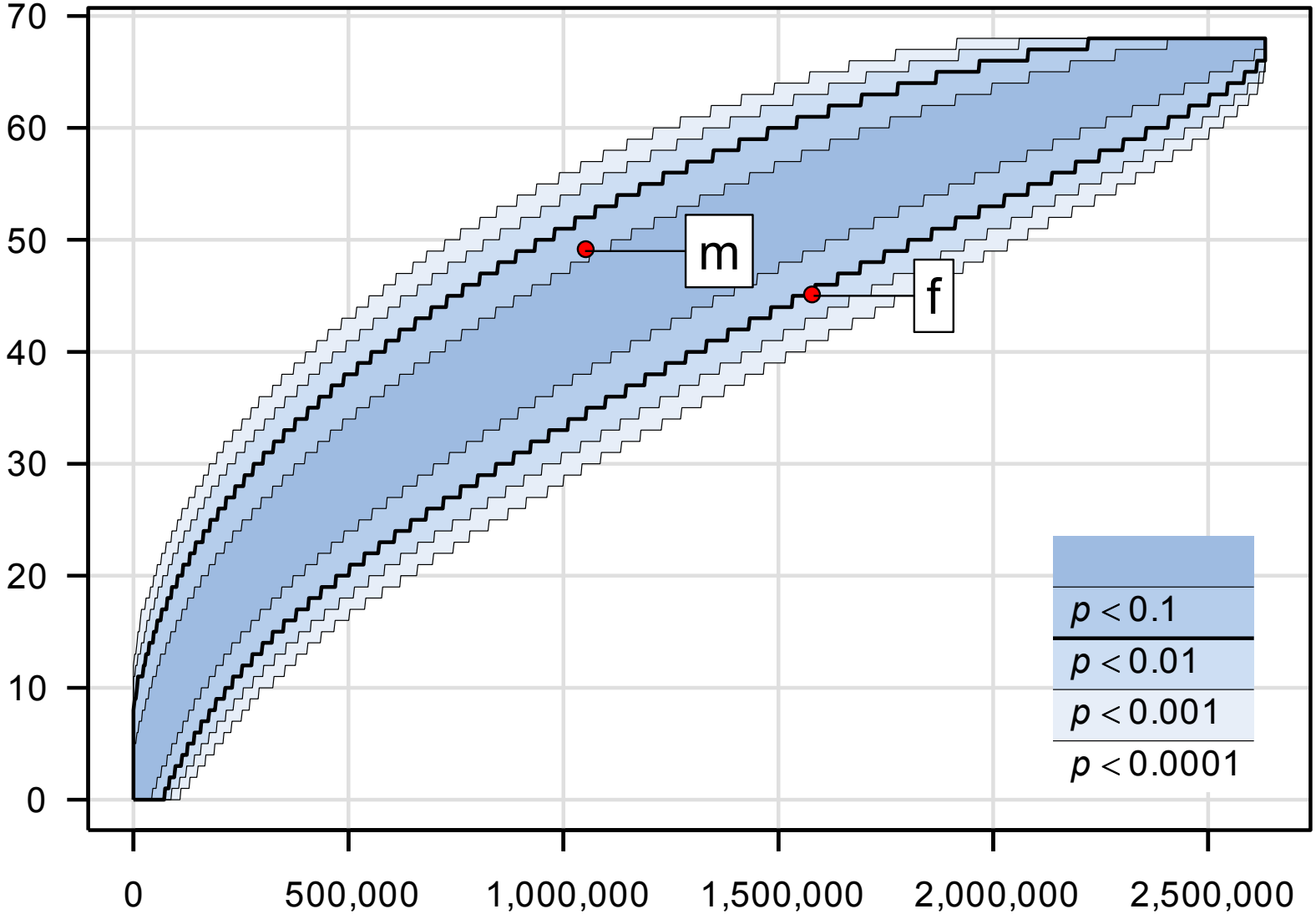
Sociolinguistics: Related work

- Productivity of *-ity* significantly low in 17th-century letters written by women
  - *Corpus of Early English Correspondence* (CEEC), Säily & Suomela (2009)
  - *-ity* 'learned', etymologically foreign; women less well educated than men → less able to use *-ity*?
- Women favour pronouns over common nouns
  - Rayson et al. 1997 (BNC-DS), Argamon et al. 2003 (BNC-W), Säily et al. forthcoming (CEEC)

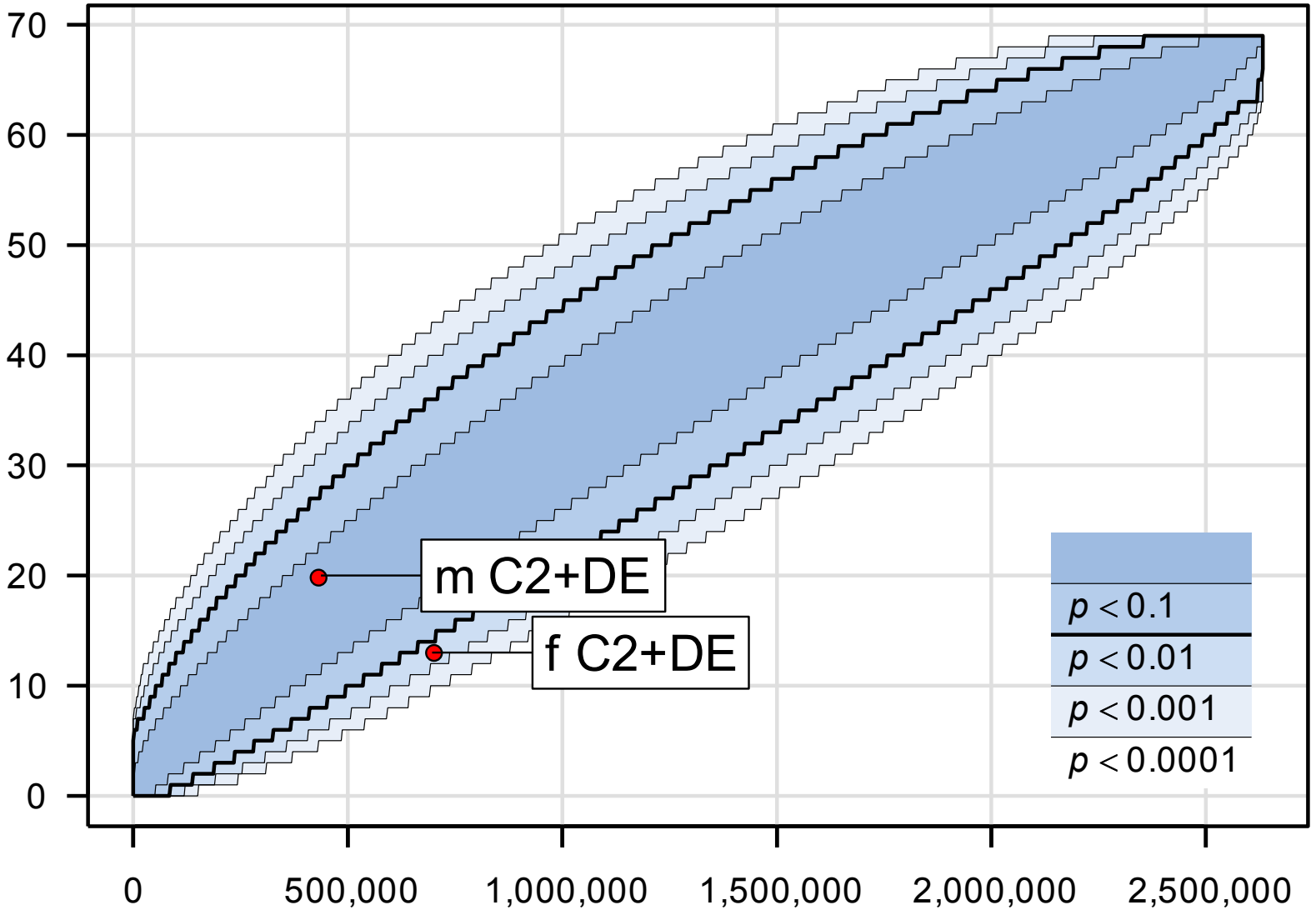
Sociolinguistics: BNC-DS

- Productivity of both -*ity* and -*ness* significantly low in women's speech
  - Expected result
    - Women's style more interactive
  - -*ity*: difference just about significant
  - -*ness*: gender difference tied to social class

BNC-DS - *ity* types vs. running words



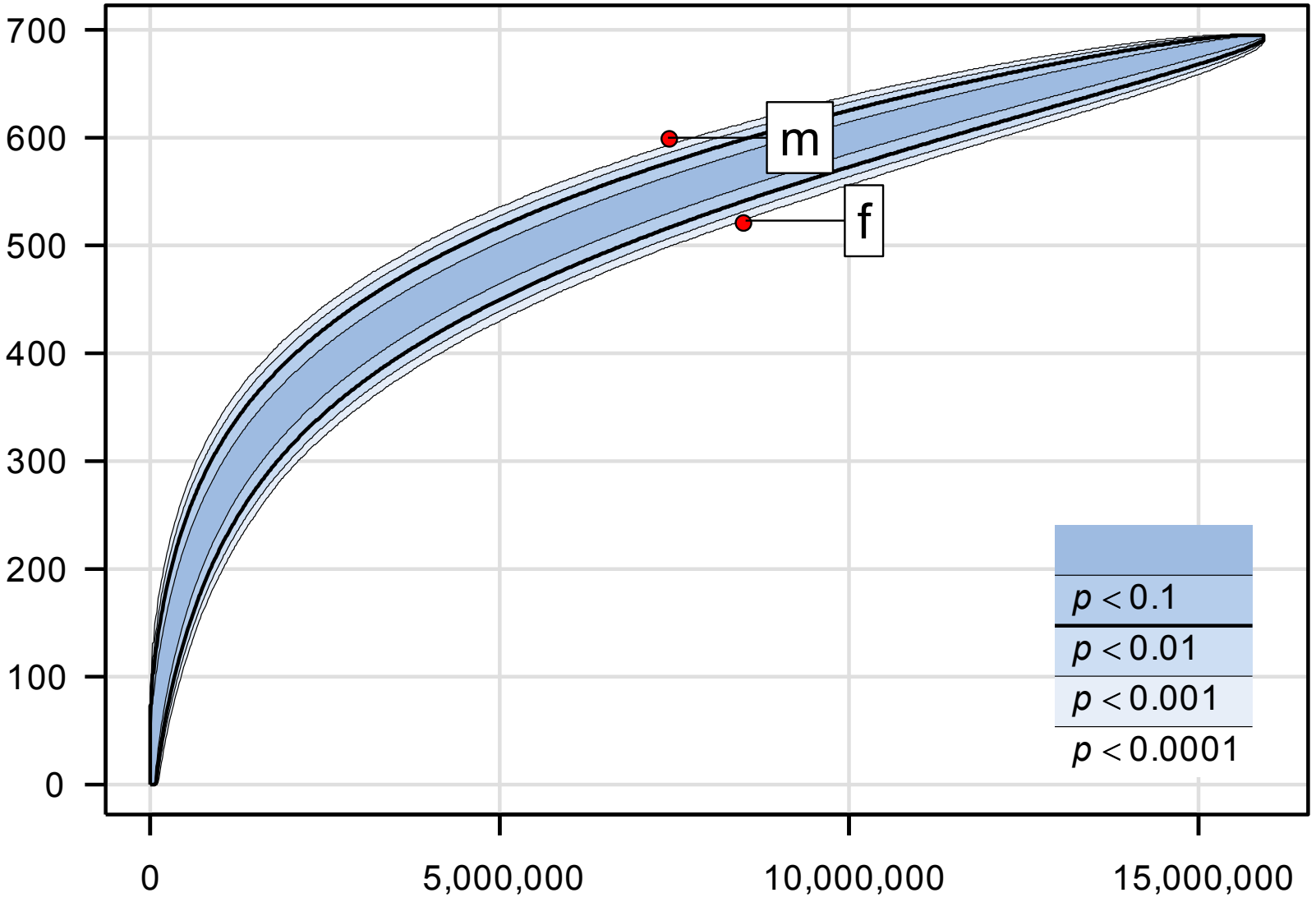
BNC-DS - *ness* types vs. running words



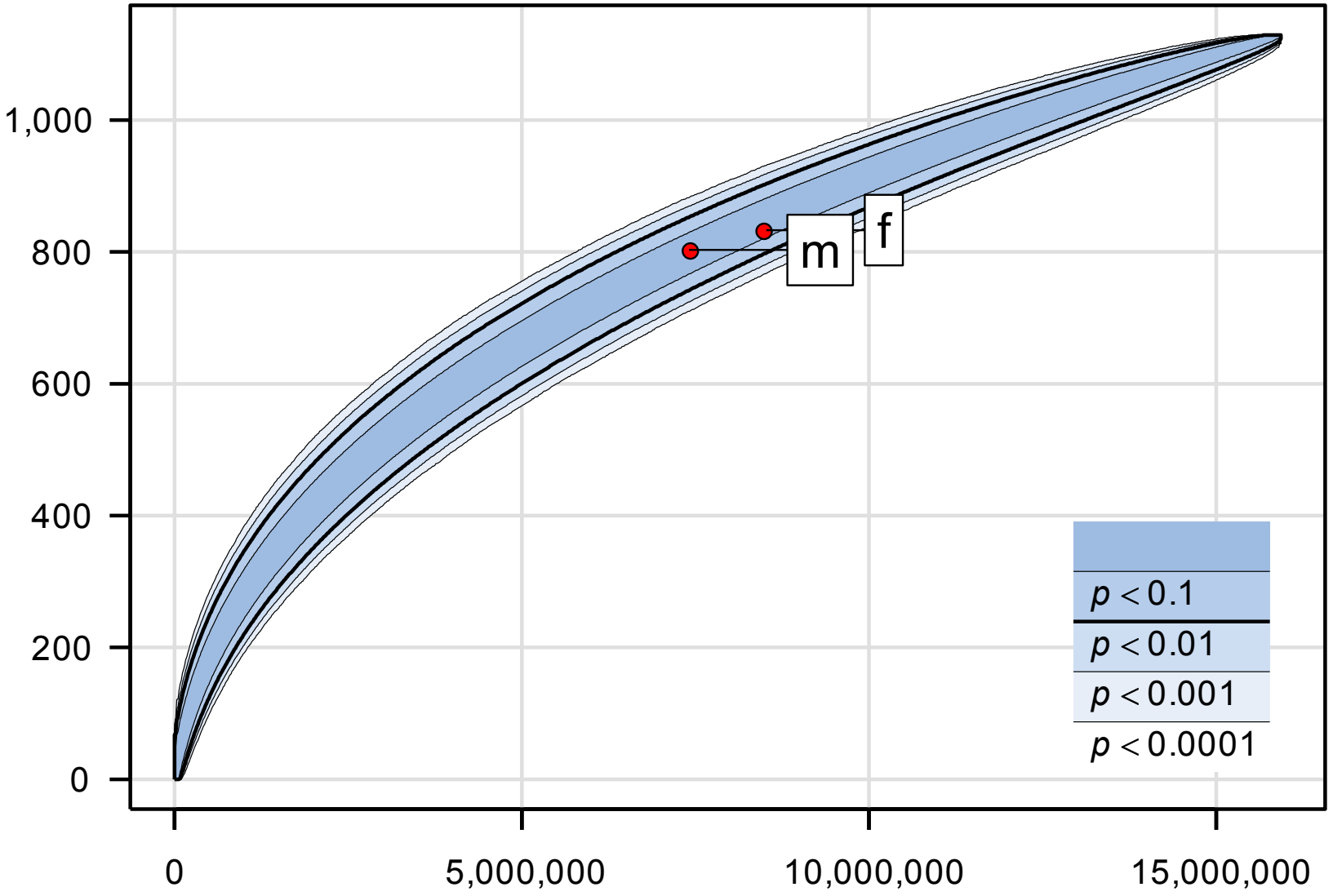
Sociolinguistics: BNC-W

- Productivity of *-ity* (but not *-ness*) significantly low in women's writing
  - Holds for both imaginative (BNC-W_{imag}) and informative (BNC-W_{inf}) texts
  - Result for *-ity* expected; negative result for *-ness* requires more research
  - Semantics of *-ness*? 'Embodied attribute/trait' goes well with interactive writing style
    - Could also apply to 17th-century results

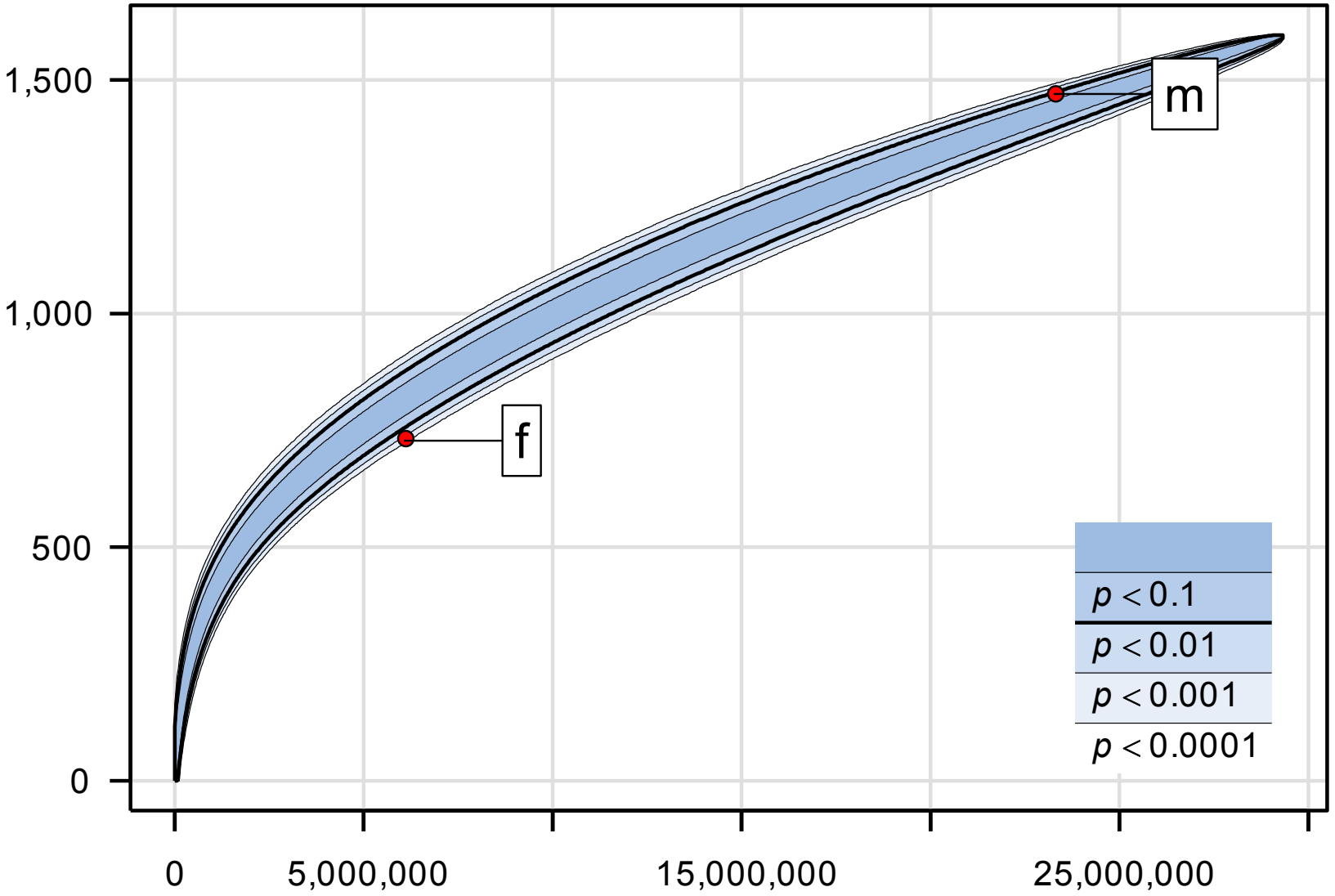
BNC-W_{imag} - *ity* types vs. running words



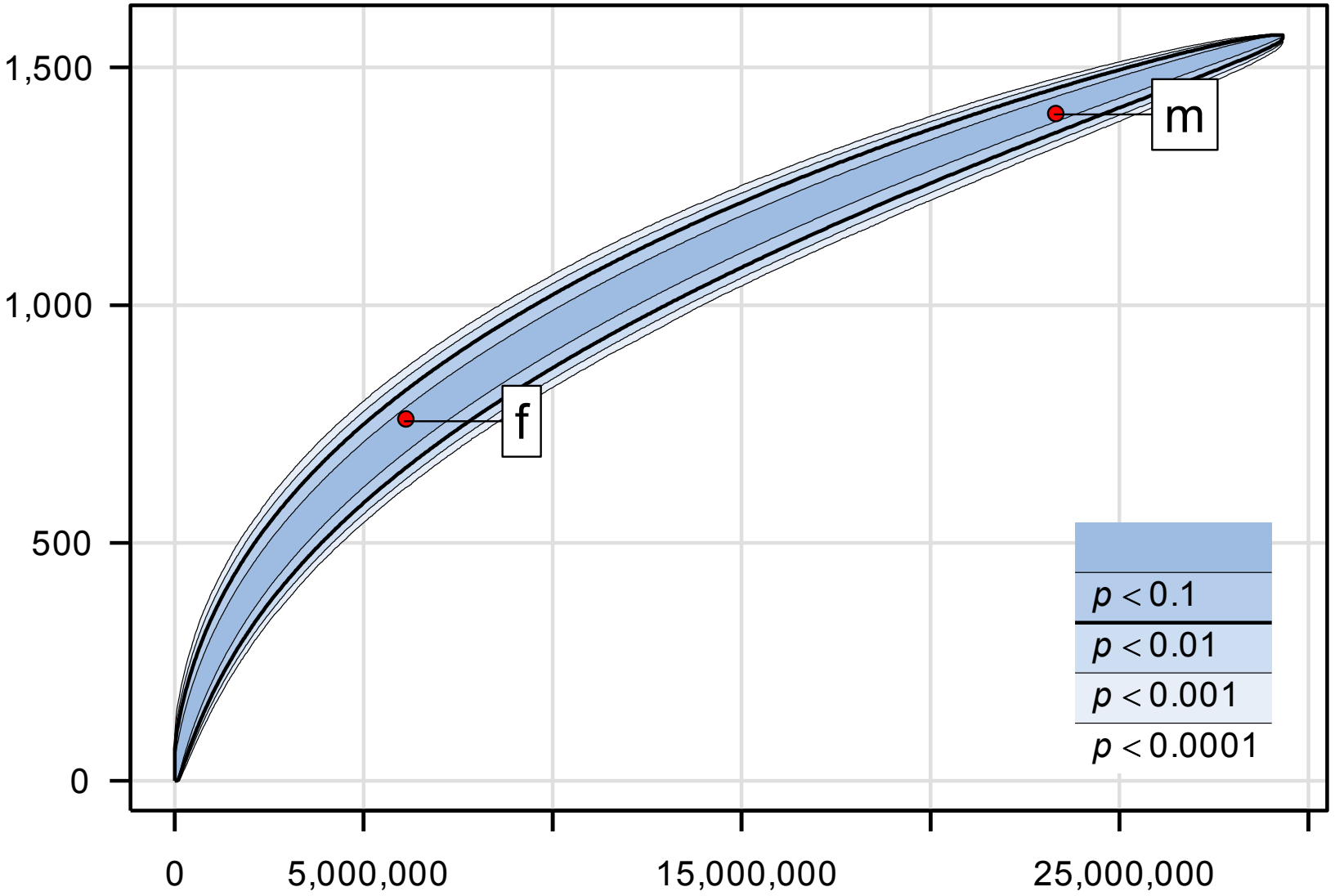
BNC-W_{imag} - *ness* types vs. running words



BNC-W_{inf} - *ity* types vs. running words



BNC-W_{inf} - *ness* types vs. running words

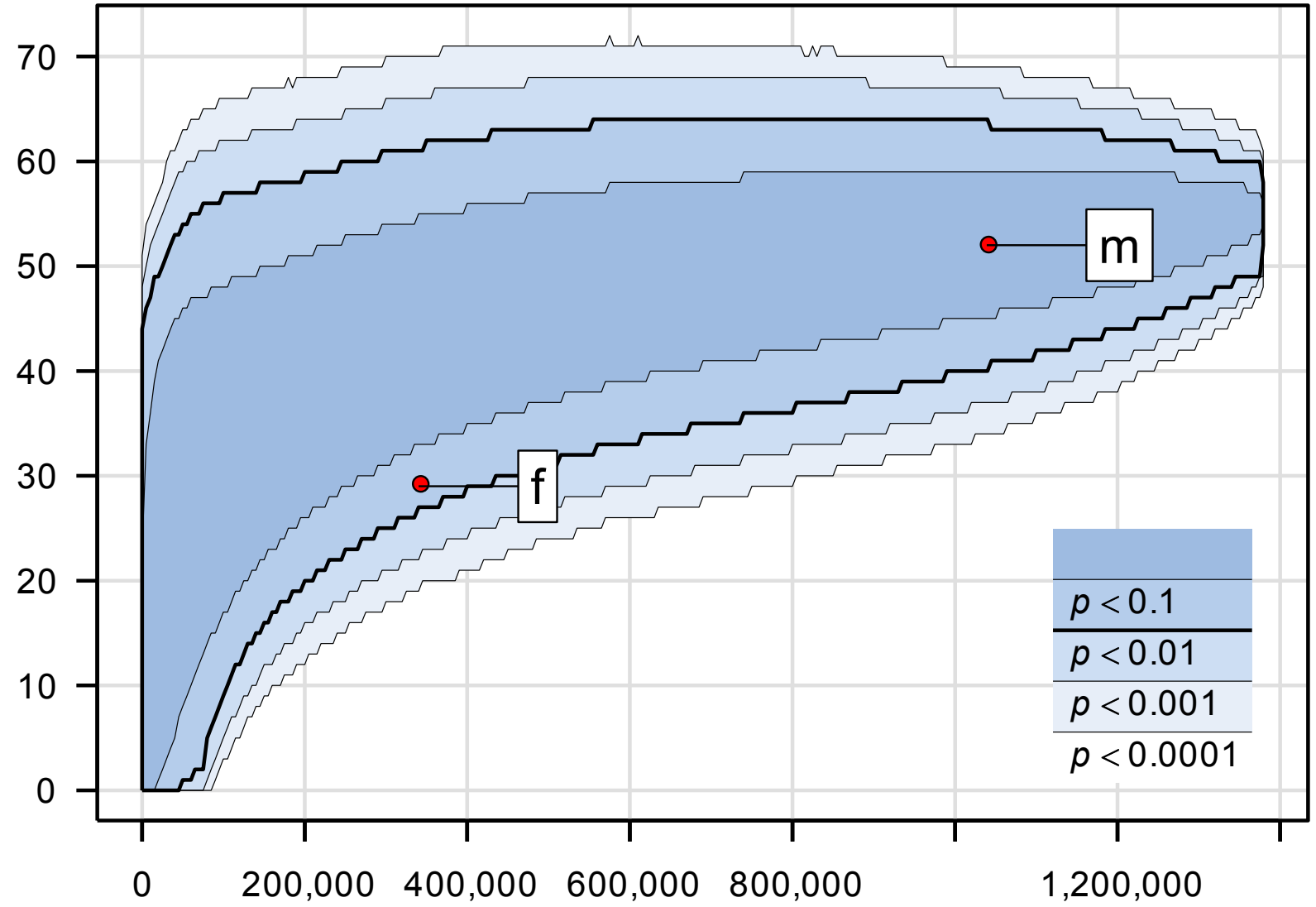


Methodology: Related work

- Baayen (e.g., 1993)
  - Category-conditioned degree of productivity
    $P = n_1/N$
  - Hapax-conditioned degree of productivity
    $P^* = n_1/h$ (or, within the same corpus, just n_1)

- CEEC: hapax accumulation curves (Säily & Suomela 2009)
  - Confidence intervals too wide

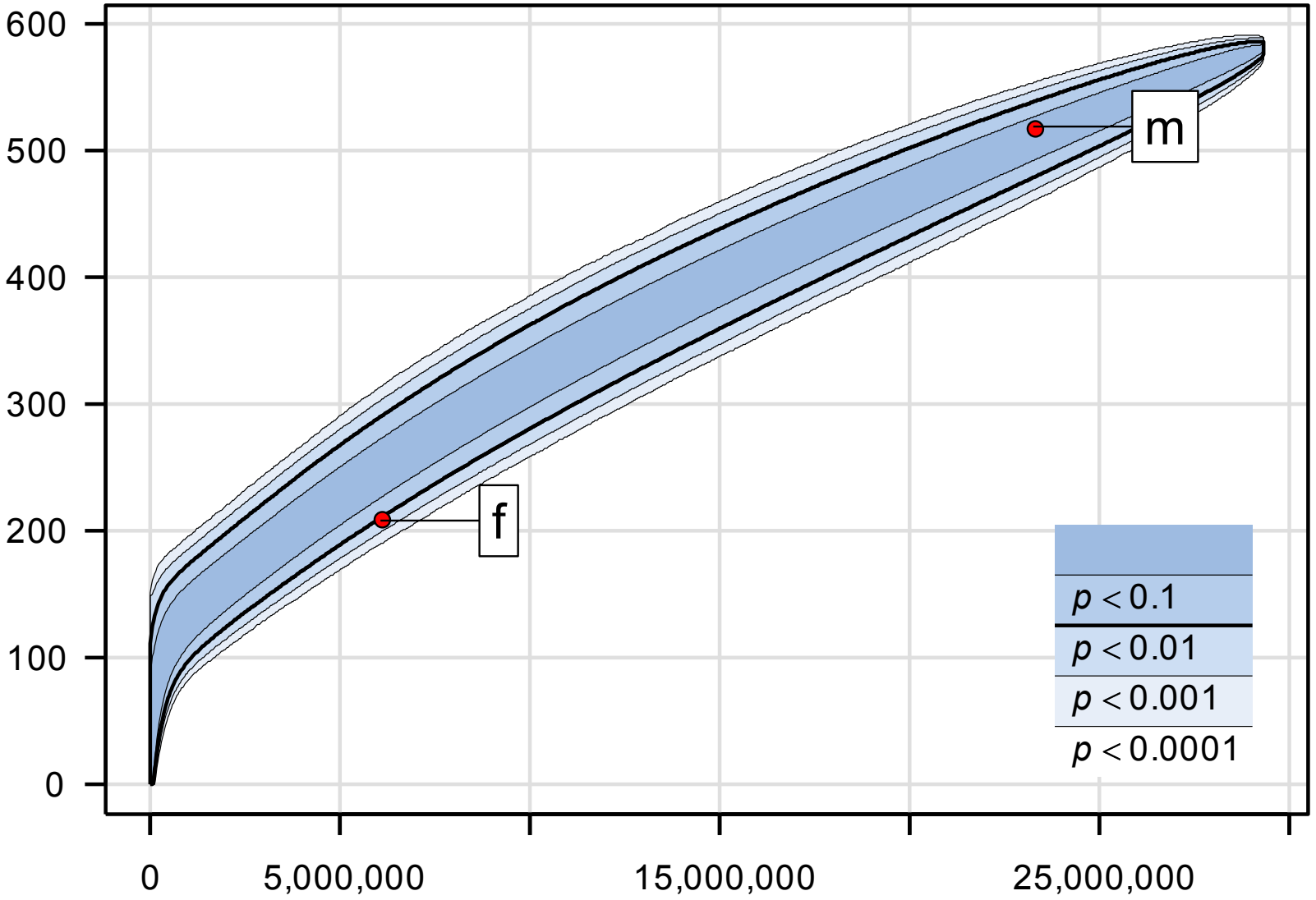
CEEC - *ity* hapaxes vs. running words



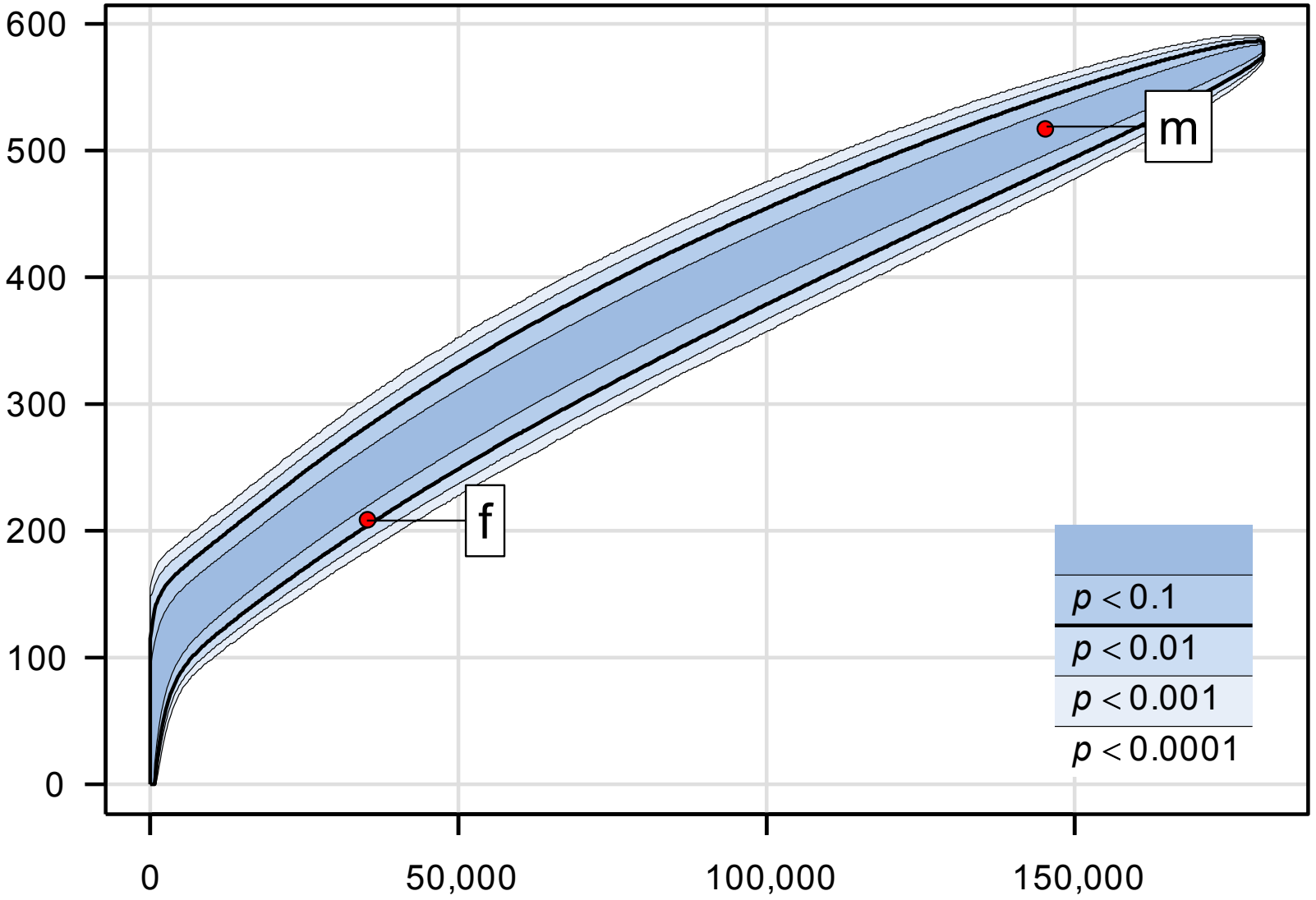
Methodology: BNC study

- BNC-W: hapax accumulation curves
  - More data → narrower confidence intervals
    - Results look similar to type accumulation curves but less significant
  - However, the number of hapaxes does not grow linearly with either corpus size or the number of suffix tokens
    - Comparing *P* figures can be unreliable unless the sizes of the subcorpora / numbers of suffix tokens are of a similar magnitude

BNC-W_{inf} - *ity* hapaxes vs. running words



BNC-W_{inf} - *ity* hapaxes vs. suffix tokens



Conclusion

- There can be sociolinguistic variation in morphological productivity
- There seem to be gendered speech styles and writing styles in English (possibly relatively stable over centuries)
- There is no perfect solution for measuring productivity as of yet

References

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Baayen, R.H. 1993. On frequency, transparency and productivity. *Yearbook of Morphology 1992*, ed. by G. Booij & J. van Marle. Dordrecht: Kluwer Academic Publishers, 181–208.

BNC = *The British National Corpus*, version 3 (BNC XML Edition). 2007. Distributed by Oxford University Computing Services on behalf of the BNC Consortium. URL: http://www.natcorp.ox.ac.uk/

CEEC = *Corpus of Early English Correspondence*. 1998. Compiled by T. Nevalainen, H. Raumolin-Brunberg, J. Keränen, M. Nevala, A. Nurmi & M. Palander-Collin at the Department of English, University of Helsinki.

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