Universiteit Utrecht

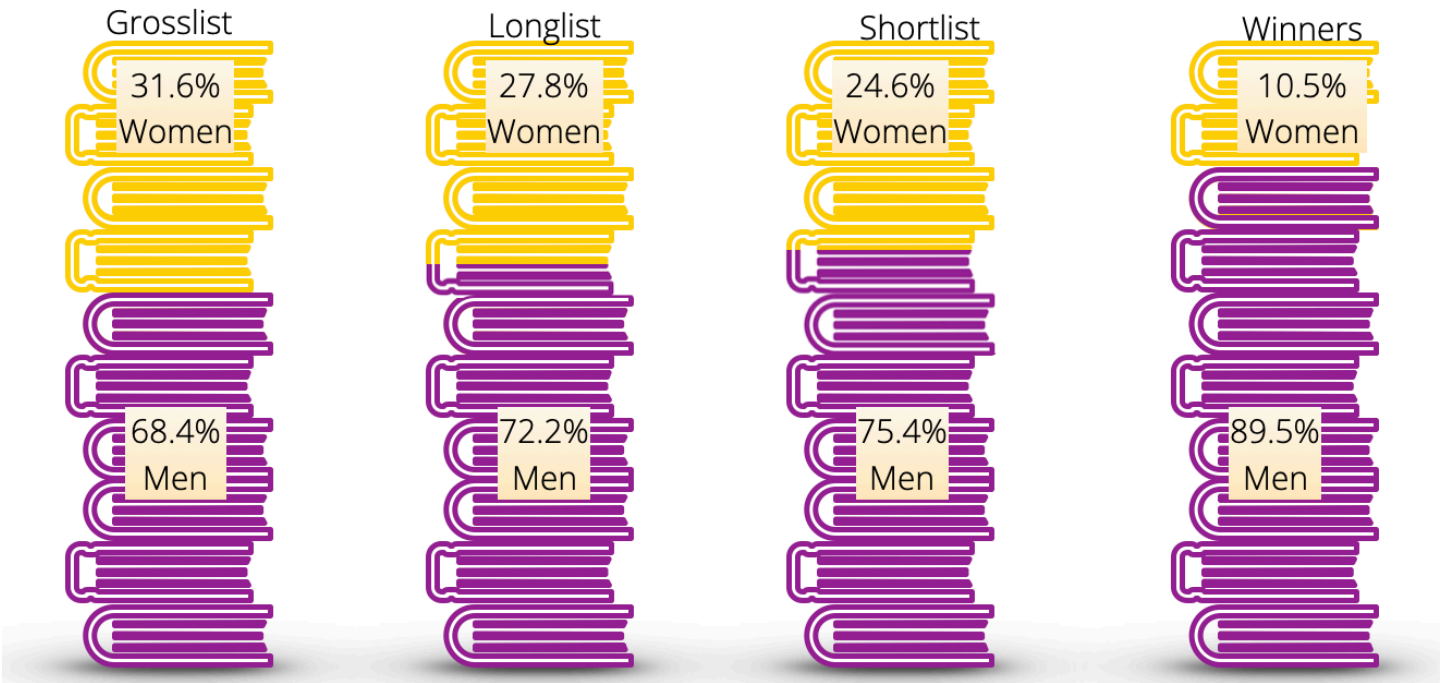
A Distant Reading of Gender Bias in Dutch Literary Prizes

Noa Visser MSc, dr. A. van Cranenburgh, dr. D. Nguyen

Introduction

Author gender inequality in Dutch literary prize nominations (Boekenbon Literatuurprijs and Libris Literatuur Prijs)

Inequality increases in the selection procedure



Percentages author gender in the selection procedure for the Libris Literatuur Prijs 1994 - 2013

Dijkgraaf & Appel (2013)

Introduction

Dutch literary novels mainly written by (white) men

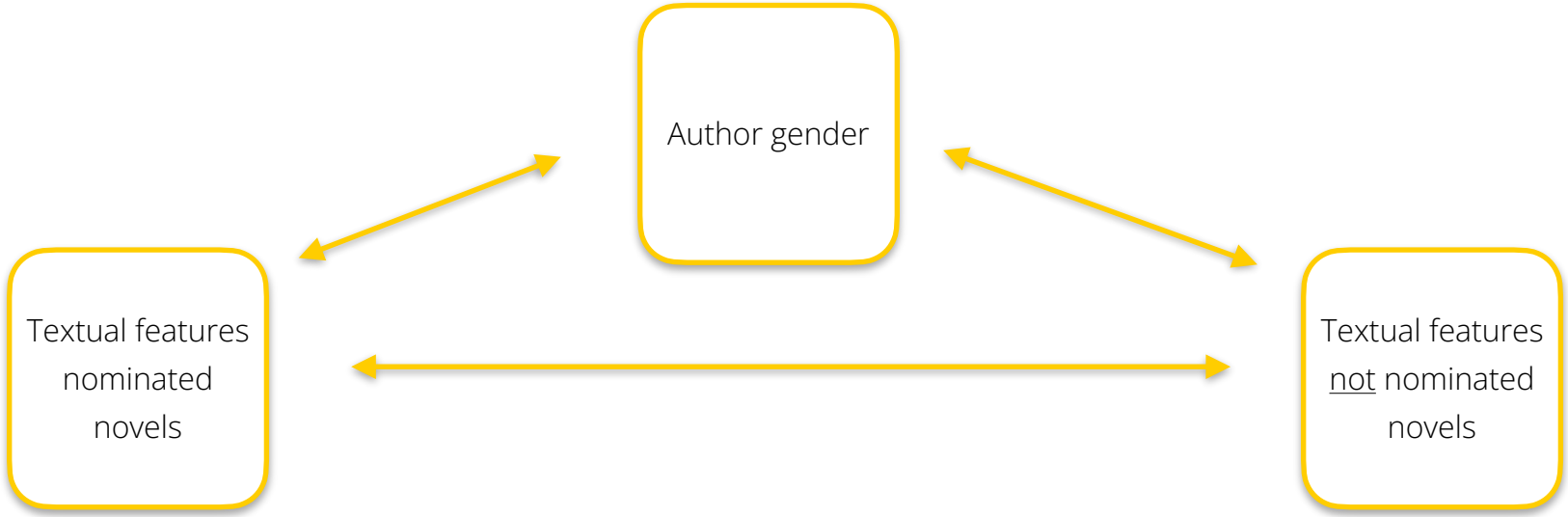
Perception of literary quality related to (white) men authors and publishers

Research question

RQ1: Can nominated and not nominated novels be identified based on textual features alone?

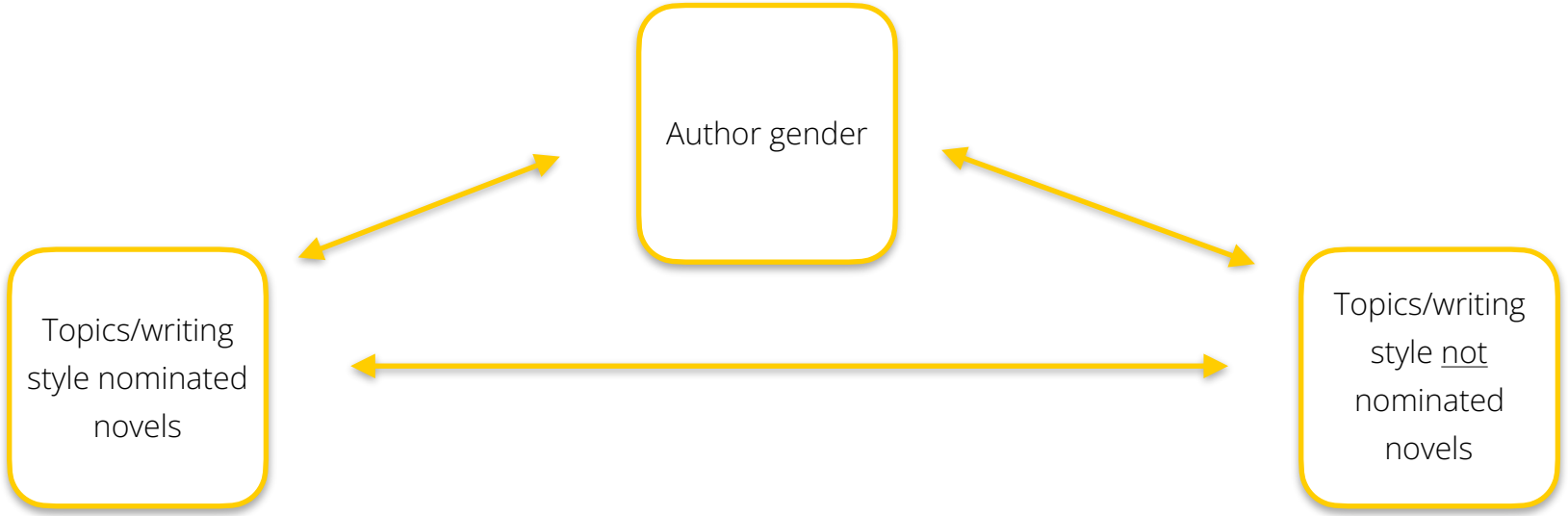
Research question

RQ2: Is there a relation between classifications on nominated and not nominated novels and author gender, where both classifications are based on textual features?

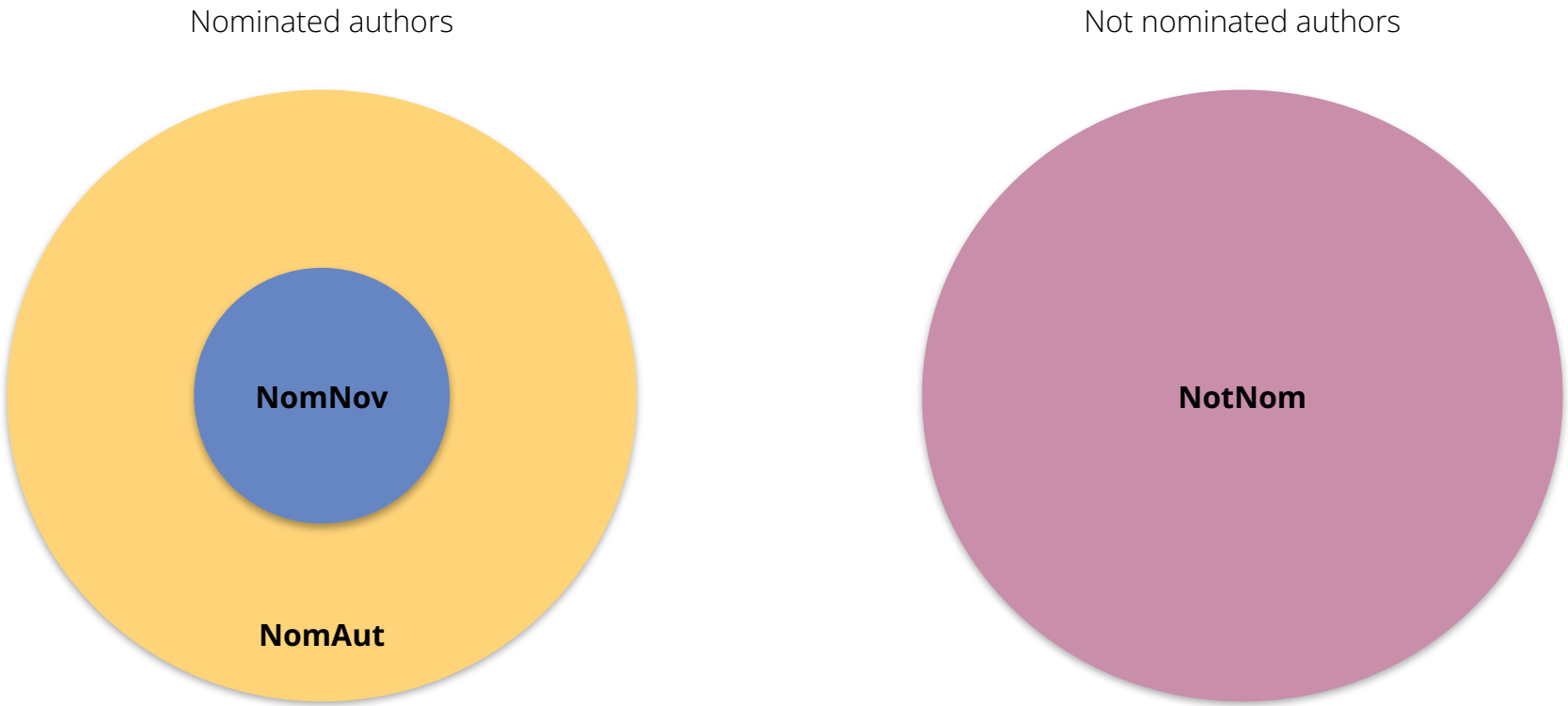


Research question

RQ3: Are the differences in topics/writing styles between books that are nominated for literary prizes and those that are not, related to author gender?



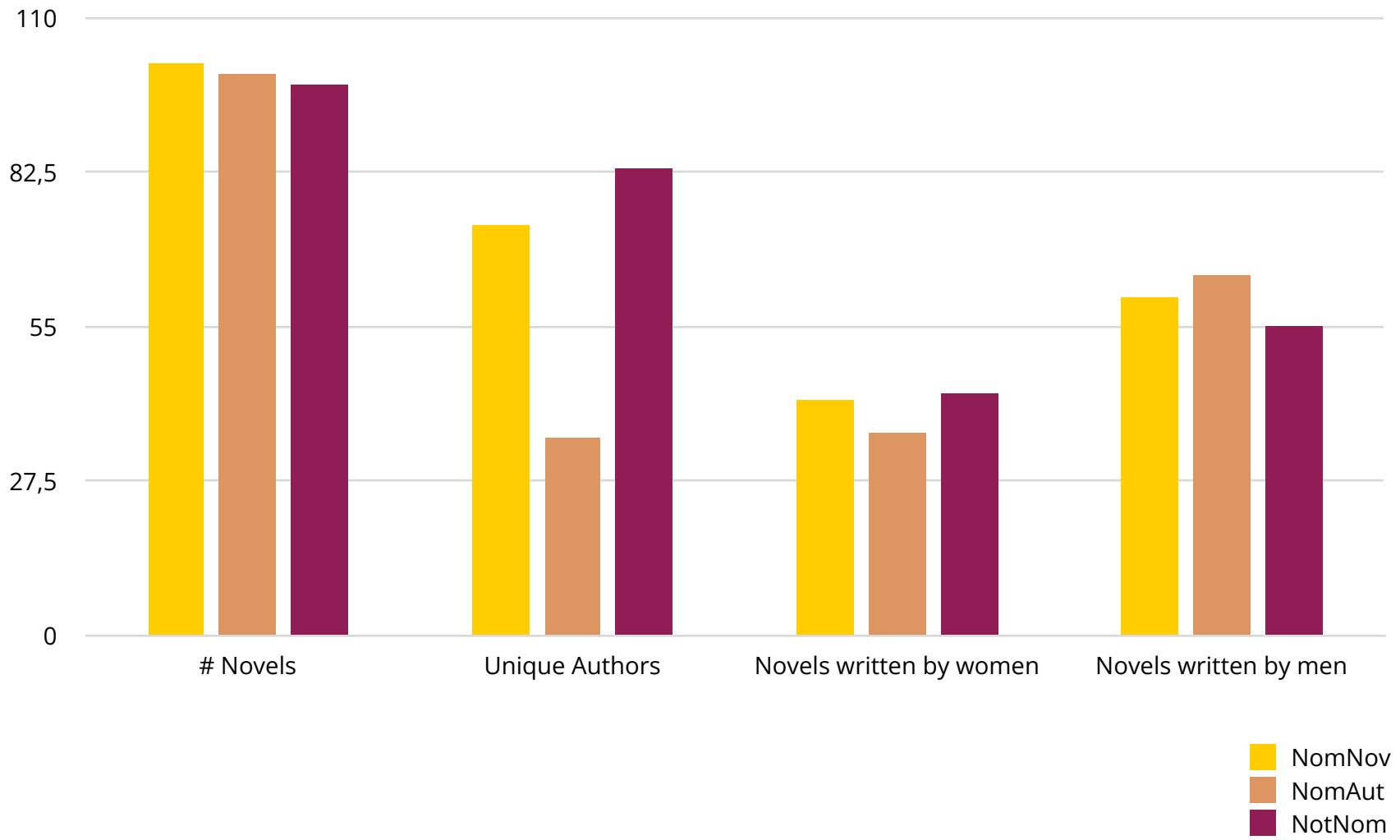
Dataset



NomNov: Nominated novels
NomAut: Not nominated novels by nominated authors

NotNom: Not nominated novels by not nominated authors

Dataset


110
82,5
55
27,5
0
Novels
Unique Authors
Novels written by women
Novels written by men
NomNov
NomAut
NotNom

Method

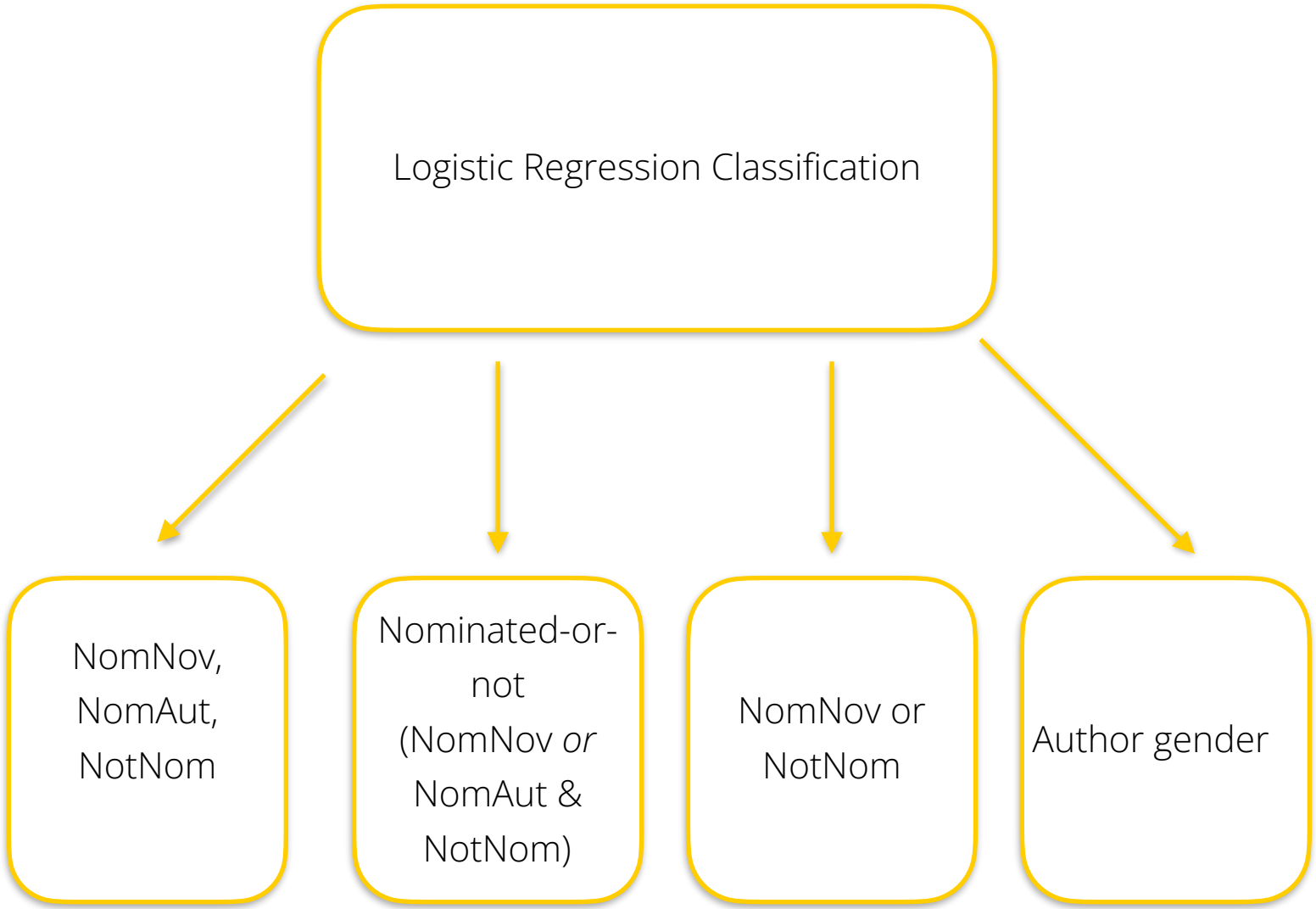
- Logistic Regression Classification
  - Tf-Idf vectoriser
  - Unigrams and bigrams
  - 5000 most frequent words
  - 5-fold cross-validation
- LDA Topic modelling
- Cosine delta

Method: Classification

Four different types of classification

All performed on complete dataset and balanced author gender subset

Precision, recall, F1-score and overall accuracy



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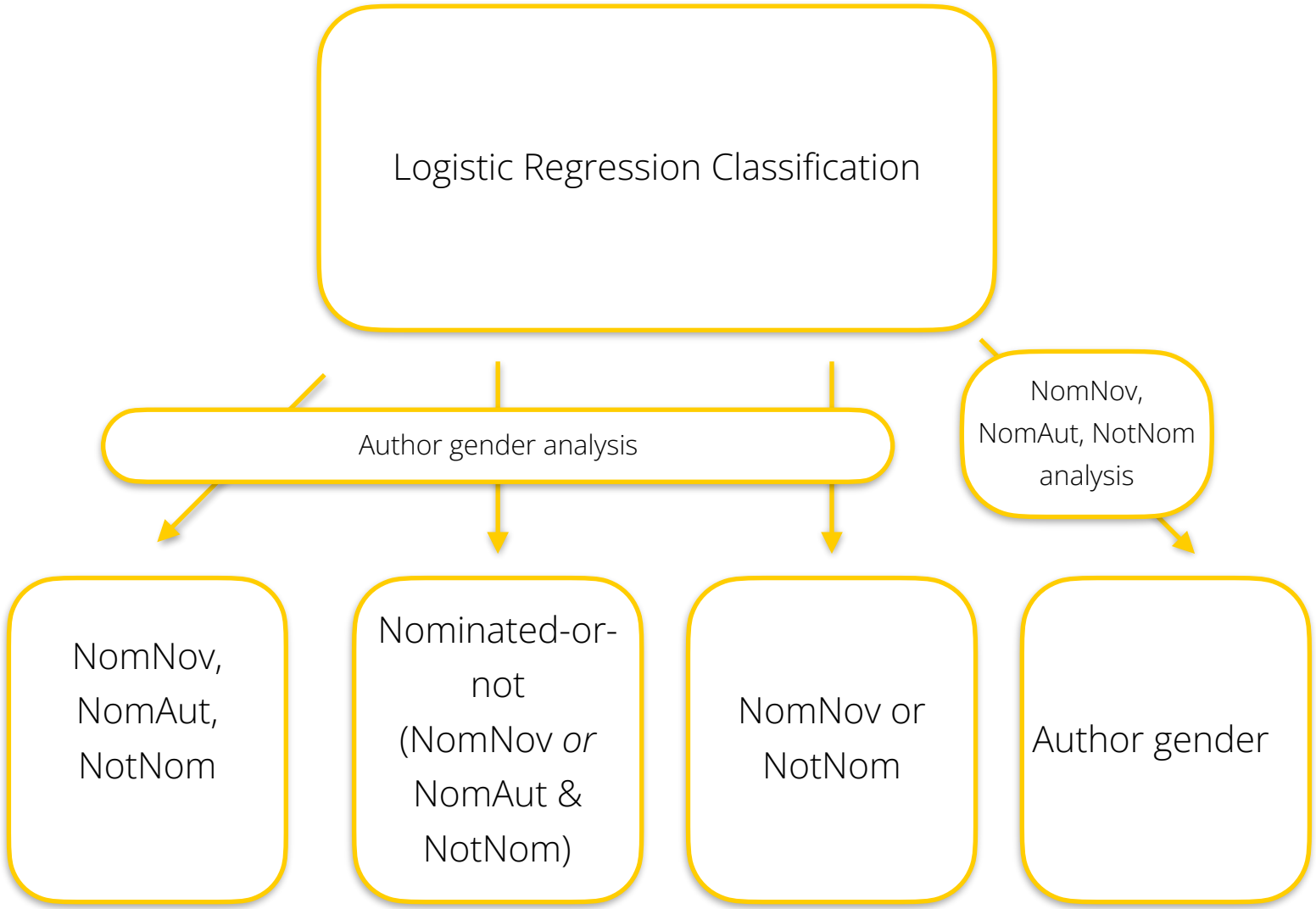

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Results: NomNov, NomAut, NotNom

COMPLETE CORPUS	Precision	Recall	F1-score	Standard deviation	Number of novels
NomNov	0.569	0.700	0.628	0.0134	100
NomAut	0.567	0.333	0.420	0.0285	102
NotNom	0.615	0.735	0.735	0.0284	98
Accuracy			0.587	0.0155	300

Overall accuracy better than chance (0.306)

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Results: NomNov, NomAut, NotNom

NomAut worst performance, regardless of author gender

Novels written by women lower classification performance in comparison to novels written by men

Not nominated novels written by women higher F1 scores than nominated novels written by women, for all three models

COMPLETE CORPUS

Women	Precision	Recall	F1-score	Number of novels
NomNov	0.500	0.583	0.538	36
NomAut	0.517	0.357	0.423	42
NotNom	0.680	0.791	0.731	43
Accuracy			0.579	121
Men	**Precision**	**Recall**	**F1-score**	**Number of novels**
NomNov	0.605	0.766	0.676	64
NomAut	0.613	0.317	0.418	60
NotNom	0.567	0.691	0.623	55
Accuracy			0.592	179

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Results: Author Gender

Complete corpus	Precision	Recall	F1-score	# novels
Man	75.9	82.7	79.1	179
Woman	70.5	61.2	65.5	121
Accuracy			74.0	300

NomNov	Precision	Recall	F1-score	# novels
Man	77.1	84.4	80.6	64
Woman	66.7	55.6	60.6	36
Accuracy			74.0	100

NomAut	Precision	Recall	F1-score	# novels
Man	74.6	83.3	78.7	60
Woman	71.4	59.5	64.9	42
Accuracy			73.5	102

NotNom	Precision	Recall	F1-score	# novels
Man	75.9	80.0	77.9	55
Woman	72.5	67.4	69.9	43
Accuracy			74.5	98

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Author gender prediction surpasses chance (0.609)

Results: Author Gender

Novels written by women lowest classification scores, on all classes

NomNov (nominated novels) written by women lowest classification score overall

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Man	75.9	82.7	79.1	179
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Method: Exploration

- LDA Topic modelling
  - 50 topics
  - NomNov, NomAut, NotNom
  - Author gender
- Cosine delta
  - Exploration most frequent words
  - Correctly classified novels compared to misclassified novels

Results: LDA Topic Modelling

Men (NomNov and NotNom)

Topic 0: War
0.0174 Major (*majoor)*
0.0145 Soldier (*soldaat*)
0.0142 War (*oorlog*)
0.0141 Man (*man*)
0.0134 General officer (*generaal*)

NotNom (Men and Women)

Topic 23: Second World War
0.0223 German (*Duits*)
0.012 Prince (*prins*)
0.0103 Germany (*Duitsland*)
0.0091 War (*oorlog*)
0.0082 Jewish (*joods*)

NomNov Men, NomAut & NotNom Women

Topic 30: Health care
0.0312 Doctor (*dokter*)
0.0195 Patient (*patiënt*)
0.0172 Hospital (*ziekenhuis*)
0.0146 Doctor (*arts*)
0.0105 To say (*zeggen*)

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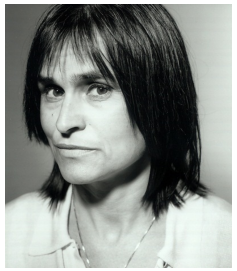
Results: Cosine Delta

Closely related writing style



Positive relation with novels written by nominated authors (NomNov and NomAut)

Conclusion

- Nominated and not nominated novels distinguishable
- Word use nominated novels further from women writers
- Author gender inequality rooted in homogenous writing style

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Thank you for your attention

Feel free to ask any questions

Literature

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Herrmann, J Berenike, Arthur M Jacobs, and Andrew Piper (2021). “Computational Stylistics”. In: *Handbook of Empirical Literary Studies*, p. 451.

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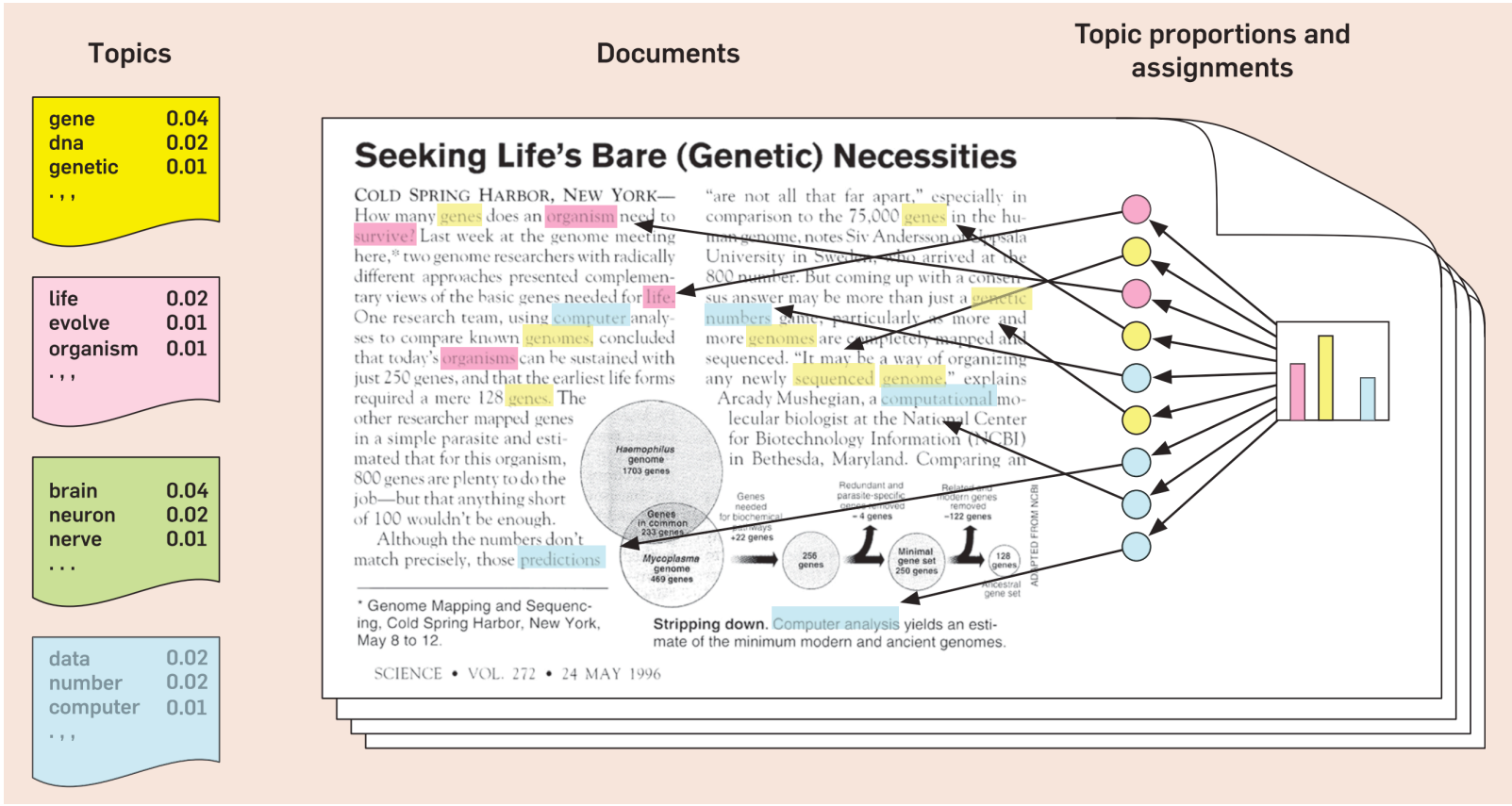
Background:
LDA Topic modelling

LDA topic modelling

Unsupervised model to determine topics that occur in documents iteratively

Topics can be related to multiple documents



https://pyro.ai/examples/prodlda.html

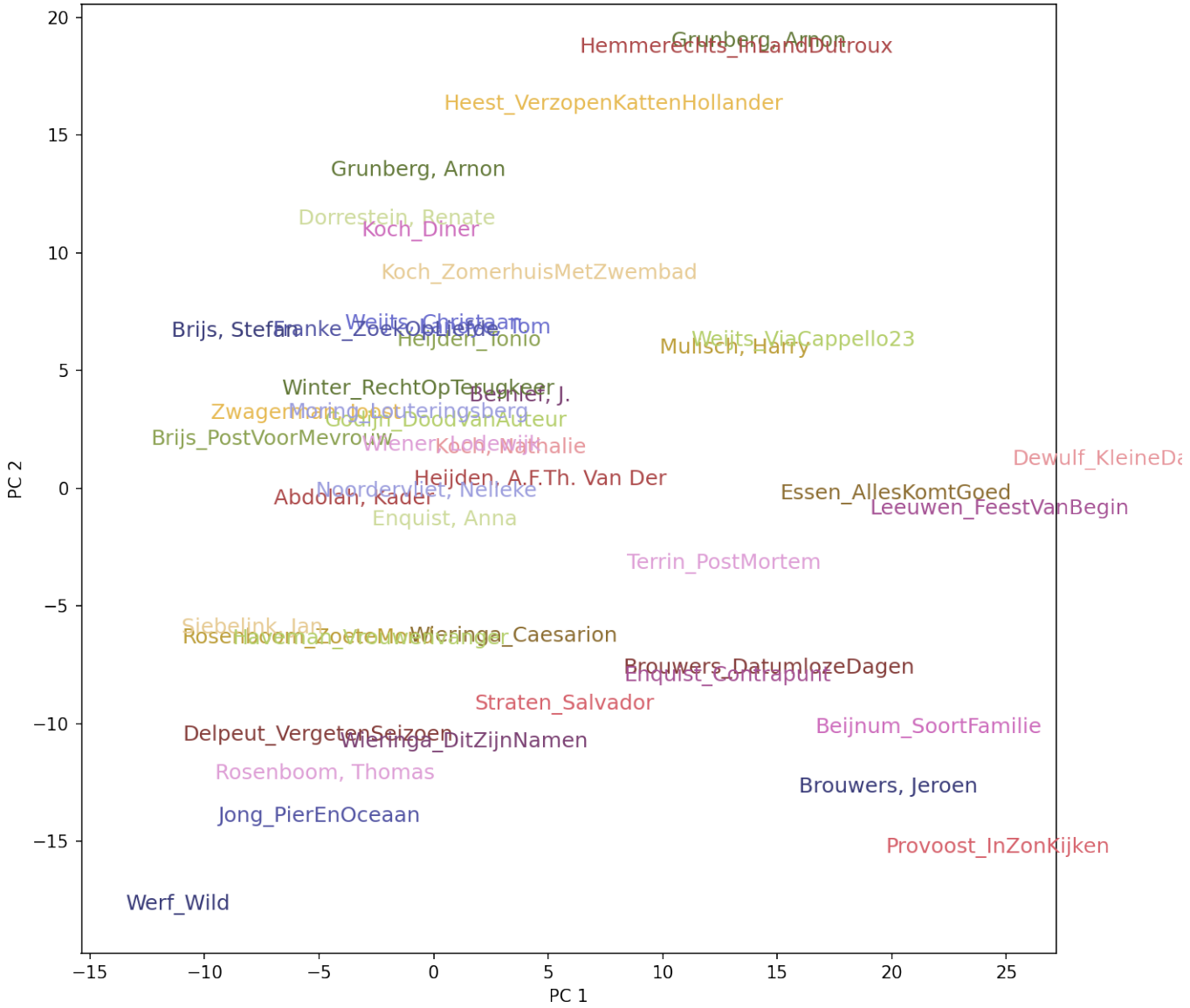
Blei et al. (2003)

Background: Cosine Delta

Identify authorship and writing style

Exploration 100-5000 most occurring words

Distance between words is calculated



Burrows (2002)

Dataset

Collection of popular epubs

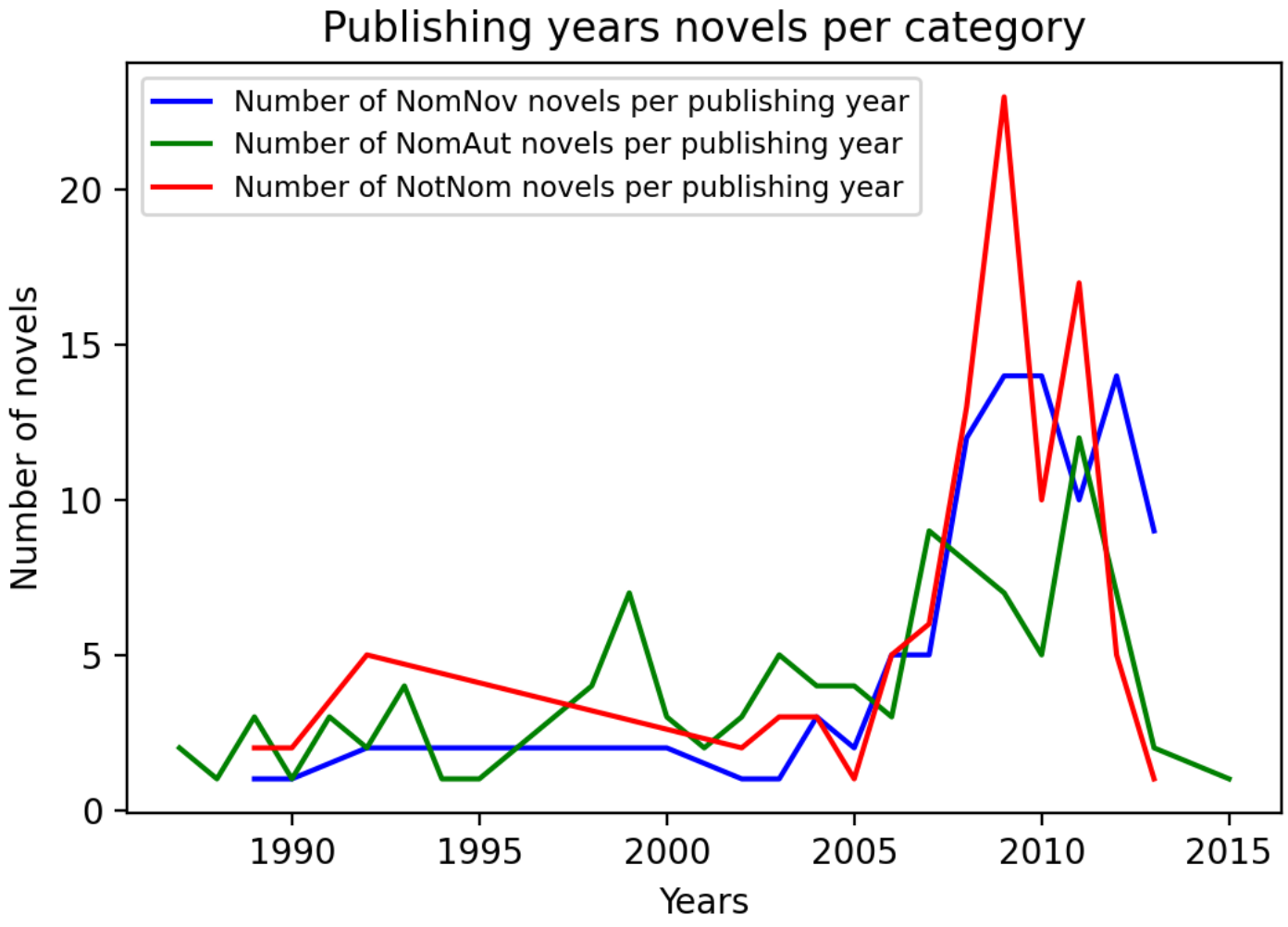
DBNL

Riddle of Literary Quality

Dutch nominated novels

Estimation publishing year

Estimation author gender

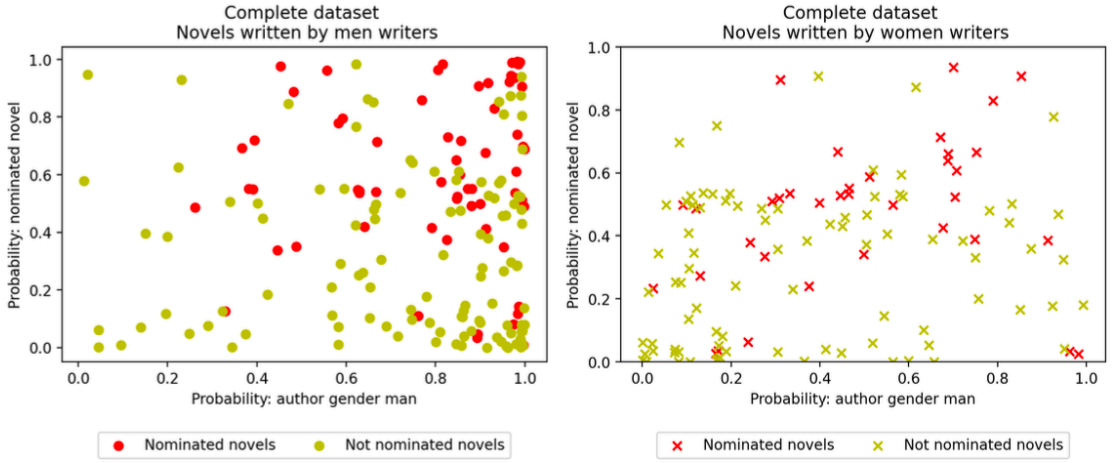


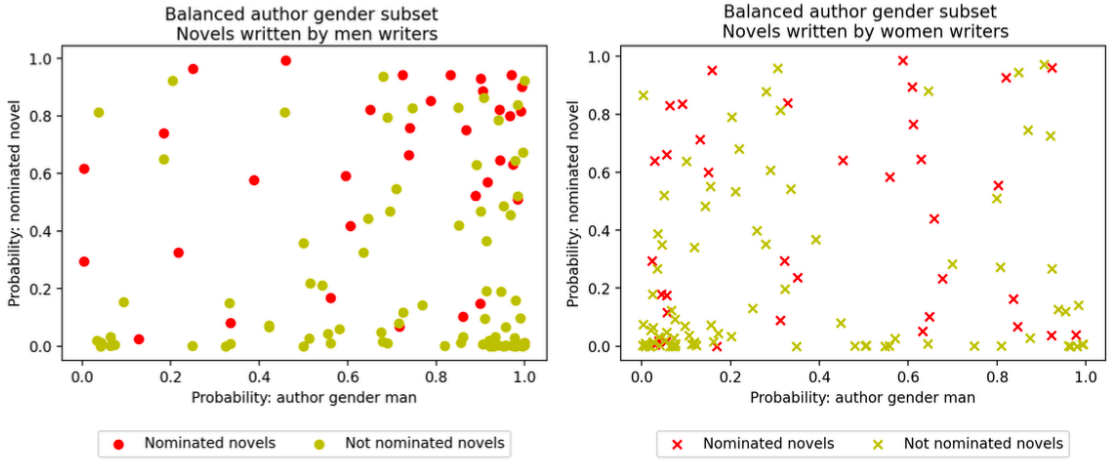
Results: Confidence Comparison

Nominated-or-not model and author gender prediction

Comparison confidence of classification

Relation between high probability to be nominated for a literary prize, and novels written by men





Results: highest weight features logistic regression

NomNov

Office (*bureau*)
I saw (*ik keek*)
Was not (*niet was*)
Swimming (*zwemmen*)

NomAut

Above (*boven*)
That still (*die nog*)
He went (*ging hij*)
To slide (*glijden*)
Her the (*haar de*)
He saw (*hij zag*)
Kilo (*kilo*)
Also be (*ook zijn*)
Party (*partij*)
When it (*toen het*)

NotNom

To happen (*gebeuren*)
No sense (*geen zin*)
Prison (*gevangenis*)
To slide (*glijden*)
Yes I (*ja ik*)
Can (*kan*)
Also from (*ook van*)
Stage (*podium*)
Affairs (*zaken*)
Sit (*zit*)