"Speaking Ill of the Dead"

A Statistical Analysis of Media Sentiment Before and After Celebrity Deaths

Titouan Dupleich

Department of Decision Sciences
Bocconi University

Master's Thesis Defense
Supervisor: Prof. Alessia Melegaro
October 25th, 2024

Bocconi

Introduction

"De mortuis nil nisi bonum dicendum est."
"Of the dead, nothing but good should be said."

Death positivity bias

"Forming more favorable perceptions and appraisals of the dead than the living." (Allison and Eylon 2005, p. 6)

- Celebrity death effects
- Analysis of death positivity bias in online media
- 7600 articles about 38 celebrities (music, film, academia, sports, public affairs)

Motivation

Evidence of bias for fictional leaders, members of general public, close relatives, disliked relatives

- Obituaries about general public and celebrities (Alfano, Higgins, and Levernier 2018; Heynderickx and Dieltjens 2016)
- ANOVA/Chi-squared on survey-based A/B tests (Allison, Eylon, et al. 2009; Hayes 2016)
- Chi-squared tests on post-death media articles (Rusu 2020)

Limitations of current literature

- Mostly qualitative assessment of death positivity bias
- Quantitative approaches (ANOVA, Chi-squared) rely on manually-labelled documents
- Post-death assessment of texts without pre-death comparison
- Few studies on news articles have small sample size (max 697 articles about 8 celebrities)

Research Questions

- **RQ1:** Does the media speak more positively about celebrities once they have passed away?
- **RQ2:** Which attributes of celebrities can account for variations in media response?
- **RQ3:** What themes are highlighted by the media before and after celebrities' passing? Can they help explain the death positivity bias?

Targeted celebrities & Period selection

1. Death date: between June 2014 and October 2023
2. Google web searches: Google Trends interest greater than 0%

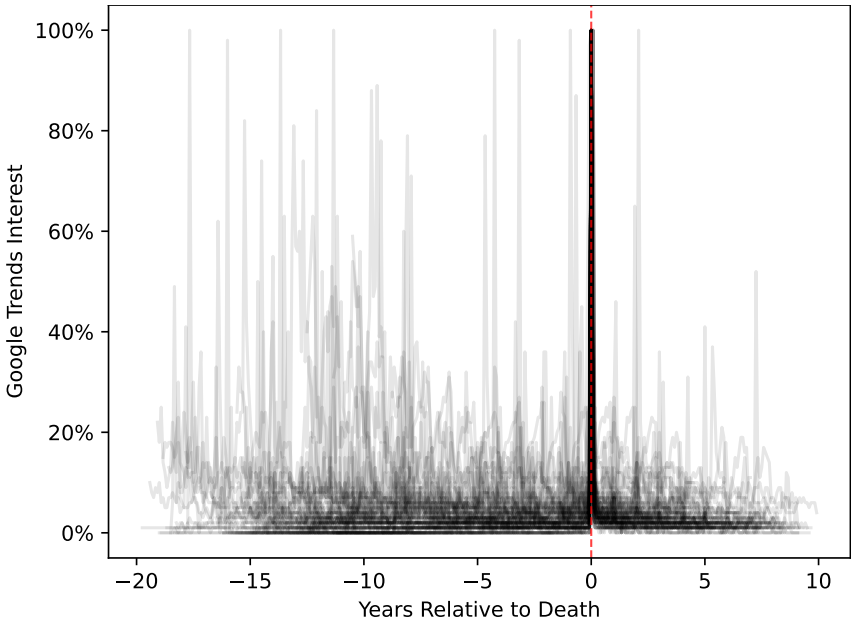


Figure: Time series of monthly Google Trends interest relative to death date for all the celebrities

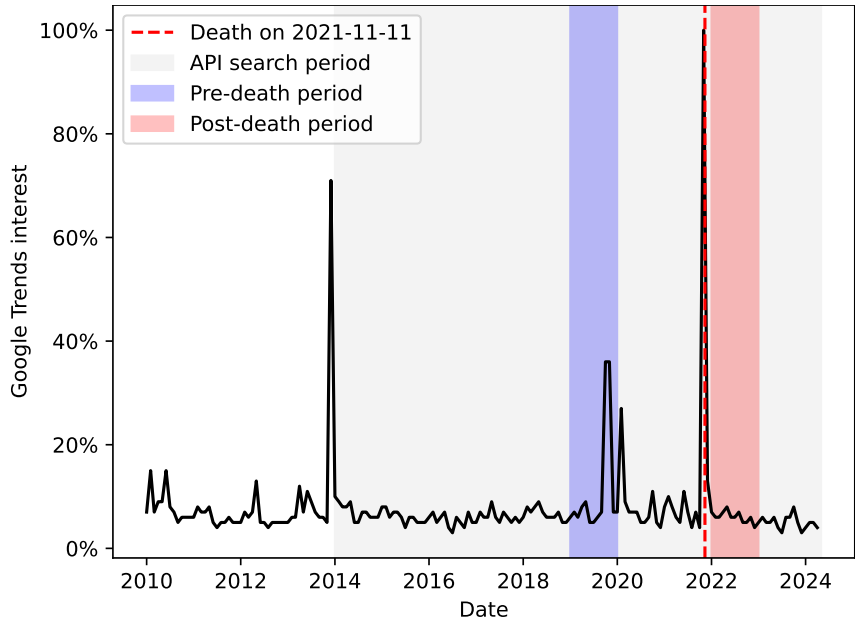


Figure: Example of pre-death and post-death period selection for F.W. de Klerk

Article collection

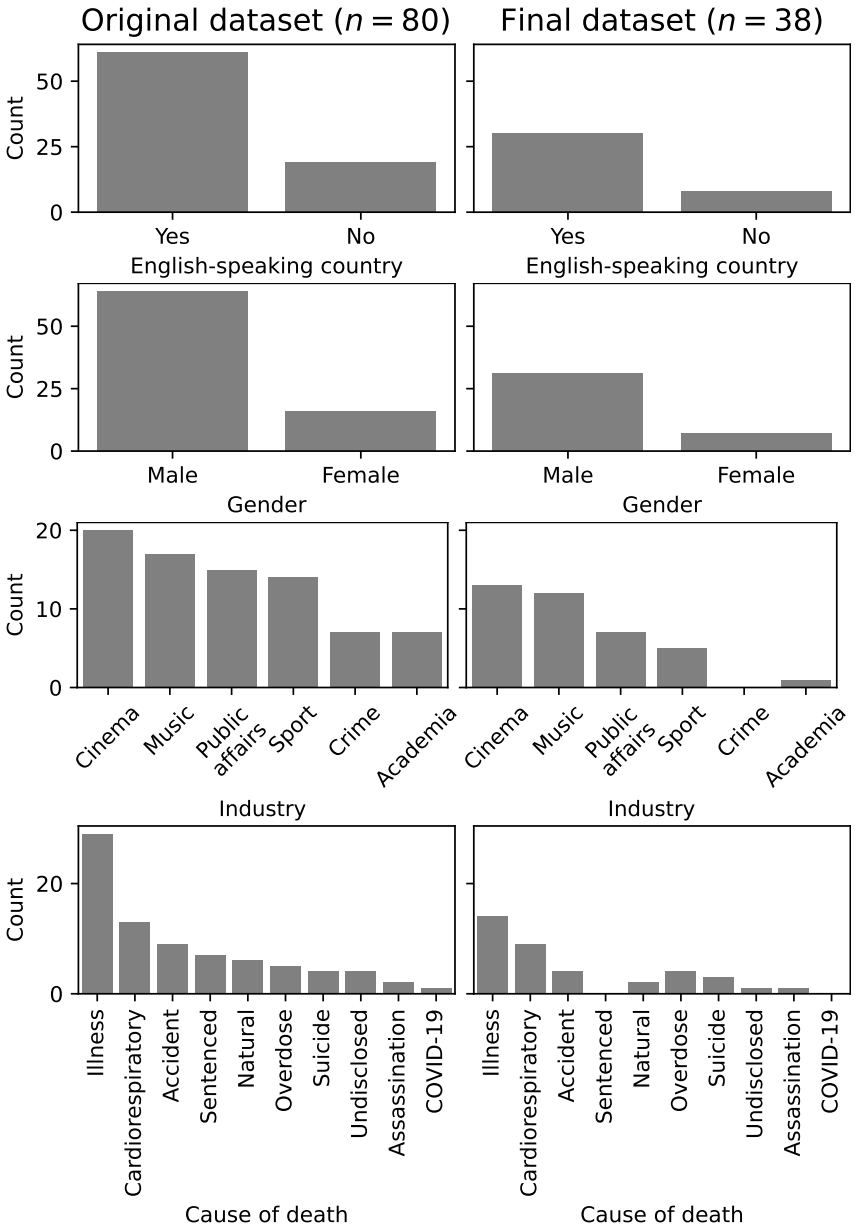
Event Registry API

- News intelligence platform that gathers online media articles
- API with Named Entity Recognition (NER)
- Dictionary sentiment score

Conditions for article selection

1. Article published in pre-death or post-death period
2. NER celebrity entity in article body
3. Celebrity first or last name in article title

Celebrities dataset



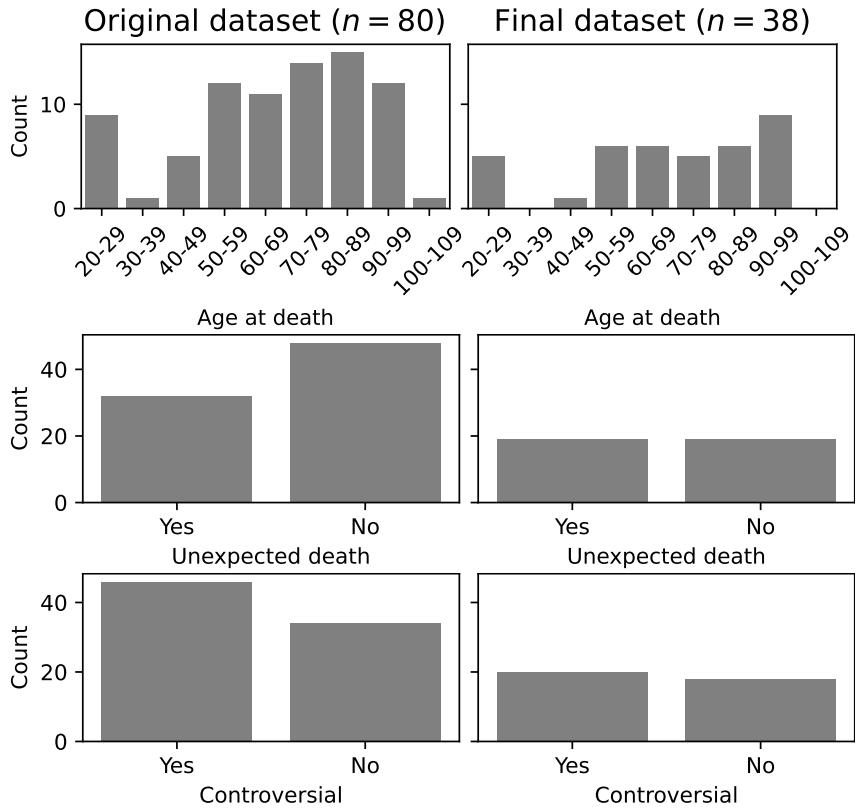


Figure: Summary of features in the original and final datasets

Research Questions

- **RQ1:** Does the media speak more positively about celebrities once they have passed away?
- **RQ2:** Which attributes of celebrities can account for variations in media response?
- **RQ3:** What themes are highlighted by the media before and after celebrities' passing? Can they help explain the death positivity bias?

Methodology

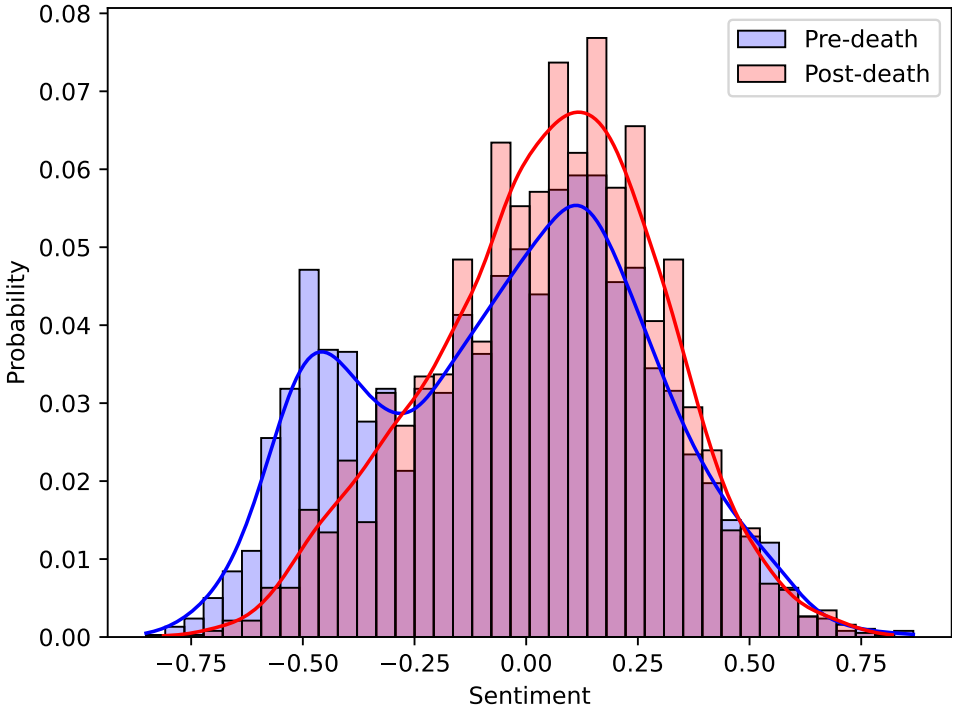


Figure: Probability distributions of pre-death and post-death sentiment for all articles (n = 7600)

1. One-sided Mann-Whitney U test (Mann and Whitney 1947)
2. Effect size: rank biserial correlation (Cureton 1956)
3. Bootstrap

$$H_0 : P(Y > X) \leq P(X > Y)$$
$$H_1 : P(Y > X) > P(X > Y)$$

- X: pre-death dist.
- Y: post-death dist.

Results

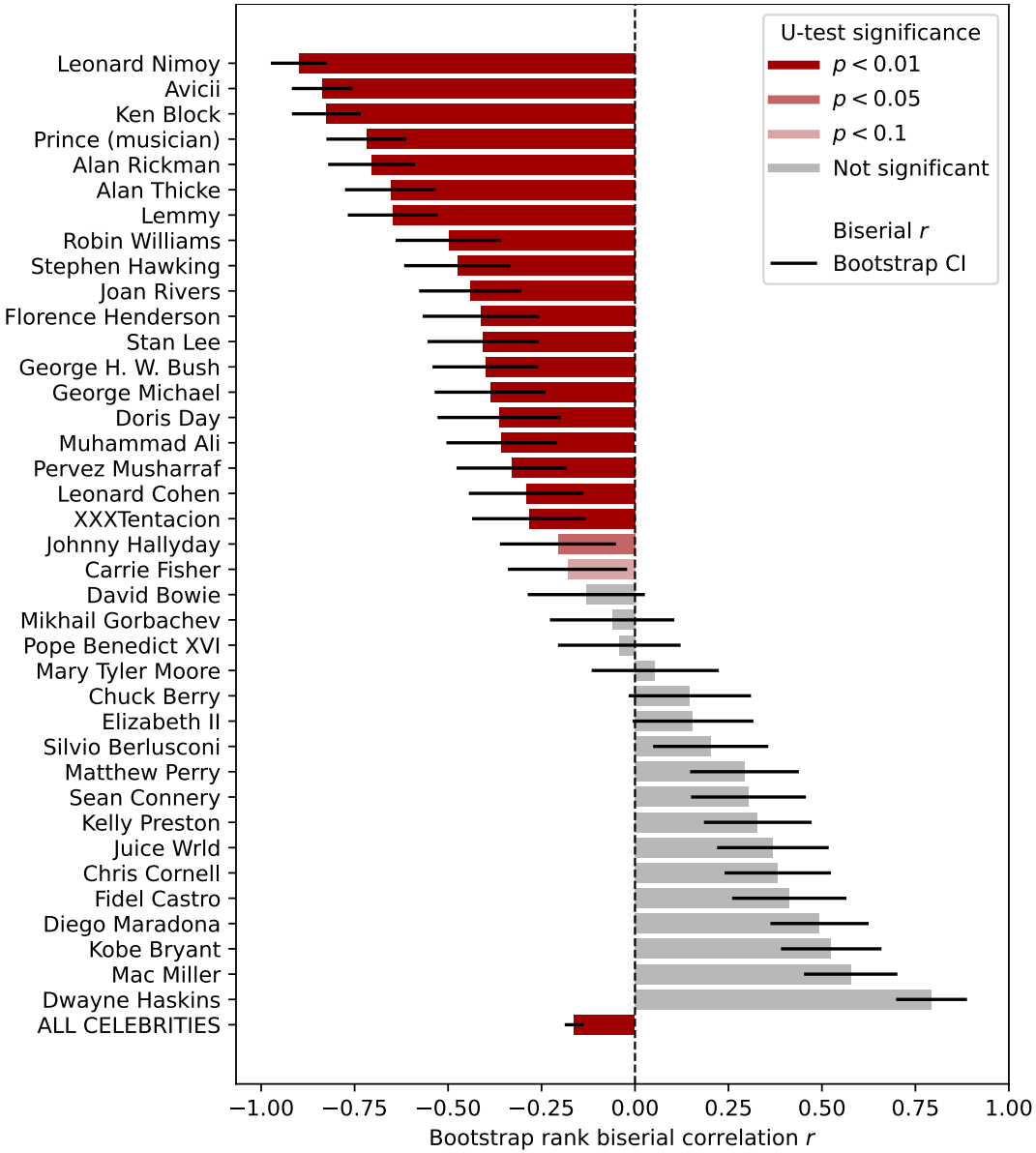


Figure: One-sided Mann-Whitney U-tests and effect sizes

- Evidence of death positivity bias
- Strong signal for some celebrities
- No effect or reverse relationship for others

Research Questions

- **RQ1:** Does the media speak more positively about celebrities once they have passed away?
- **RQ2:** Which attributes of celebrities can account for variations in media response?
- **RQ3:** What themes are highlighted by the media before and after celebrities' passing? Can they help explain the death positivity bias?

Methodology

- Each pre-death article randomly paired with a post-death article about the same celebrity to compute sentiment difference distribution $D = \{d_1, d_2, ..., d_{3800}\}$:
  1. x_c: sentiment of random pre-death article about celebrity c
  2. y_c: sentiment of random post-death article about celebrity c
  3. $d_c = y_c - x_c$
- ANOVA test on D based on celebrity features
- Tukey's Honestly Significant Difference (HSD) tests

Results

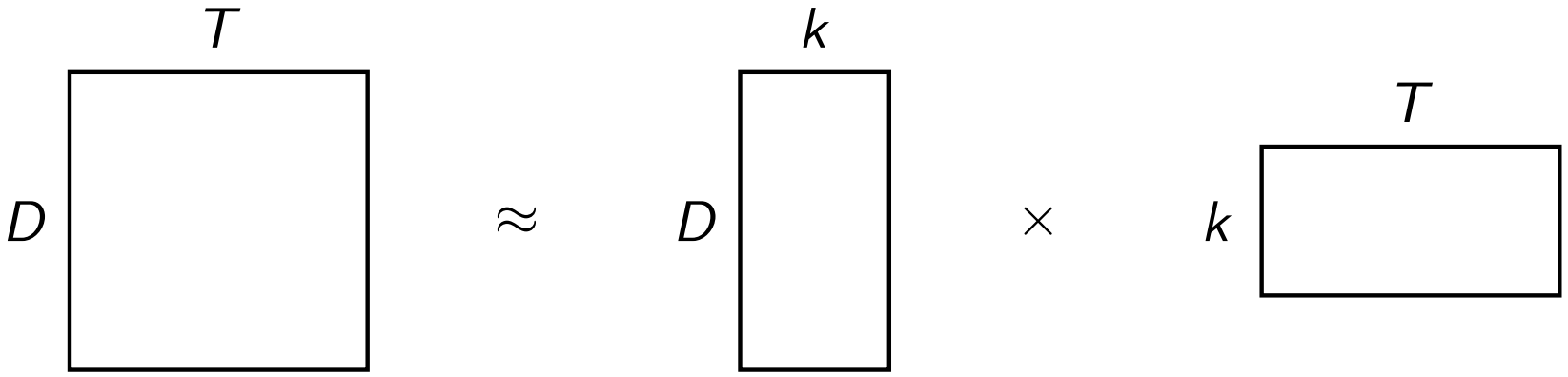
- Industry
  - Strong bias in entertainment industry (music, cinema)
  - No signal in other industries (sport, public affairs, academia)
- Cause of death
  - Bias for deaths by suicide, illness, assassination, natural, and cardiorespiratory failure
  - No signal for other causes (accident, overdose, undisclosed)
- Age at death
  - The older the celebrity, the stronger the bias
  - Except for deaths at 90+ years old
- Little to no effect detected for other features

Research Questions

- **RQ1:** Does the media speak more positively about celebrities once they have passed away?
- **RQ2:** Which attributes of celebrities can account for variations in media response?
- **RQ3:** What themes are highlighted by the media before and after celebrities' passing? Can they help explain the death positivity bias?

Methodology

Topic modelling with Non-negative Matrix Factorisation (NMF)



TF-IDF input **V**

V_{dt}: TF-IDF score of term t in document d

Document-topic **W**

W_{di}: prevalence of topic i in document d

Topic-term **H**

H_{it}: contribution of term t to topic i

Results

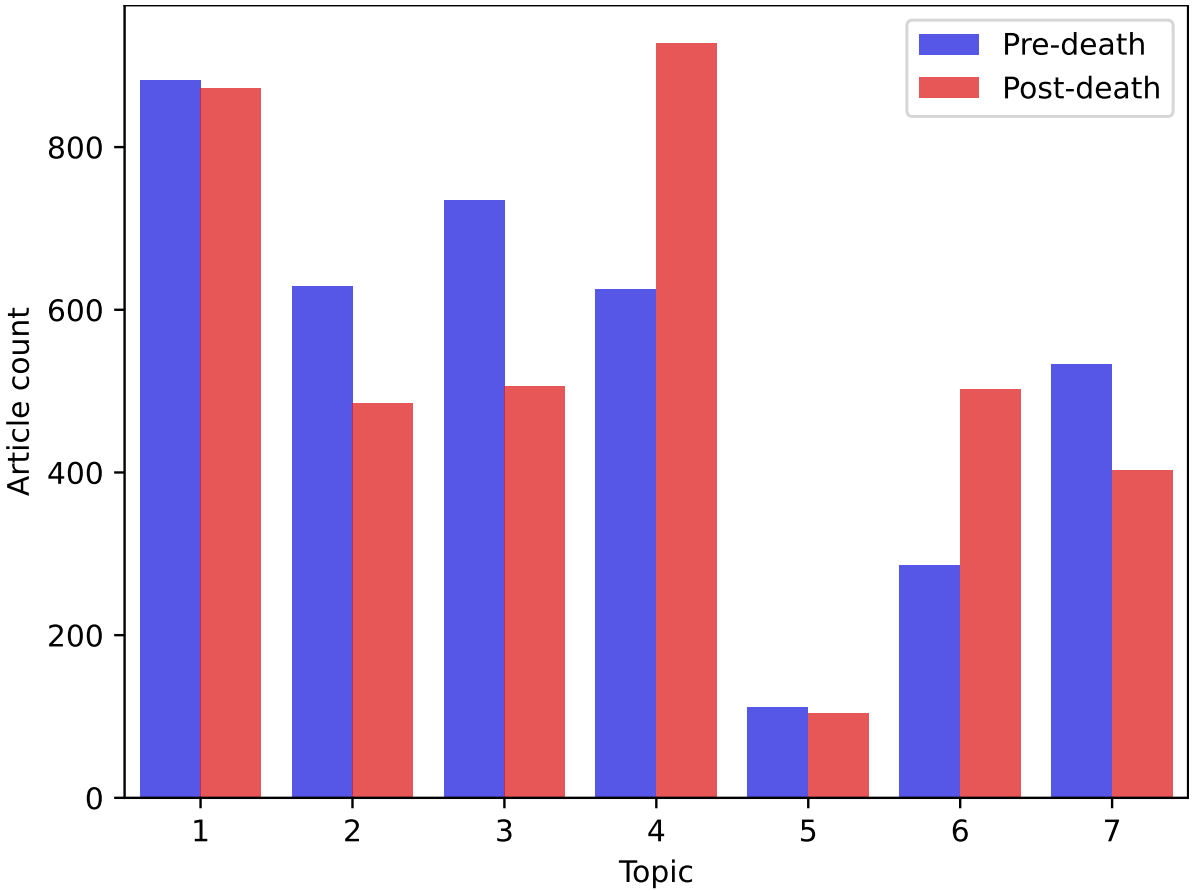


Figure: Pre- and post-death distributions of articles for each NMF topic

NMF topics:

1. Cinema
2. Public affairs, leadership
3. Music
4. Family, tribute
5. Justice, treason
6. Crime, drugs
7. Sport

Results

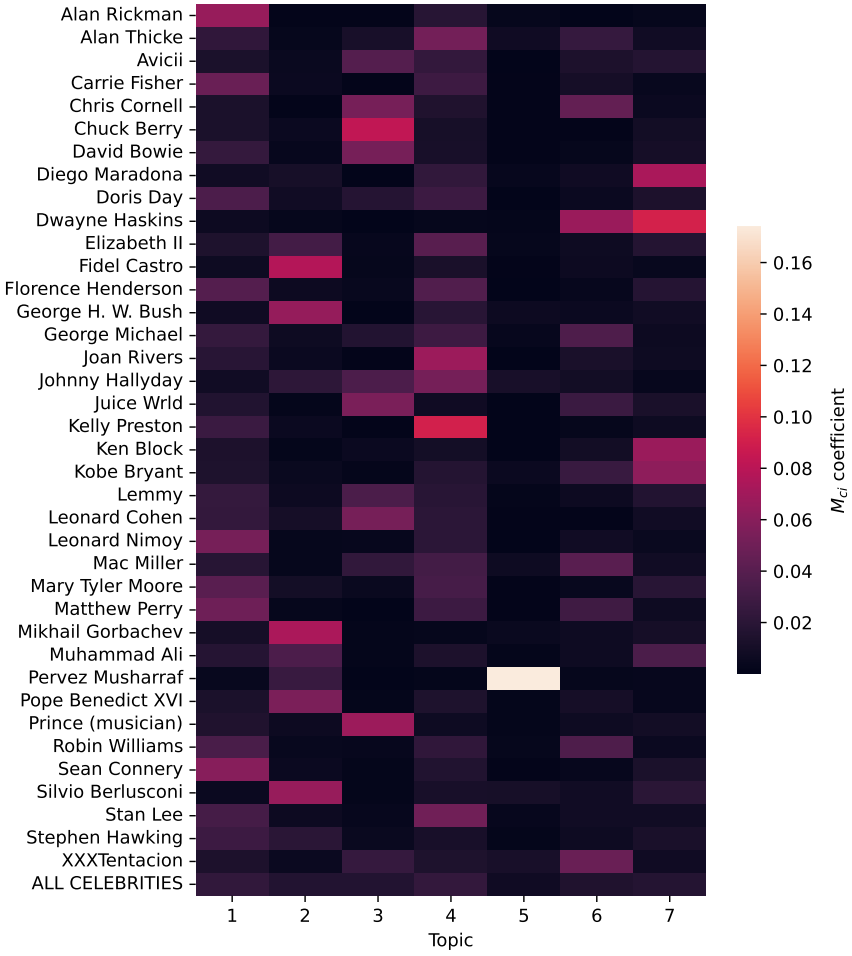


Figure: Heatmap of topic distribution matrix **M**

Topic dist. matrix $\mathbf{M}(C \times k)$

- C: number of celebrities
- k: number of topics

$$M_{ci} = \frac{1}{200} \sum_{d=1}^{200} W_{di}$$

c: celebrity

i: topic

d: article about celebrity c

Bocconi

Results

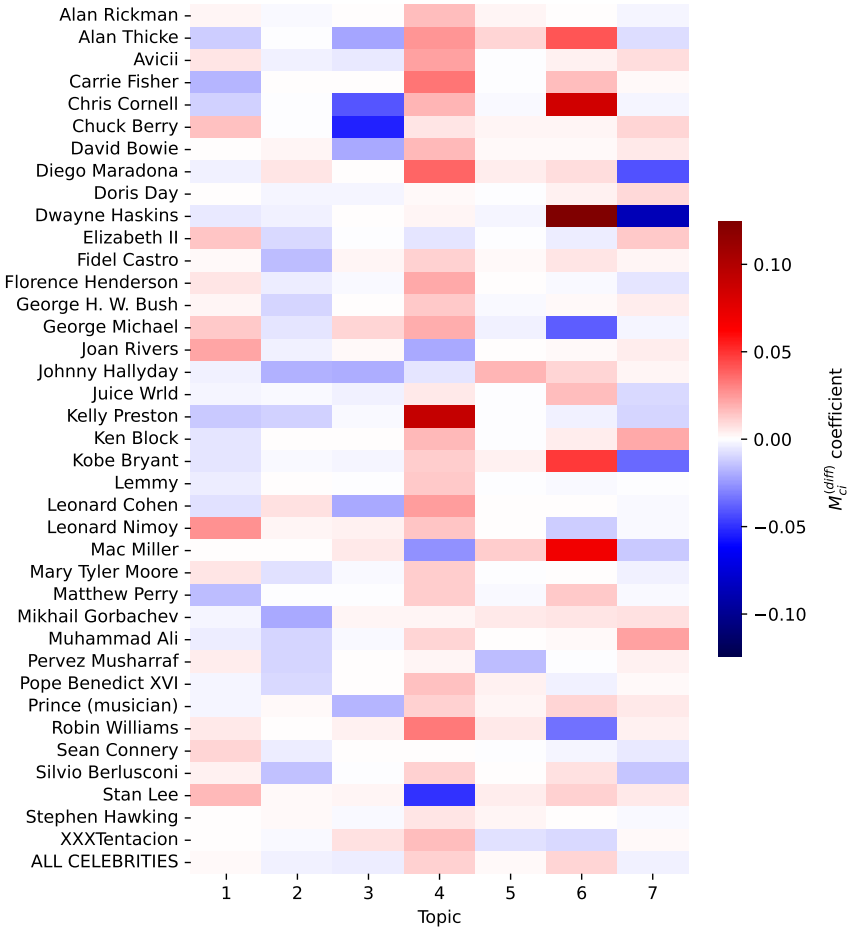


Figure: Heatmap of difference in topic distribution matrix $\mathbf{M}^{(diff)}$

Pre- and post-death topic dist. matrices, $\mathbf{M}^{(pre)}$ and $\mathbf{M}^{(post)}$

$$M_{ci}^{(pre)} = \frac{1}{100} \sum_{d=1}^{100} W_{di}$$

d: pre-death article about c

$$M_{ci}^{(post)} = \frac{1}{100} \sum_{d=1}^{100} W_{di}$$

d: post-death article about c

Diff. in topic dist. matrix $\mathbf{M}^{(diff)}$

$$M_{ci}^{(diff)} = M_{ci}^{(post)} - M_{ci}^{(pre)}$$

Bocconi

Results

- NMF correctly identified topics associated with celebrities
- But, not useful in understanding death positivity bias

Discussion

Key takeaways

- RQ1: Evidence of small death positivity bias, in line with previous research (Allison, Eylon, et al. 2009; Hayes 2016)
- RQ2: Stronger bias for entertainment industry and death at older age (except 90+)
- RQ3: 7 relevant topics identified but not explaining bias

Limitations	**Ideas for future research**
Mostly focused on US	Extend to other countries
Short scraping periods	Longer periods
Dictionary sentiment	More sophisticated model
Sentiment vs. Topic model	Topic-level sentiment (Pathak, Pandey, and Rautaray 2021)
Limited to news articles	Extend to social media (Brown, Basil, and Bocarnea 2003; Ueda et al. 2017)

Alfano, Mark, Andrew Higgins, and Jacob Levernier (2018). "Identifying virtues and values through obituary data-mining". In: *The Journal of Value Inquiry* 52, pp. 59–79.

Allison, Scott T and Dafna Eylon (2005). "The demise of leadership: Death positivity biases in posthumous impressions of leaders". In: *The psychology of leadership: New perspectives and research* 295.

Allison, Scott T, Dafna Eylon, et al. (2009). "The demise of leadership: Positivity and negativity biases in evaluations of dead leaders". In: *The Leadership Quarterly* 20.2, pp. 115–129.

Brown, William J, Michael D Basil, and Mihai C Bocarnea (2003). "Social influence of an international celebrity: Responses to the death of Princess Diana". In: *Journal of communication* 53.4, pp. 587–605.

Cureton, Edward E (1956). "Rank-biserial correlation". In: *Psychometrika* 21.3, pp. 287–290.

Hayes, Joseph (2016). "Praising the dead: On the motivational tendency and psychological function of eulogizing the deceased". In: *Motivation and Emotion* 40, pp. 375–388.

Heynderickx, Priscilla C and Sylvain M Dieltjens (2016). "An analysis of obituaries in staff magazines". In: *Death studies* 40.1, pp. 11–21.

Mann, Henry B and Donald R Whitney (1947). "On a test of whether one of two random variables is stochastically larger than the other". In: *The annals of mathematical statistics*, pp. 50–60.

Pathak, Ajeet Ram, Manjusha Pandey, and Siddharth Rautaray (2021). "Topic-level sentiment analysis of social media data using deep learning". In: *Applied Soft Computing* 108, p. 107440.

Rusu, Mihai S (2020). "Celebrities' memorial afterlives: Obituaries, tributes, and posthumous gossip in the Romanian media deathscape". In: *OMEGA-Journal of Death and Dying* 80.4, pp. 568–591.

Ueda, Michiko et al. (2017). "Tweeting celebrity suicides: Users' reaction to prominent suicide deaths on Twitter and subsequent increases in actual suicides". In: *Social Science & Medicine* 189, pp. 158–166.