Digitization and Availability of Artworks in Online Museum Collections

Rethinking Culture & Creativity

Unlocking value from digital heritage collections: international perspec

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Motivation and Research Question

How does a public domain status of a creative work affect its distribution in the market; availability and quality?

In the case of museums, **it is not clear ex ante** what the impact of right status is on availability and quality of digital artwork surrogates

- First, museums in physical possession of a public domain work are under no obligation to produce digital images and/or make them available. They act as **gatekeepers** with control over access to the only tangible copy of the work
- Second, museums might rationally decide to not release (or only lower quality) images as a means of maintaining consumer interest in **visiting** the museum venue
- Third, as a source of **income** directly from licensing (higher resolution) images

➢ The issue deserves a more rigorous **empirical** assessment

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Literature

Copyrights, **availability** and **quality** of digital artwork surrogates**.**

- **Book market**: when works fall into the public domain, the supply of new copies increases often due to higher competition and lower transaction/ production costs, and leading to lower average prices and higher availability of works (Biasi and Moser, 2021; Heald, 2020b, 2014, 2007; Reimers, 2019; Flynn et al., 2019; Li et al., 2018; Buccafusco and Heald, 2013)
- **Music ; movies; operas** (Buccafusco and Heald 2013; Cuntz 2023, Giorcelli and Moser 2020, MacGarvie et al. 2022)
- Artworks & digital Images: Clear **gap in the empirical literature** related to museums and distributional effects in the visual arts sector, including supply and quality of images as well as further downstream reuse. (Heald et al. 2015; Nagaraj 2018)
- We find: increase in availability of images online of US original artworks in the public domain; ≈ 42%; higher image rez. Considerable downstream (commercial) value ≈8mio$

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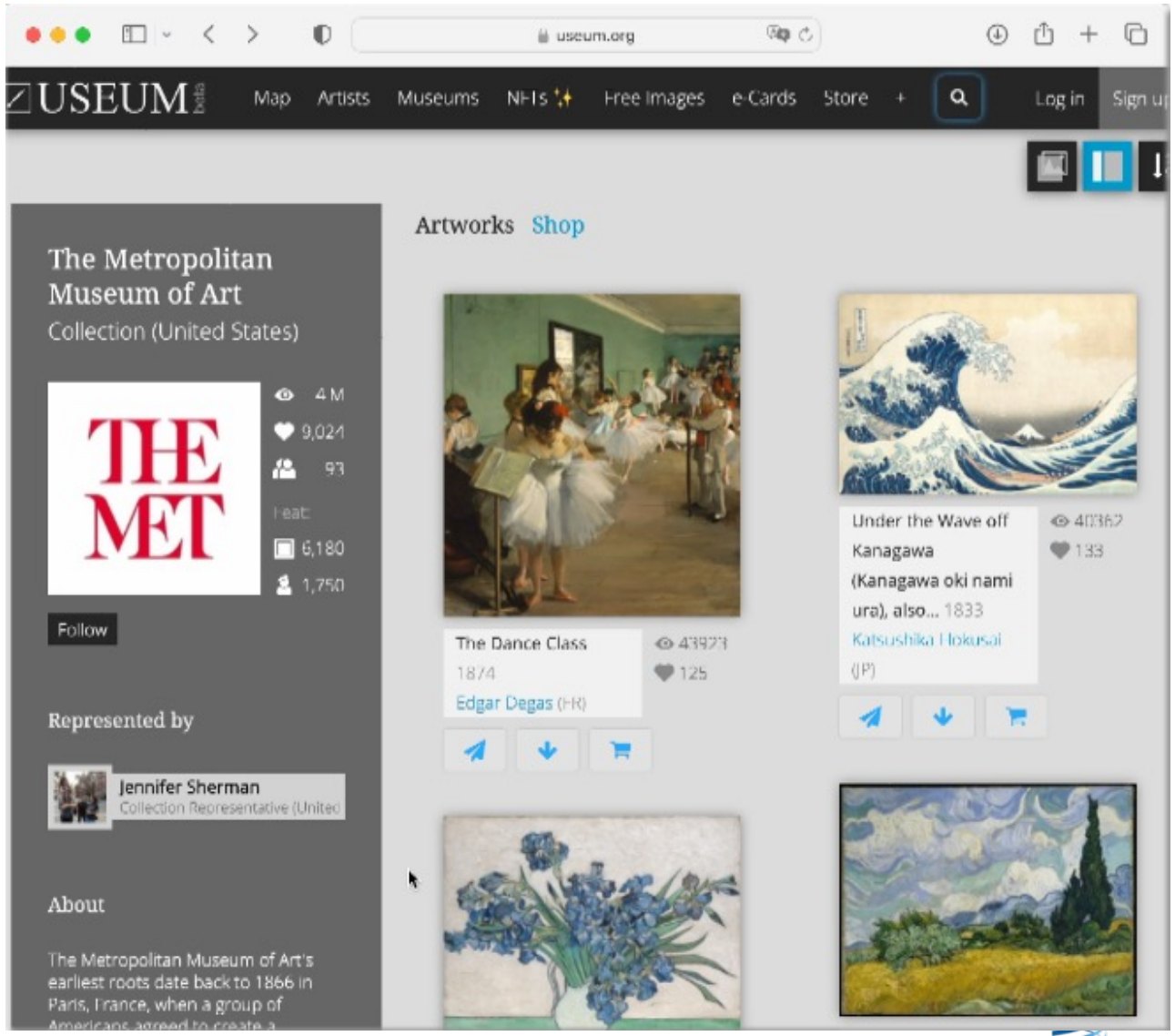
Data

The raw data

- Digital artwork platform: useum.org
- Artworks from 1'286 museums located in 59 countries
- Consists of more than 130'000 artworks created by 15'780 artists.
- Community activity e.g. likes and hearts
- Artworks receive more than 56,6 mio. page views.



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Empirical strategy for non-economists

- Again: what is the causal impact of copyright on availability.
- In social science, we cannot run natural experiments and randomly assign treatments.
- Therefore, we rely on a quasi-natural experiment, made possible by:
- the 1998 Sonny Bono Copyright Term Extension Act on digital availability
- Causal design: regression discontinuity design (RDD)

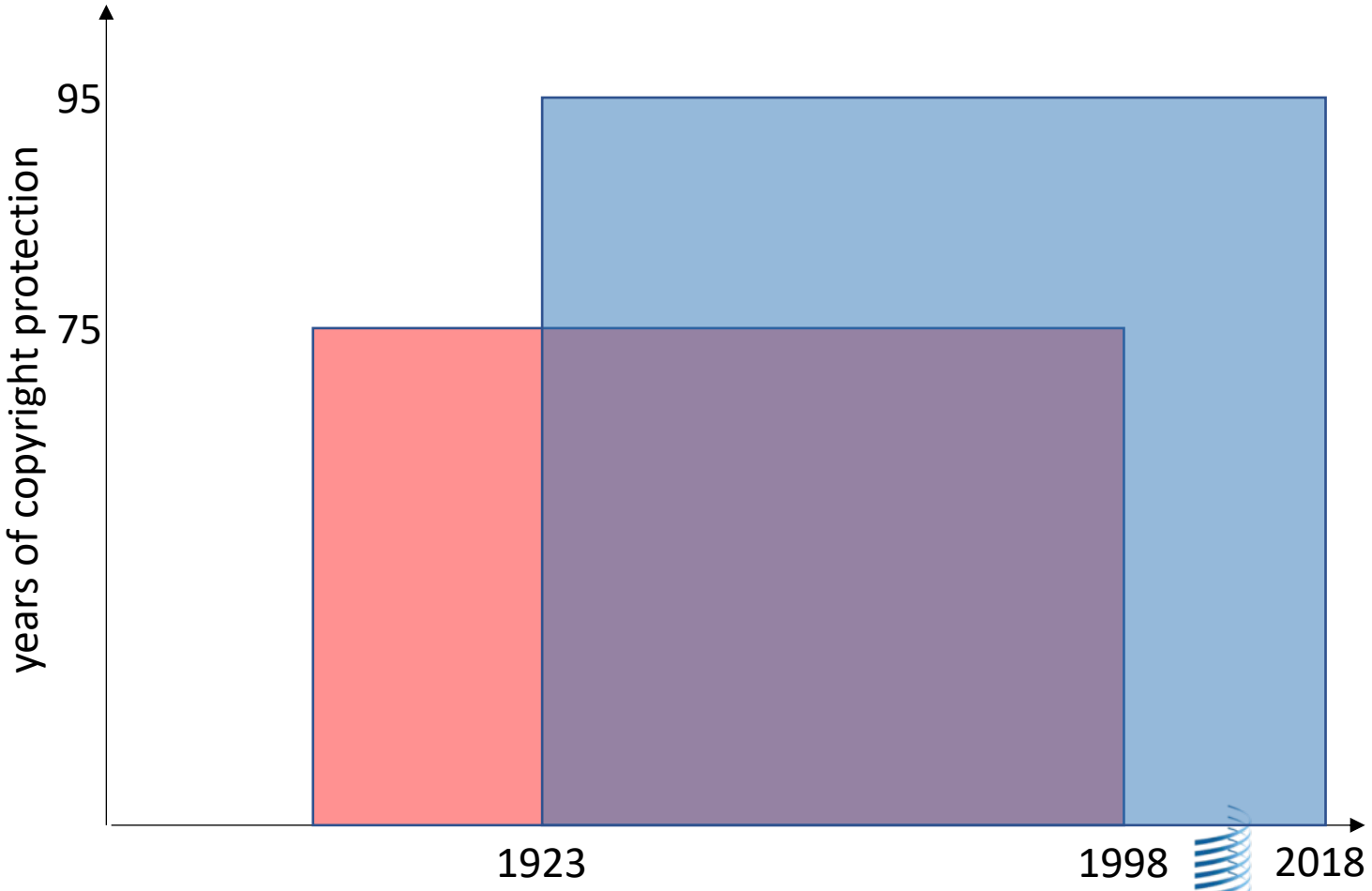

Fig. 1: **Publication** year & years of protection

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Raw Data: U.S. (country-level)

- For the main estimation, we narrow down the data to include only artworks coming from museum collections in the U.S. (UK and the EU).
- We limit the (main) sample to artworks **created** between 1910 and 1940.

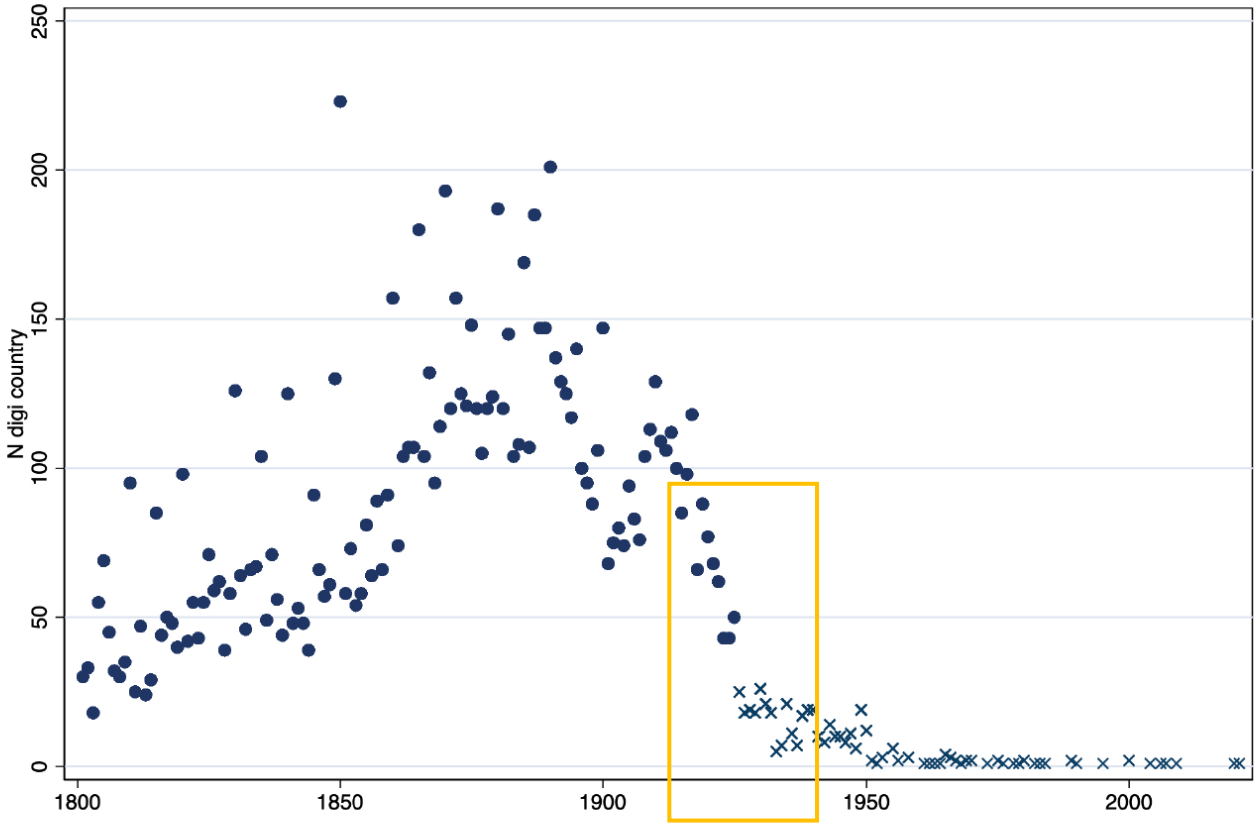

Fig. 2: Total number of digital artworks

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Results digital availability and PD years

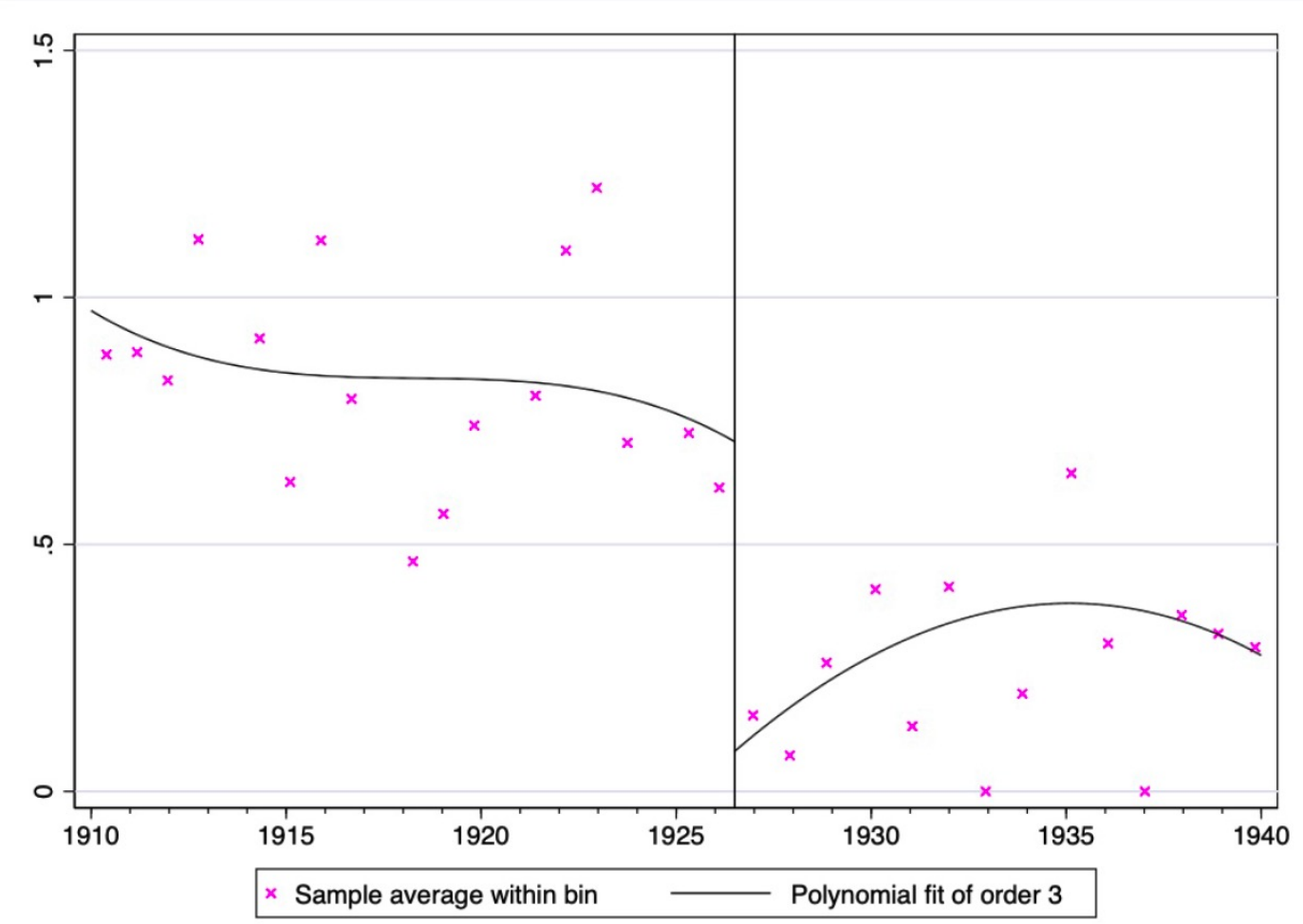

Fig. 3: Regression Discontinuity Design (balanced artist level)

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Robust result?

Fig. 4: digital artwork likes and page views

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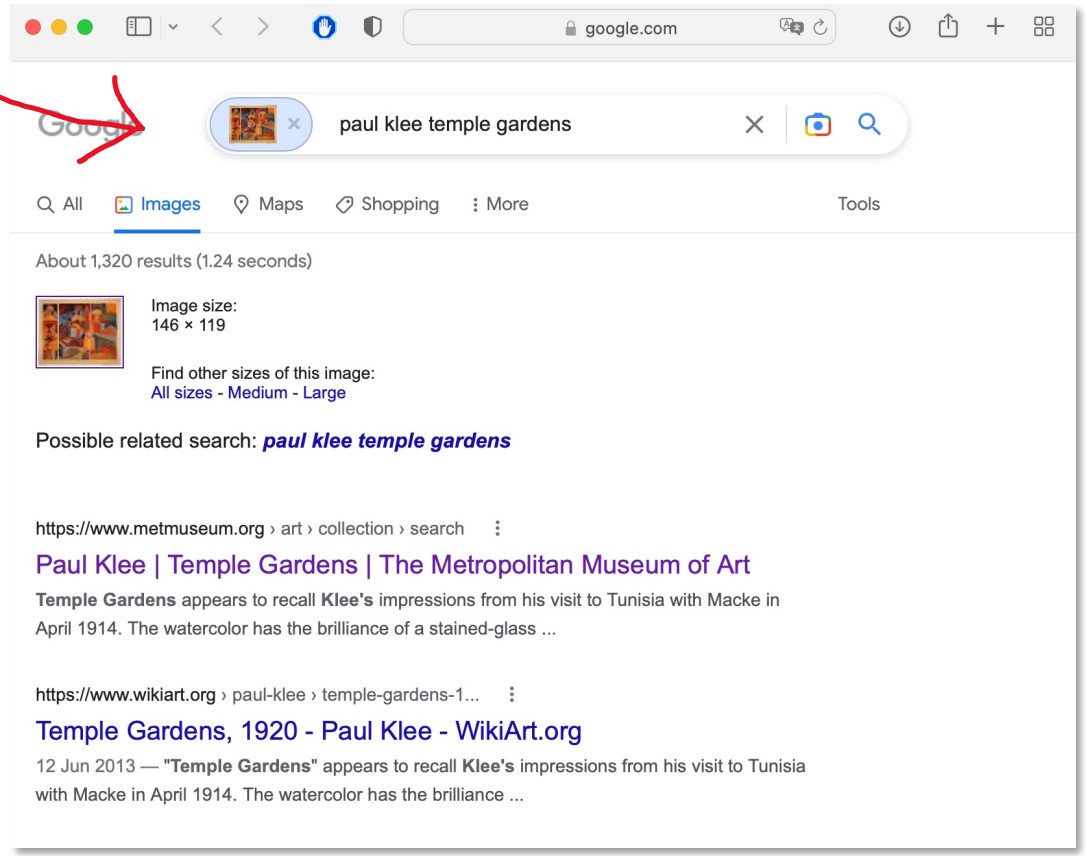
Quality: Google Reverse Image Search

<img src="https://images.metmuseum.org/CRDImages/ma/web-additional/ma1987.455.2.R.jpg"



- What about the **image quality** of digital artworks and public domain status?
- External Validity: data from (community) platform. Bias?
- Upstream: Museum webpage
- Downstream use: WWW
- Google Reverse Image Search: Entire use of the digital images

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Results : Upstream and Downstream use of U.S. artworks in the www

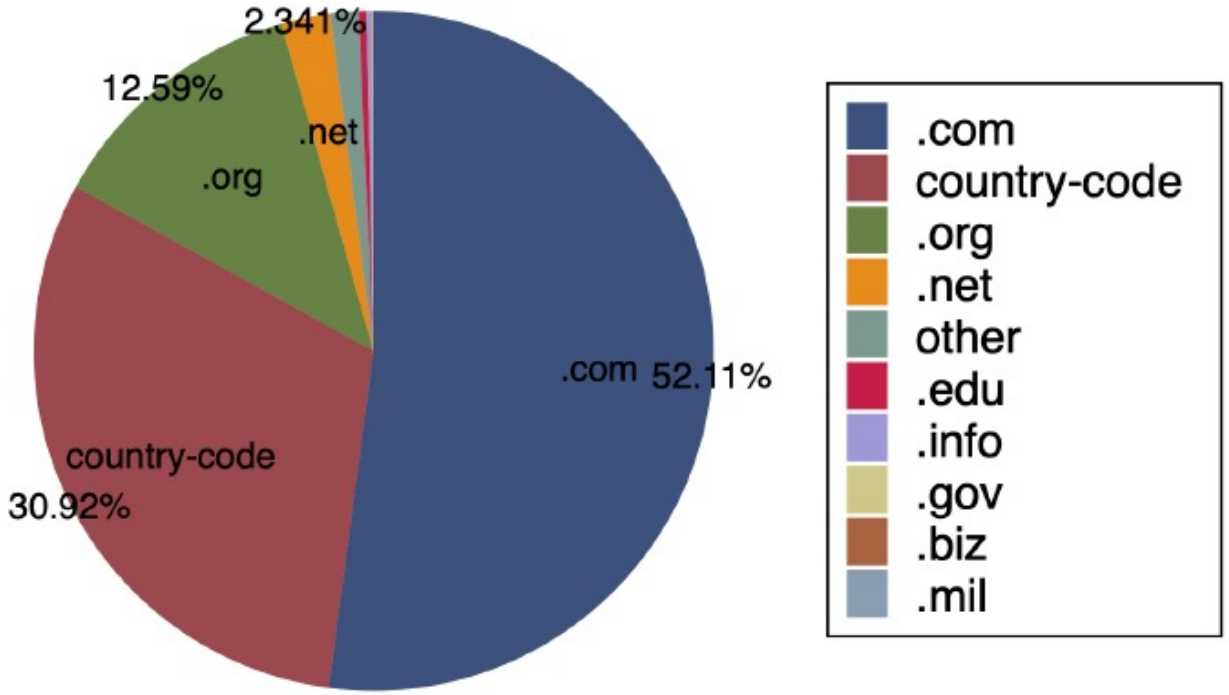

Fig. 5: digital image reuse in the www

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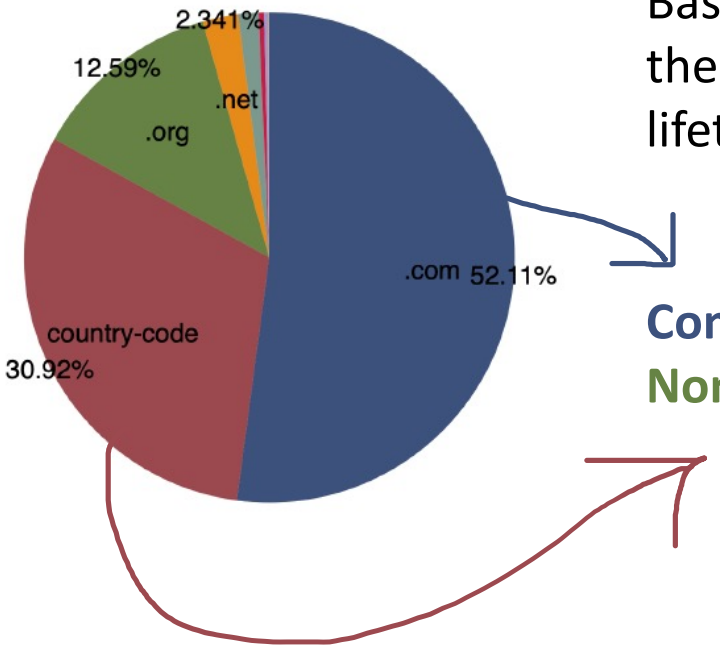
Results: **Value** of the (non) commercial downstream use?



Based on Heald et al. (2015) and Erickson (2018), we can estimate the value of the downstream use of the entire artwork catalogue in our dataset over lifetime:

Commercial: [1349 * 34 * $175] = 8 mio$, (773 mio$ for the entire platform)
Non-commercial: [1349 * 8 * $60] = 650K$, (62 mio$ for the entire platfrom)

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Results: Upstream & Quality

Public domain/ copyrighted

Image quality: Industry threshold

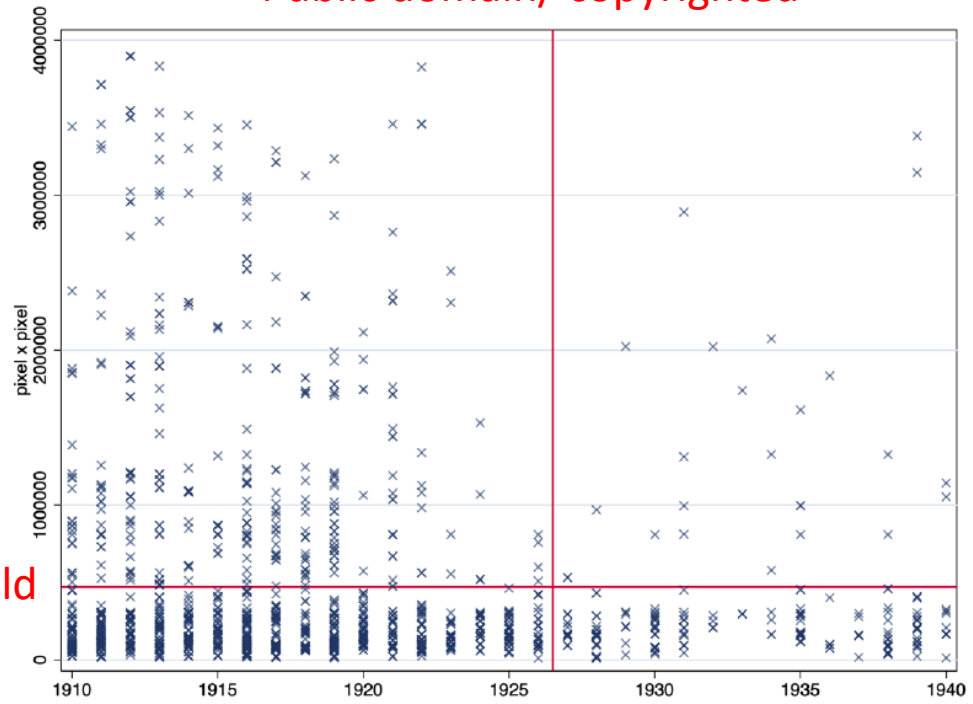

Fig. 6: digital image resolution and copyright status

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Conclusion

How does a public domain status of a creative work affect its distribution in the market; availability and quality?

- We find an **increase** in the general **availability of images online** of original artworks in the **public domain**
- We find preliminary evidence that images of **public domain artworks are of higher average quality** (image resolution)
- Results indicate that flexible **fair use** rules might encourage U.S. museums to also make low-resolution images of copyright-protected artworks available online
- Images made available online see **considerable downstream reuses** ex post, independent of their right status – indicative of their commercial and public value (results not shown)

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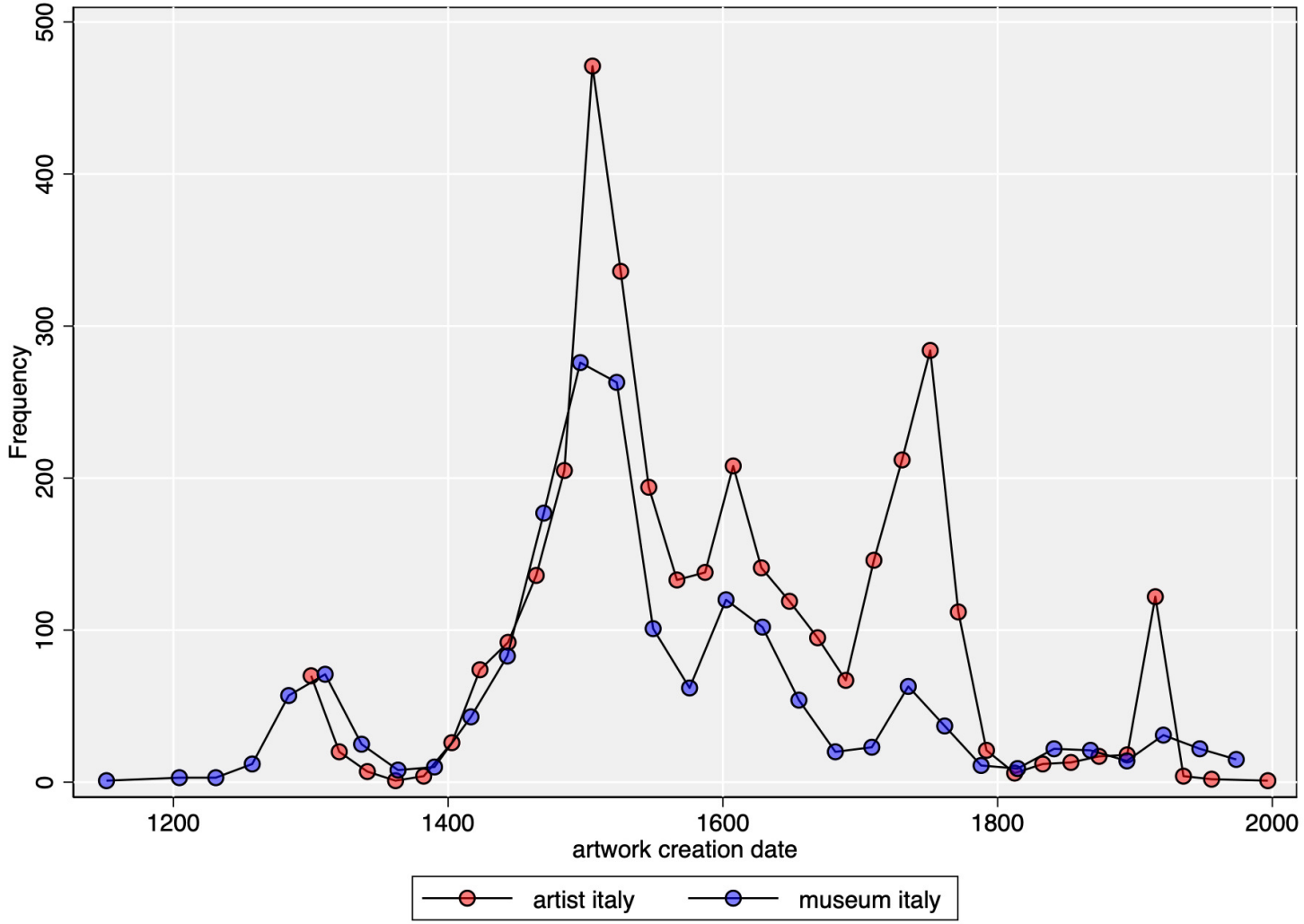
Discussion: digital images and Italy

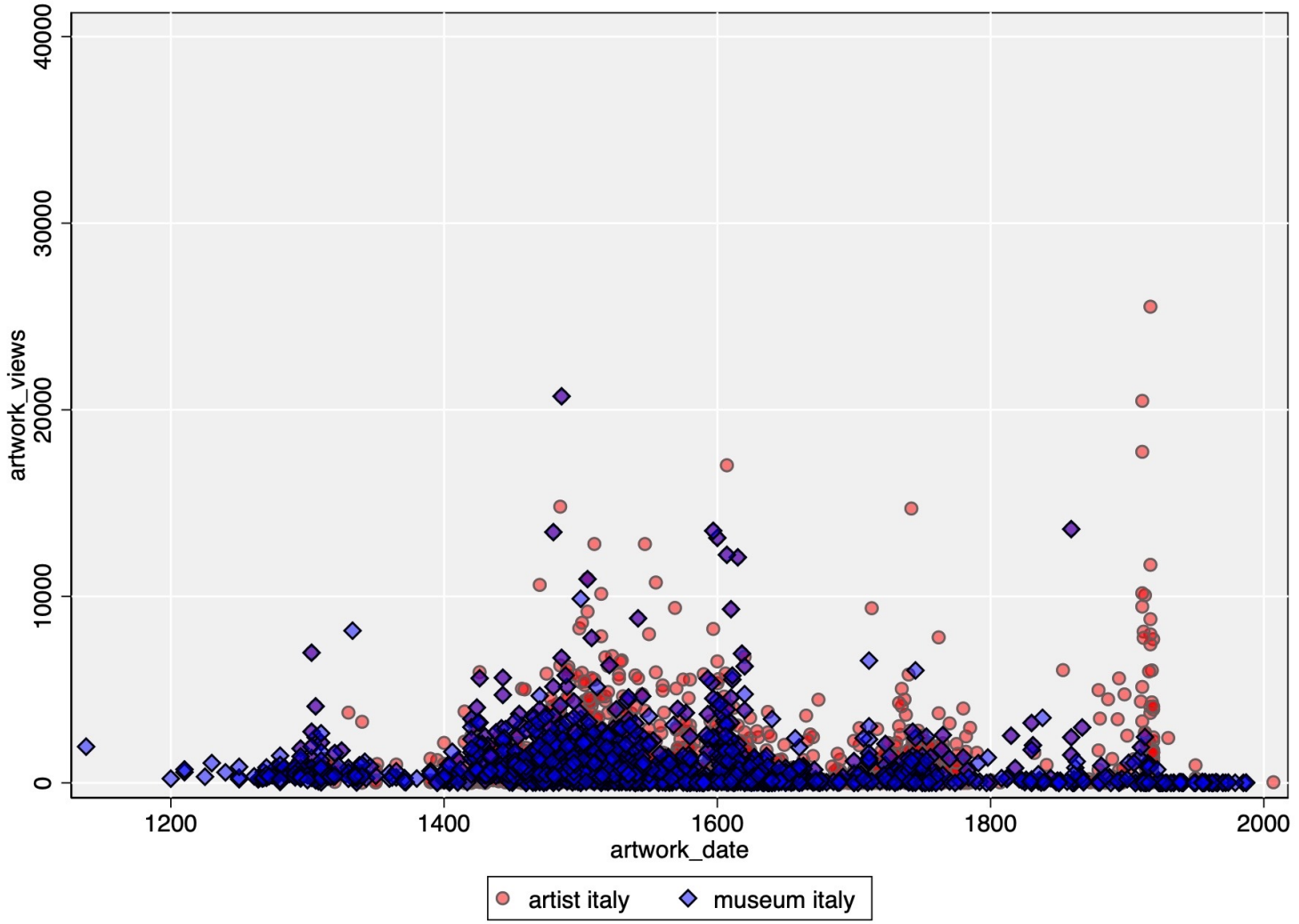
- Artist Italy n=3508
- Museum Italy n=1760
- 1800-2000?



Discussion: digital images and Italy

Top names (in terms of page views)

- Amedeo Modigliani
- Leonardo da Vinci
- Sandro Botticelli
- Umberto Boccioni



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