

A Tale of Three Dashboards: The Use of Interactive Data Visualization in Oncology Publishing

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Insights

- Approaches to using data visualization tools vary by journal/publisher
- As these tools become more widely available, there is a key need for reviewing options and reaching alignment with authors and journals on their preferred approach prior to journal acceptance



Introduction

- Interactive data visualization tools and other enhancements are valuable options that provide novel ways of presenting key data in accessible formats, which enhances the understanding of data and drives readership to scientific publications
- A data visualization dashboard is a website platform aimed to supplement a study publication, with live graphic content that allows an end user to interact with the study data

- We recently published three artificial intelligence (AI)-based data visualization dashboards for oncology papers (2 clinical trials and 1 real-world study) that were developed with input from experienced medical/scientific writers and web coders
- Our objective is to describe the variations in approach to publishing these innovative interactive data visualization tools in three different journals

COLUMBUS

The COLUMBUS 5-year update was published in *J Clin Oncol* in July of 2022 along with its associated dashboard¹

- The dashboard was initially intended to be a direct link embedded within the abstract and body of the paper; however, journal style preferences resulted in the dashboard being placed in the reference list (**Figure 1**)
- Despite its potentially reduced visibility with this placement, the dashboard has been accessed frequently since its launch, with 1246 novel users during the first 8 months accessing this data visualization dashboard 12,347 times (**Figure 2**)
- The COLUMBUS 5-year update was ranked as the 5th most popular article in *J Clin Oncol* in 2022



Scan this quick response (QR) code with your smartphone app to view the dashboard.

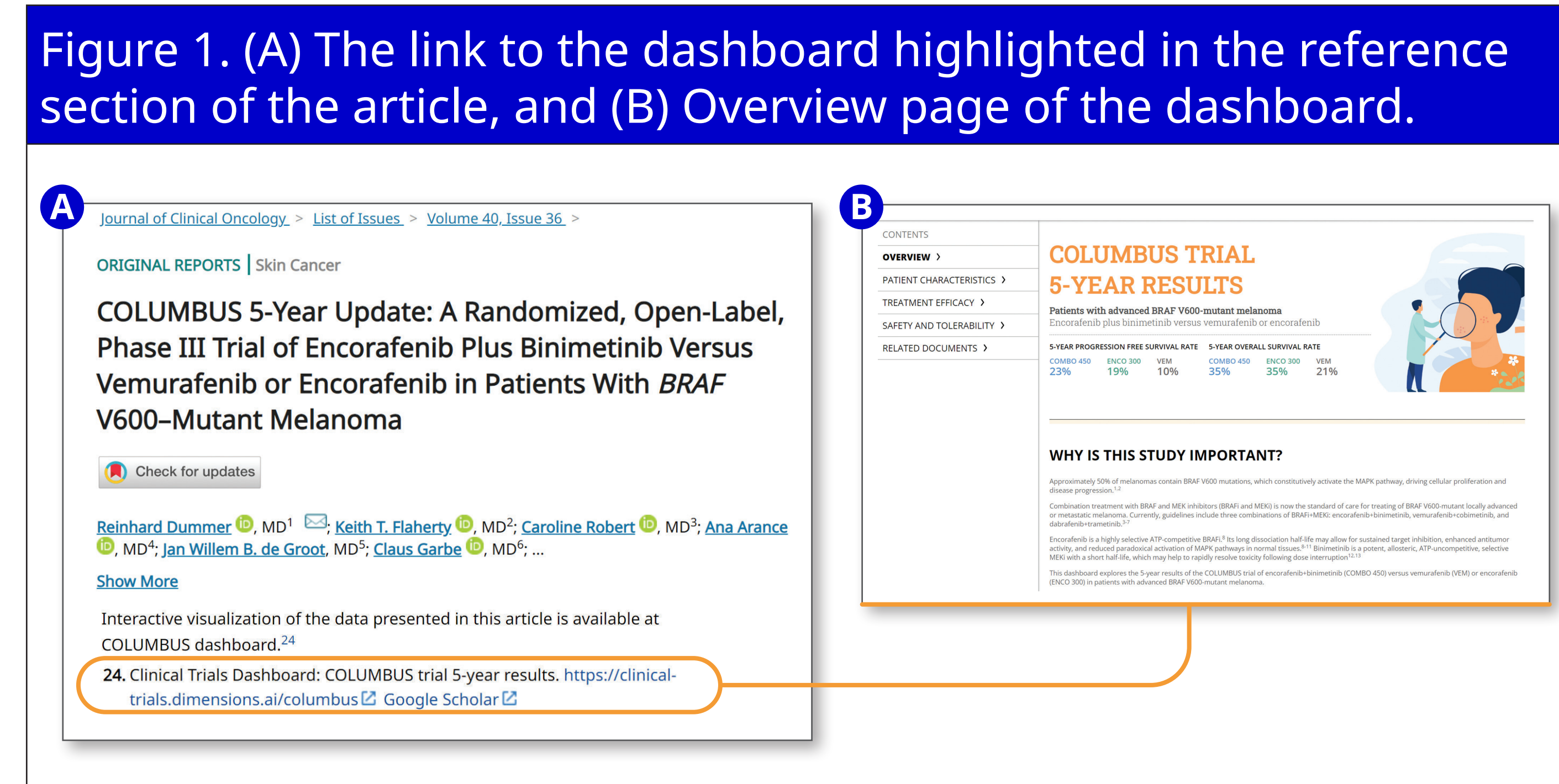
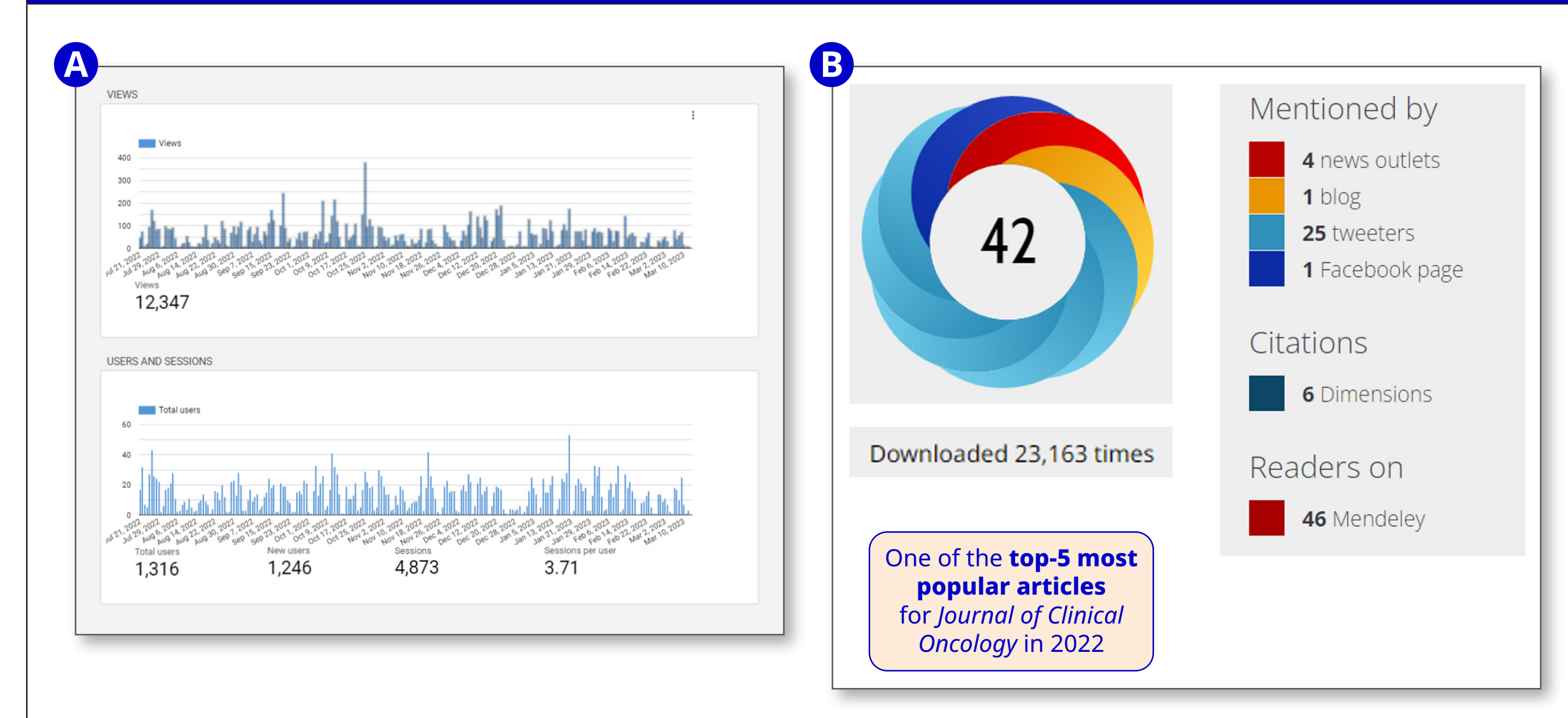


Figure 2. (A) Page views of the dashboard as of March 13, 2023, and (B) Overview of audience attention for the article published in *J Clin Oncol*.



P-REALITY X

The P-REALITY X real-world overall survival study was published in *npj Breast Cancer* along with its associated dashboard in October of 2022²

- The journal allowed for a direct link to the dashboard to be embedded within the results section, as well as in the data sharing statement (**Figure 3A**)
- Additionally, the dashboard was translated into 3 languages for greater accessibility (**Figure 3B**)
- The data visualization dashboard was viewed 1061 times in 5 months, with 593 new users, and an average of 2.44 sessions/user (**Figure 4A**)
- The article in *npj Breast Cancer* detailing the P-REALITY X real-world overall survival study has been accessed over 27,000 times (**Figure 4B**)



Scan this quick response (QR) code with your smartphone app to view the dashboard.

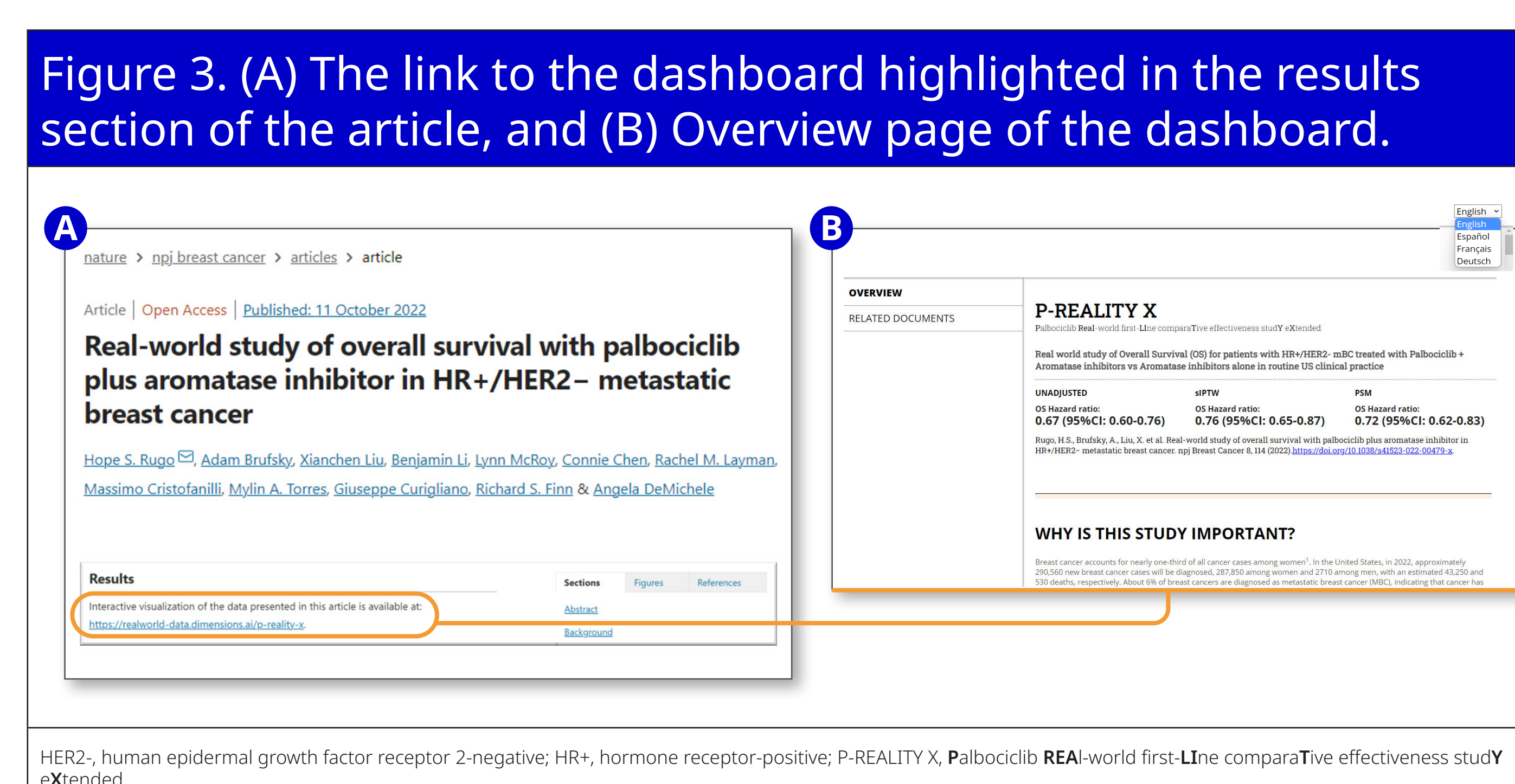
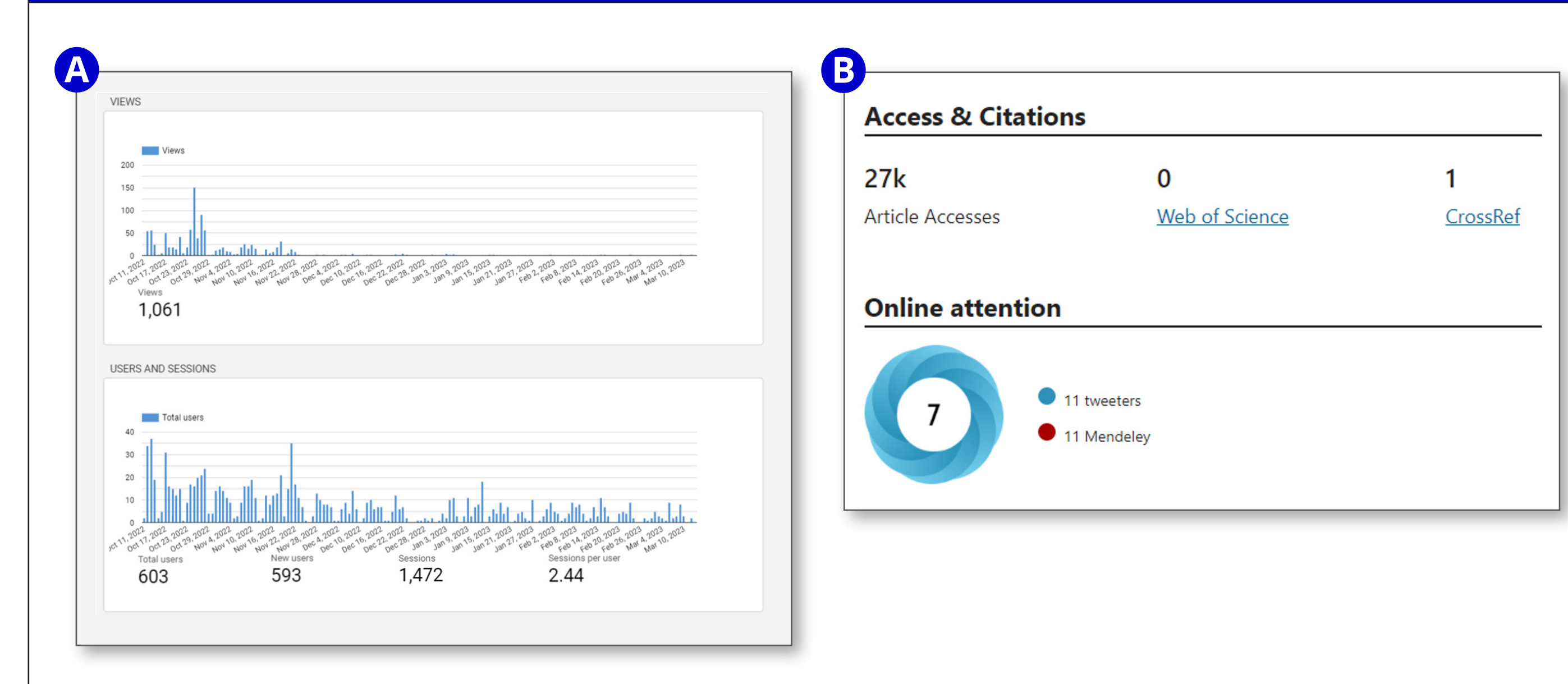


Figure 4. (A) Page views of the dashboard as of March 13, 2023, and (B) Overview of audience attention for the article published in *npj Breast Cancer*.



CROWN

The 3-year CROWN paper was published in *Lancet Respir Med* along with its associated dashboard in December of 2022³

- After multiple rounds of review, the editors requested to remove the link from the manuscript during final revisions
- Subsequently, the dashboard was posted on Figshare, with permission from the journal to link to the final manuscript (**Figure 5**)
- During the first three months after its launch, the data visualization dashboard had 449 views, which included 145 total users, with an average of 2.59 sessions/user (**Figure 6**)



Scan this quick response (QR) code with your smartphone app to view the dashboard.

Figure 5. (A) The dashboard posted on Figshare, with a link to the article and (B) Overview page of the dashboard.

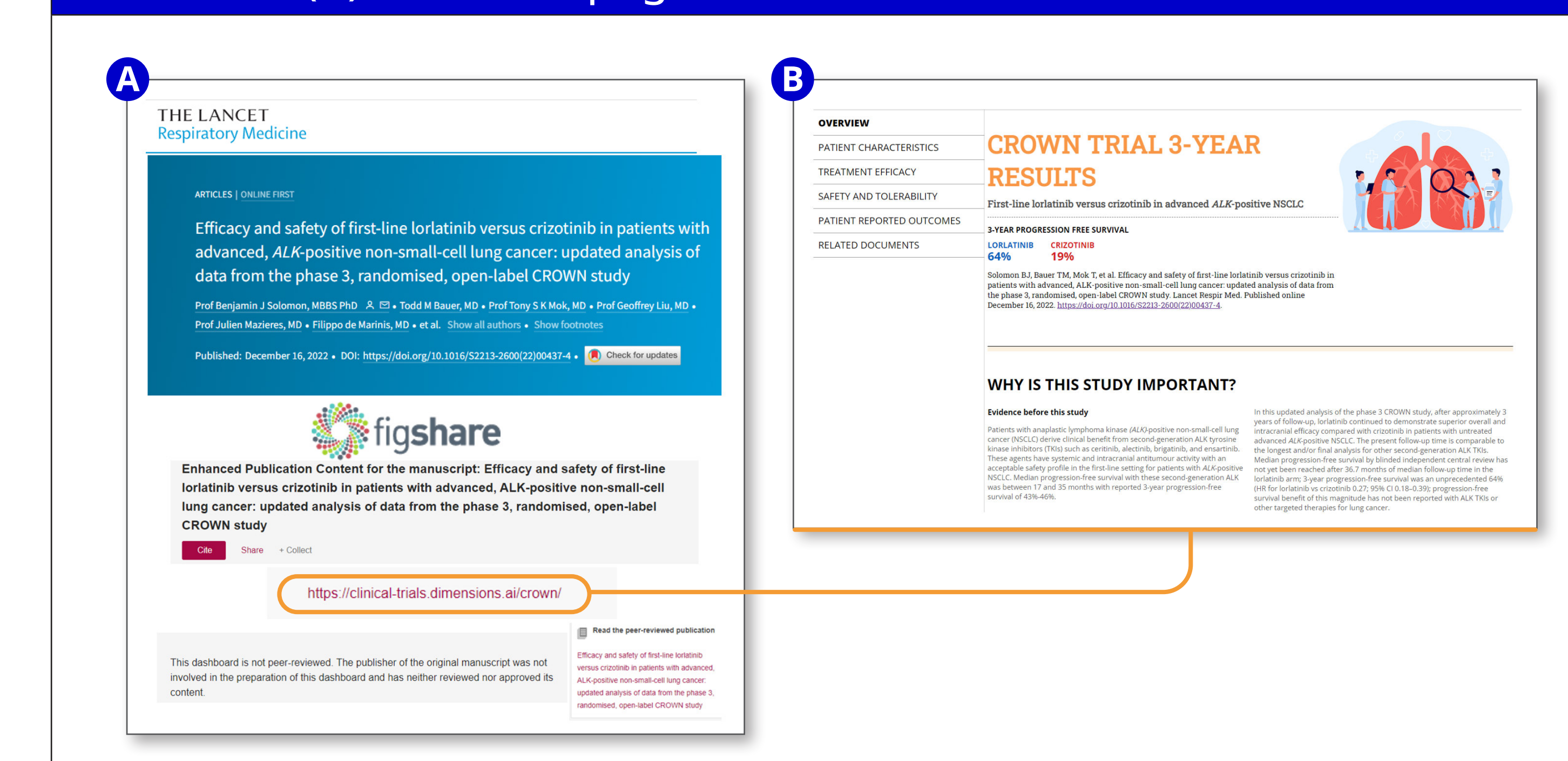
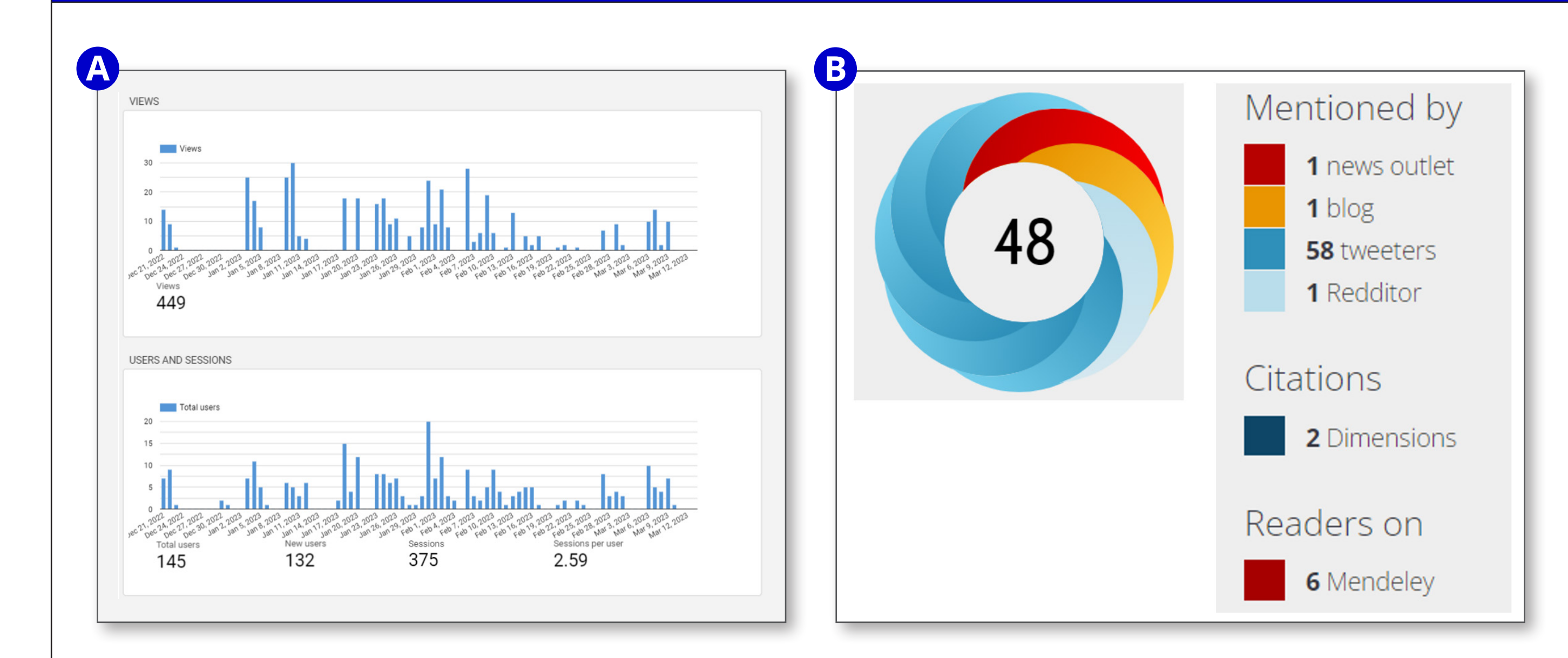


Figure 6. (A) Page views of the dashboard as of March 13, 2023, and (B) Overview of audience attention for the article published in *Lancet Respir Med*.



Best Practices



Discuss data visualization development with authors at the earliest-possible time point



Ensure close communication among all stakeholders responsible for development of the manuscript and dashboard

- Reach alignment on the most appropriate disclosures to highlight on the dashboard, including study sponsorship, development support, and funding statement



Initiate discussions with the target journal about dashboard development, including its location in the article and linking/hosting options, in pre-submission communications

References: 1. Dummer et al. *J Clin Oncol*. 2022;40:4178-4188. 2. Rugo et al. Real-world study of overall survival with palbociclib plus aromatase inhibitor in HR+/HER2- metastatic breast cancer. *npj Breast Cancer*. 2022;8:114. 3. Solomon et al. Efficacy and safety of first-line lorlatinib versus crizotinib in patients with advanced, ALK-positive non-small-cell lung cancer: updated analysis of data from the phase 3, randomised, open-label CROWN study. *Lancet Respir Med*. 2023;11:354-366.

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