The importance of multidisciplinary communication methods: valuing trust when selling the science

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Abstract

This paper outlines science communication strategies which use new media formats such as podcasts and interactive web tools to effectively convey complex scientific information about riparian management and native fish recovery to diverse audiences. The approach uses a multidisciplinary scope which intertwines trust, authenticity, and logic, introducing a social science perspective into our science communication strategies. This method enhances stakeholder engagement, fosters an understanding of environmental issues, and raises awareness, offering a model for broader application in environmental conservation efforts.

Keywords: Restoration, riparian, recovery, Australian, native, fish, communication, communities, recreational, research, science

Introduction

At the Australian River Restoration Centre (ARRC), our mission is to restore rivers and empower others to do the same. Critical to this mission is effectively communicating the latest research, innovation and best practices in riparian restoration and waterway management. Our audience includes a wide range of stakeholders, including state and federal government, catchment management authorities, universities and research bodies, consultancies, landholders, and recreational anglers – anyone who wants to protect and restore Australia's rivers. Whilst science communication is often viewed as secondary to the initial research by academics and their institutions, at the ARRC we believe that the value of research is in effectively sharing it so that it can be understood by different stakeholders and put into practice.

Unlike more traditional approaches in science communication, which tend towards an emphasis on propositional knowledge as the key deliverable, the ARRC adopts a unique methodology that uses a social science perspective in our science communication strategies. This creates communication products which not only deliver key information in a compelling and actionable manner to a wide range of audiences, but which also connect with people's values to encourage further engagement, and crucially, drive more informed decision-making.

The ARRC's communications methodology is influenced by several frameworks, including Frances Frei's Triangle of Trust (Frei and Morriss, 2020) and Simon Sinek's 'Start with Why' philosophy (Sinek,

2009). These frameworks guide us through the process of developing and implementing communication strategies which has allowed us to navigate complex challenges with nuance and agility.

For researchers and waterway managers, effectively communicating complex scientific information for diverse audiences is challenging. In our work with scientists, we have found that they can be bound by a logic or rationale that does not always account for the 'messiness' and complexity of people and their emotions, with an additional tendency to assume that other people's worldviews match their own (Fischhoff, 2018). Not only is there confusion amongst those attempting to communicate, but it is also within the audience about knowing who to trust, and how to interpret the science (Hendriks, Kienhues and Bromme 2016).

Translating science means understanding the needs of those wanting to interpret and act on the science (Fischoff, 2013). One area of river restoration in which the ARRC is deeply invested is the recovery of native fish populations. In the landscape of Australian nature conservation, native fish can be a difficult sell — unlike the koala or the wombat, native fish are rarely seen as iconic Australian wildlife (unfortunately, they aren't quite as cuddly!). This means it can be challenging to secure emotional and financial investment in native fish recovery. This is one instance in which our approach has proven critical, as facts and studies alone have proven unable to catalyse meaningful progress towards improved recovery outcomes, demonstrating empathic communication is essential (Holm, 1997).

The purpose of this paper is to outline how the ARRC's interwoven approach of leveraging social science when communicating biophysical science is the key to the success of our communications products.

Start with Why and the Triangle of Trust

The ARRC's small, skilled team thrives in a collaborative environment, enhancing our ability to integrate diverse skills and perspectives. This structure supports our emphasis on authenticity, as advocated by ARRC Managing Director Dr. Siwan Lovett, who stresses the importance of being 'real and true' to inspire trust and confidence among communities (Lovett, 2021). By balancing the logical rigor of biophysical science with the insights of social science, we craft messages that connect with both the ecological and human elements of our work. This sentiment is embodied in all the work we do, blending knowledge systems that we value to deliver the best science communications — improving the rivers and riparian zones (natural capital), with their interdependent communities, networks, and relationships (social capital).

This strategy not only addresses the 'messiness' of human emotions and the complexity of ecological issues, but also bridges the gap between knowledge and action, making science accessible and actionable for everyone. In every communication product we build, we start by asking ourselves the purpose of the work. By starting with our 'why' as an organisation (Sinek, 2009), we can illustrate Frances Frei's Triangle of Trust, which is evident across all the ARRC's communications endeavours. Frei writes that trust is founded on three pillars; Authenticity, Logic, and Empathy (see Figure 1.). To be a trusted organisation, these pillars need to be interwoven in everything we do, as the following examples demonstrate.

Take Me to the River Podcast

Take Me to the River is a podcast series about sharing stories and inspiring hope with fascinating people who care about their rivers. Beginning in January 2020 as 'Conversations Over a Cuppa', the show now has 28 episodes (April 2024), and has evolved from a short one-person talk show into an engaging interview series focusing on important conversations about Australia's waterways. The show features impactful conversations with a wide range of guests, from First Nations voices Richie Allan, Tanya Keed, Richard Swain, recreational fishers like Andrew McGovern, industry leaders such as the Commonwealth Environmental Water Holder Dr. Simon Banks, and high-profile political guests such as Independent Senator for the ACT David Pocock. The show has become a valuable avenue for discussions about riparian restoration, environmental flows, and natural resource management, as well as connections to Country, sustainability, and environmental science. Due in part to Dr. Lovett's background as an 'undercover social scientist', episodes blend the personal with the professional, providing rich insights into the personalities, motivations, and aspirations of the guests. A strong focus on empathy, connection, and interpersonal relationships underscores each conversation, emphasising qualities which remain necessary aspects of science communications and natural resource management work.

Feedback from listeners reveals that learning more about the guest as a person, rather than their profession, makes this 'environmental' podcast engaging. Listening to other people's stories is empathy in action – the conversations shared through the Take me to the River Podcast shows how different people care for and think about rivers in different ways. As humans our greatest asset is our ability to share knowledge through storytelling, no other species can do this. Storytelling allows us to connect through sharing our 'why' (Sinek, 2009) and establishes the pillar of empathy, a key part of building trust with our audience (Frei and Morriss, 2020).

Since the show's launch, the ARRC has invested in improved pre-production research, production techniques and equipment, and post-production editing for all episodes. In addition, there is a more frequent release schedule to keep our listeners engaged, and detailed show notes with links and resources to accompany each episode. These improvements, along with episodes featuring better-known guests such as Senator David Pocock and Dr. Simon Banks, have contributed to steadily increasing per-episode downloads year-over-year (as compared to the first year of the show's release), indicating significant audience growth and engagement over time (see Figure 2. and Figure 3.). As of June 2024, we have recorded 7,596 downloads across all our episodes since the launch of the show.

Finterest

Finterest.au is an innovative science communications platform dedicated to fostering a deeper understanding and appreciation of Australia's freshwater fish. Initially Finterest was created to be the repository of all the work undertaken through the Murray-Darling Basin Native Fish Strategy (NFS) which ran from 2003 to 2013. The NFS invested in research, practical action and community engagement, and the creation of Finterest ensured the achievements of this decade of investment were able to be accessed in perpetuity. In 2020, the Native Fish Recovery Strategy (NFRS) provided further investment in native fish at a Murray-Darling Basin scale, building on the NFS and continuing to use Finterest as a key communication vehicle.

Finterest aims to bridge the gap between scientific research and the public. The research articles submitted by scientists provide 'logic', one of the three pillars Frei discusses as being required to build trust. Logic is important because it provides people with evidence that, for example, the activities recommended to improve fish habitat are underpinned by science. The website features a plethora of resources including detailed articles, news stories, engaging infographics, and multimedia content designed to make the science of freshwater fish accessible to all. By highlighting the latest research findings, ongoing conservation efforts, and the challenges freshwater ecosystems face, Finterest serves as a critical tool for education and advocacy, empowering readers to contribute to the long-term sustainability and conservation of Australia's freshwater fish.

The Finterest website has launched 16 new articles and 4 email newsletters in the 2023-2024 financial year, recording 28,557 visitors and 86,884 pageviews over the eight-month reporting period. These figures show just how much interest there is in fish, with 90% more pageviews over the year (and increasing), indicating that visitors consistently engage with multiple stories, pages and articles on each visit to the website. Users of the website come from a range of places with 44% of traffic derived organically from search engines, 35% through social content on social media such as Instagram and Facebook, 3% from paid ads and email campaigns, and 18% via direct navigation to the website. A total of 57 Facebook posts directed 10,045 visitors to the site over the reporting period.

Mdb.fish

A significant contribution to the native fish recovery space was the development of a companion site to Mark Lintermans' book Fishes of the Murray-Darling Basin in 2023, a collaboration between Mark, the ARRC and the Murray-Darling Basin Authority through the Native Fish Recovery Strategy. Mdb.fish is an online resource dedicated to the freshwater fish species found in Australia's Murray-Darling Basin. The website shares content from Lintermans' book providing detailed profiles on 63 fish species, both native and alien. Each species profile provides insights into the fish's habitat, biology, distribution, and conservation status, including detailed maps of their distribution and habitat locations. Linterman's book is highly regarded, as there is no other text that brings together up to date freshwater fish species information in both hard copy and online formats.

Aimed at students, researchers, and environmentalists, the site is an unprecedented, freely available educational tool for understanding the ecological dynamics and challenges facing species within the Murray-Darling Basin. This website is a valuable public resource that serves as an accessible hub for information that would otherwise only be available to a niche audience with access to a hardcopy of the book. The site has recorded nearly 11,000 unique users since its launch in May 2023 and 24,000 pageviews, with an average of 1.8 pageviews per session. Most traffic has come from organic search, demonstrating the site's function as a key online resource for public interest and research about native fish species and recovery.

Given the extensive investment made in developing the book and the website, we asked ourselves how we might share it with more audiences? One the most difficult challenges in the native fish recovery space is engaging the many highly diverse segments of the audience in ways that work for each of them.

Alongside our articles, we have a new approach in communicating and raising awareness about native fish recovery through a series of Instagram, Facebook and TikTok videos ('reels'). Sinek finds that, 'people don't buy what you do, they buy why you do it' (Sinek, 2009). We needed a way to convey our 'why' to a younger demographic. Reels are short-form vertical style videos which younger mobile users (Generation Z) process more fluently than older Generations X and Y (Mulier, Slabbinck and Vermeir, 2021).

The reels have over 10,000 views per video across all platforms and have reached over 50, 000 people across all 5 videos (as of April 2024). Additionally, the audience is sharing comments and opinions across most of the reels, often asking questions and/or requesting more information. This demonstrates that the videos have a high level of engagement and watch-time, and more powerfully, that they spark a desire to learn more about this critical conservation space. Both products have their basis in the pillar of logic, yet the adoption of new media forms engage people about their experience giving us 'an authenticity boost' (Frei and Morriss, 2020) and foster trust in a diverse group.

The Forgotten River

In 2020, the plight of the Upper Murrumbidgee River led the ARRC to take on the role of river advocate. The Upper Murrumbidgee River runs through the ACT and past Canberra between Tantangara Dam and Burrinjuck Dam. The legislative framework for ensuring that the Murray-Darling Basin is managed in the national interest explicitly excludes structures operated by the Snowy Hydro scheme, which means that Tantangara Dam can capture more than 90% of the water at the headwaters of the Murrumbidgee River each year, and as much as 99% in dry years. Further, the current rules in place for this part of the river mean that when Snowy Hydro does release water for the environment, these flows are not protected from extraction.

As a part of our advocacy and awareness campaign for the Upper Murrumbidgee, the ARRC conducted a community survey in November through December 2023, which was distributed to residents of the ACT and greater ACT region and received additional responses from across Australia. The survey received over 1,000 responses, with respondents generously contributing their thoughts, feelings, and opinions about the Upper Murrumbidgee.

What was overwhelmingly clear from the results of this survey is that people care deeply for this river, holding strong personal and cultural connections to it. They value the river for providing a range of cultural, social, environmental, and economic benefits, and many respondents had strong personal ties relating to childhood or family experiences. Respondents also made clear their strong opinion that these values must be better considered in the river's current and future management, for the benefit of all who interact with this much-loved part of our Country.

The Forgotten River website has recorded 3,849 unique visitors and 7,014 pageviews since its launch in 2021, with a pageview percentage increase of 220% year over year. However, the campaign has also been covered on the ARRC website and across social media, so these numbers do not accurately reflect the reach of the campaign.

The Forgotten River campaign shows how real-world action, more informed decision-making, and community engagement can result from effective public science communication. In November 2023, ACT Independent Senator David Pocock reached an agreement with the Albanese Government, the terms of which included a commitment to a review of the Snowy Water Inquiry Outcomes Implementation Deed (SWIOID); a rewrite of the Statement of Expectations which governs Snowy Hydro operations; $20 million for catchment health initiatives; $30 million to purchase water for the Upper Murrumbidgee River in times of drought; and $500,000 for First Nations to genuinely have their say and participate in the ongoing management of the river. This landmark outcome brought new hope for the future of the Upper Murrumbidgee River. The success of this campaign can be attributed to its use of all three pillars – empathy, logic, and authenticity - creating a strong and stable structure of trust (Frei and Morriss, 2020). Often, we can have all the facts but ultimately our decisions are influenced by the feeling they foster (Sinek, 2009), stressing the important of giving the community a platform to be listened too. Whilst the river still needs more flows to ensure its long-term health, this critical steppingstone demonstrates that community awareness and engagement works and can bring meaningful change.

Discussion

Each of these products and projects were designed, developed, and produced with the ARRC's signature approach of interweaving social science with biophysical science, emphasising empathy, logic, and authenticity. The result is a range of communication products which are as diverse in their approaches and mediums as they are effective, and which nonetheless share the same core values.

Through the process of producing this diverse range of science communications, we have observed some themes and trends. We know that communicating science effectively requires collaboration from experts who know the subject matter and those who know how people communicate (Fischoff, 2018), however, it is important these groups also make a genuine commitment to listening to community perspectives and engagement (Forbes, 2011).

Whilst some of the article-style content performs well on social media, this content does not encourage the same level of interaction on content such as reels. We often found that our audience commented on posts promoting the article, without clicking the article and reading the content. Sharing the relevant information in-app, however, is a format native to mobile devices, without the viewer having to click away from the social media platform. This means viewers are more likely to digest and engage directly with the information.

Through regular reflection on our communication methods, we choose to actively listen to our audience and meet them on their preferred platforms, and in their preferred formats. By using this reflexive activity, we underscore the pivotal role of effective communication in driving tangible outcomes for both social

and natural capital. By targeting messaging strategies and leveraging new communication platforms, we can enhance stakeholder engagement and foster a shared understanding of complex environmental challenges.

Limitations

As a non-government organisation (NGO) and registered charity under the ACNC, ARRC often "runs on the smell of an oily rag", and this means we are often restricted by funding and resourcing. For example, our reels campaign — although successful — was limited simply by the time allocated to this project (7 hrs). Whilst we are investigating opportunities and pathways for core funding for the organisation going forward, we are largely reliant upon short-term grants and contracts. This operating environment means that we develop, apply, and measure our communications outcomes within this framework. The ability to operate larger communications campaigns over a longer period, free from the dependence upon a specific client or partner, would enable us to achieve milestones and outcomes that are currently out of our reach. Another consequence of this business structure is that client projects can take short-term priority over core initiatives such as the Take Me to the River podcast — this happened in 2021 and is something we are working towards stabilising as the organisation grows.

Additionally, we are limited in our ability to measure the impact of the communications efforts of the organisation as a whole — our communications work is largely fragmented into various projects and signature initiatives, each with their own reporting and analytics apparatus. An avenue for analysing the widespread impact of these initiatives cumulatively would provide further insight into how we might tailor our strategies and products moving forward.

Future Research Implications/Applications

The implications of this work extend beyond the immediate context of river management and native fish recovery, underscoring the critical role of communication in environmental conservation efforts. This work demonstrates how the integration of the social sciences into science communication, and particularly the consideration of social capital as one of the most valuable resources in natural resource management, can lead not only to effective science communication but to higher community engagement, tangible funding outcomes and real on-ground action. This work offers a blueprint for how similar strategies can be applied to engage the public in other areas of environmental science and policy. By enhancing the way we communicate complex environmental issues, we can improve awareness and understanding, inspiring action, and driving positive change for the holistic health our waterways.

Conclusions

In conclusion, the valuing by ARRC of being a trusted organisation, results in an approach that integrates authenticity, logic, and empathy throughout our science communication endeavours. Frei's pillars have been instrumental in developing communication strategies that are not only informative but also resonate

deeply with diverse audiences, building trust and facilitating meaningful interactions. Through authenticity, we ensure our communications are genuine and transparent, reflecting our commitment to truth and integrity in every message. The logic pillar allows us to present complex scientific data in a coherent and understandable manner, which is crucial for informed decision-making. Empathy, perhaps the most critical, helps us connect on a human level, acknowledging and addressing the concerns and emotions of our stakeholders. This approach not only makes our communications effective but also fosters a sense of community and shared purpose essential for collaborative environmental efforts.

By applying these principles, the ARRC has successfully bridged the gap between scientific knowledge and public engagement, leading to enhanced community involvement and proactive contributions to river restoration and conservation. Our methods highlight the transformative power of trust-based communication in science and environmental management, setting a benchmark for others in the sector. As we move forward, continuing to refine and adapt these strategies will be key to sustaining and expanding our impact, ensuring that both our natural and social environments flourish.

Graphics and Figures

Figure 1.

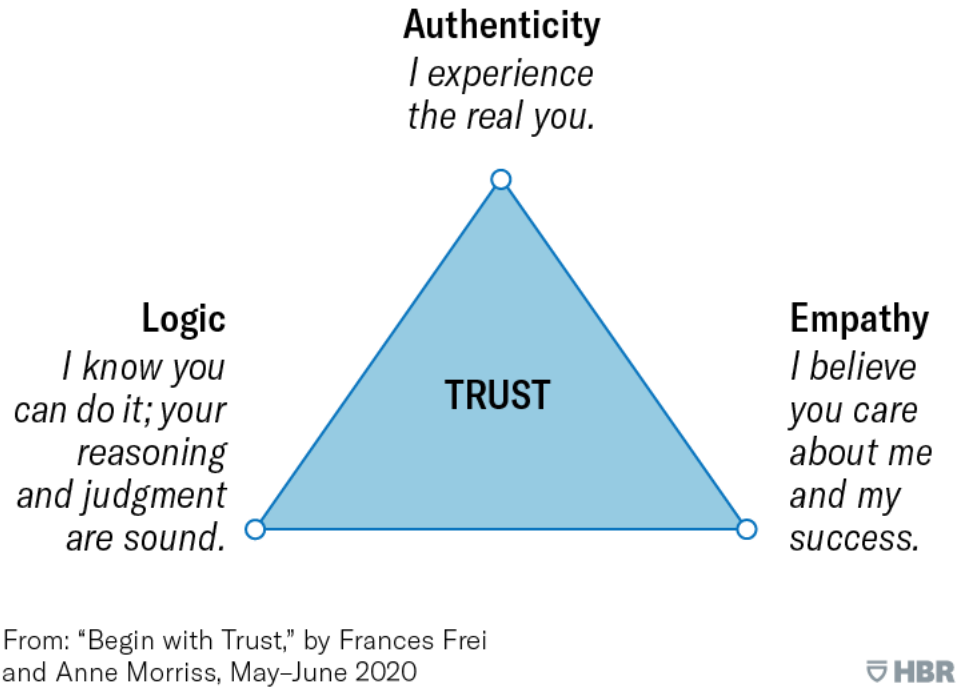
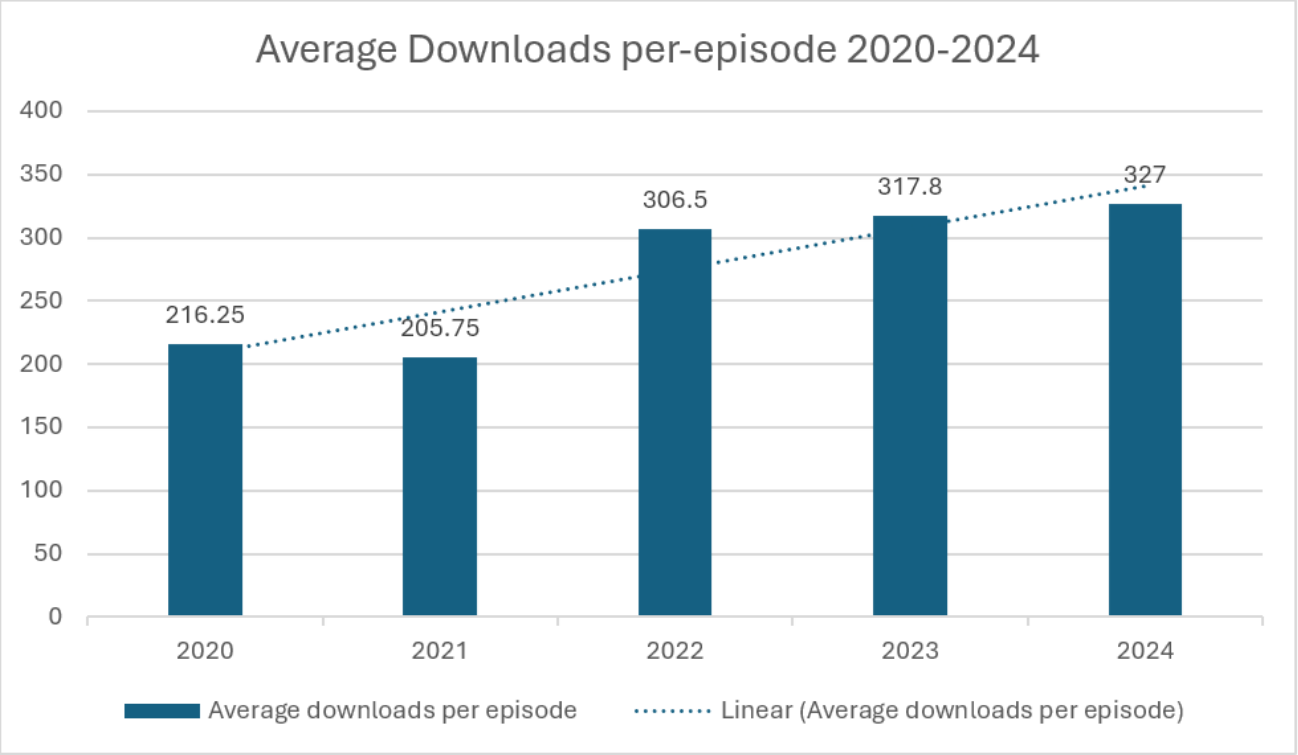


Figure 2.


Average Downloads per-episode 2020-2024
400
350
300
250
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150
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216.25
205.75
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2020
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2023
2024
Average downloads per episode
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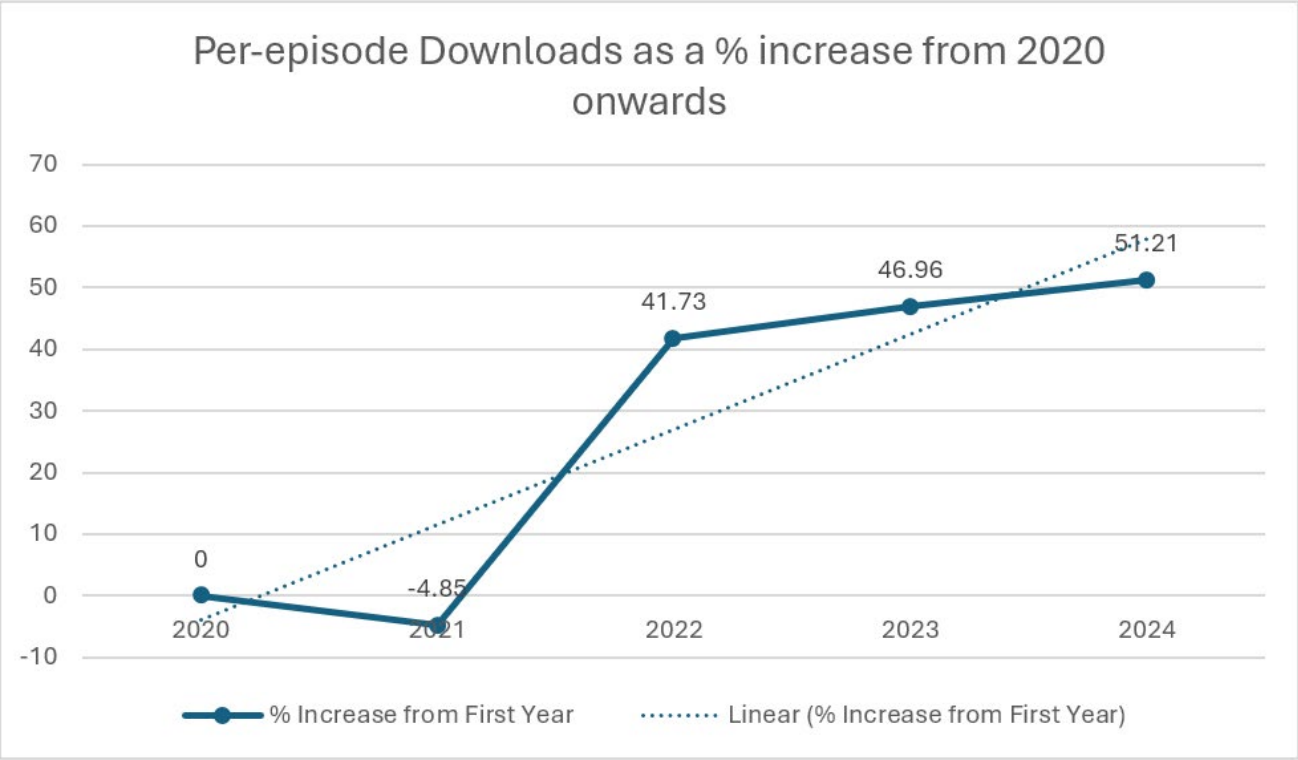
Figure 3.


Per-episode Downloads as a % increase from 2020 onwards
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-4.85
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51.21
2020
2021
2022
2023
2024
% Increase from First Year
Linear (% Increase from First Year)

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