

# If We Immerse Them, They will Come: Can Rural Health Experiences through Virtual Reality have Impact on Workforce Recruitment?

TEGAN PODUBINSKI, Department of Rural Health, The University of Melbourne, Australia

KRISTEN GLENISTER, Department of Rural Health, The University of Melbourne, Australia

HASAN FERDOUS, Centre for Digital Transformation of Health, The University of Melbourne, Australia



Fig. 1. An immersive view of the entrance of a rural hospital to be watched using a virtual reality headset.

Rural Australia has long-standing workforce shortages, which contribute to rural-metro health disparities. This study explored virtual reality (VR) technology as an innovative approach to address the limitations of traditional rural health recruitment strategies. In collaboration with a rural health organisation, we developed an immersive VR experience and trialled it with 44 metropolitan health students and professionals. Participants reported high levels of presence, involvement, and immersion, finding it an engaging way to explore rural life and careers. Key findings highlight VR's efficacy in changing future geographical practice intent, capturing rural attraction themes, dispelling negative perceptions, reinforcing positive experiences, and bolstering confidence in rural integration. Participants valued VR for overcoming challenges in accessing career advice and rural health experiences. They suggested improvements in comfort and interactivity and advocated for expanding the experience. VR emerged as a feasible tool for experiencing rural healthcare settings, supporting efforts to alleviate rural health workforce shortages.

CCS Concepts: • **Human-centered computing** → *Empirical studies in interaction design; Empirical studies in visualization; Virtual reality.*

Additional Key Words and Phrases: Rural Health, Virtual Reality, Immersive Visualisation, 360-Degree Video.

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Authors' Contact Information: Tegan Podubinski, Department of Rural Health, The University of Melbourne, Wangaratta, Victoria, Australia, [tegan.podubinski@unimelb.edu.au](mailto:tegan.podubinski@unimelb.edu.au); Kristen Glenister, Department of Rural Health, The University of Melbourne, Wangaratta, Victoria, Australia, [kristen.glenister@unimelb.edu.au](mailto:kristen.glenister@unimelb.edu.au); Hasan Ferdous, Centre for Digital Transformation of Health, The University of Melbourne, Parkville, Victoria, Australia, [ferdous.h@unimelb.edu.au](mailto:ferdous.h@unimelb.edu.au).

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## 1 Introduction

Long standing rural health workforce shortages contribute to poorer access to healthcare services, under-spend for rural health and poorer health outcomes in rural communities [41]. Existing research suggests that provision of immersive and positive training experiences in rural areas encourages future rural practice [52]. Such training experiences have the advantage of exposing health students and professionals to the rural context and the unique competencies needed to practice in rural communities. This in turn can positively impact attitudes to living and working rurally [52] and increase intention to practice rurally [52]. However, providing rural training opportunities and ensuring those who undertake them are well-suited for rural practice is a significant challenge, often hindered by cost and capacity constraints, including financial barriers and a shortage of experienced supervisors [6]. Second to this, in person training experiences within rural health are primarily reserved for health students undertaking clinical placements, meaning that early-, mid-, and late-career health professionals miss out on this exposure. These challenges lead to problems providing these experiences at sufficient scale and breadth.

Novel technologies, such as virtual reality (VR) could provide tailored and innovative solutions to the challenges of providing immersive rural experiences, on a more scalable level and in a cost effective way. VR is a computer-driven technology that creates a simulated three-dimensional environment that users can fully immerse themselves in and interact with. VR has several benefits over other forms of media, especially regarding its ability to increase engagement and provide a ‘sense of presence’ – the extent to which the individual interacts with the VR environment as if it is reality [14]. Within the travel industry, VR has been used to showcase tourism destinations in an engaging way, and research in this area has found that virtual tourism promotes travel intention [13]. Further, those who go onto travel to the destination they viewed in VR have enhanced experiences [13, 54, 64]. VR has also been used for educational experiences, with one study demonstrating its ability to heighten students’ interest in specific educational pursuits and career aspirations [34]. Thus, VR has the potential to develop interest in rural practice as a future career option, positioning it as a powerful technology for attracting health practitioners to rural areas. It could remove many of the cost and capacity barriers associated with traditional rural training experiences, while still ensuring an immersive experience.

With this in mind, we co-developed an immersive VR rural health experience for health students and health professionals in collaboration with a rural healthcare service in Northeast Victoria, Australia, as a supplementary approach to rural health recruitment. In doing so, we sought to provide an opportunity to experience rural health work in a novel way, dispel negative misperceptions about work in rural health and rural living, and engage local health employees and communities in the promotion of their region, all of which are important to recruiting healthcare professionals to work rurally [11, 22, 62, 63]. In the initial stages of the project, we collaborated with the partnering healthcare service to develop a VR experience showcasing rural health practice and the rural lifestyle. Staff and community members directed the filming but were asked to consider what they would like to show someone who might be considering a rural health career, along with how they personally resonated with evidence-based themes that play a pivotal role in health-workers decisions to practice rurally. A focus was also placed on ensuring diversity of experiences (e.g., different career stages, different disciplines and roles within the health service, etc.). Researchers recorded the footage using a commercial off-the-shelf 360-degree camera. During the editing process, the researchers reviewed all the footage and engaged in reflective discussions regarding what to include in the final cut to ensure thematic cohesion and coverage. Additional filming was undertaken as necessary to fill any identified thematic gaps. Finally, a story-line was crafted to unify the footage, which was then made accessible in VR headsets.

Table 1. Overarching themes to guide the filming and editing process.

Work-related	Lifestyle-related
Having a diverse case load	Attractive physical environment and lifestyle
Ability to work as part of a multidisciplinary team	Availability of social entertainment
Availability of mentoring, supervision, and support	Good café/restaurant/winery culture
Opportunities for professional development and skills building	Sense of belonging to the community
Access to career pathways	Economic opportunities (e.g. availability of jobs)
Friendly, supportive, and inclusive work environment	Access to services (e.g., education, health, and sporting)
Contributing to the health needs in the community	Good infrastructure
Building rapport with clients	Healthy work-life balance
Autonomy	Ability to be involved in outdoor activities
Availability of modern equipment	Proximity to other towns and cities

This study aimed to explore the impact of the VR experience on: (1) engagement and intent to practice rurally, (2) reflection of guiding themes in participant feedback, and (3) potential for scalability for broader audiences.

## 2 Background and Related Works

### 2.1 Guiding theoretical background for filming and editing

Individuals are drawn to rural health careers for a variety of reasons, which can be broadly categorised into work- and lifestyle-related themes (e.g., [9, 11, 12, 26, 38, 50, 57]). These themes play a pivotal role in a health worker's decision to practice in a rural setting. Incorporating these themes into recruitment processes can allow for a nuanced consideration of the "person-environment-fit", evaluating the applicant's compatibility with the job, the organisation, and the local environment [66]. For example, non-local health professionals with an adventurous temperament might actively choose a rural town with exciting outdoor activities [12], while for others, it might be more important to consider opportunities for their spouse and children [58]. Based on the available studies on this topic, and local knowledge of the rural area (two of the researchers are long-term residents of the local town, living and working in Northeast Victoria, Australia), the researchers developed a list of broad themes and messages to guide the process of filming the VR experience. These themes are included in Table 1.

### 2.2 The maldistribution of the rural health workforce

It is widely recognised that the rural health workforce in Australia is maldistributed, with severe health workforce shortages existing outside of the metropolitan areas [12, 41]. While approximately one-third of Australians live rurally, they typically have fewer doctors, specialists, and allied health professionals per capita, which results in limited access to necessary healthcare services [41]. This shortage also leads to Medicare benefits being claimed at a reduced rate when compared to people living in major cities. Consequently, the result is inequitable per-person healthcare expenditure, with individuals in rural and remote Australia missing out on nearly \$850 annually in healthcare access, contributing to an annual rural health under-spend totalling \$6.5 billion [2, 19].

The impact of rural health shortages is profound, directly affecting the health outcomes and wellbeing of rural communities [41]. Limited access to healthcare services results in reduced preventative care, delayed diagnoses, and increased health risks for rural residents [20, 30, 59]. Long travel distances to access healthcare facilities often deter

157 individuals from seeking timely medical attention, exacerbating health conditions and leading to poorer health outcomes  
158 overall [18, 56]. Moreover, the absence of adequate healthcare provision in rural areas contributes to already existing  
159 health disparities, as rural communities struggle with higher rates of chronic illness and risky behaviours, such as  
160 tobacco smoking and alcohol use [41]. These challenges perpetuate a cycle of disadvantage, where rural populations  
161 continue to face barriers in accessing essential healthcare services necessary for their overall health and quality of life.  
162

163 Several factors contribute to the maldistribution of the rural health workforce, reflecting complex systemic issues  
164 within the healthcare sector and sub optimal policies. Key factors include challenges related to recruitment and retention  
165 of healthcare professionals in rural areas, often influenced by inadequate professional development opportunities,  
166 limited career advancement prospects, and isolation from professional and social networks [12, 26]. Additionally, the  
167 geographic and social isolation of rural communities, coupled with insufficient infrastructure and support services,  
168 pose significant barriers to attracting health professionals [21]. These barriers to attracting rural health practitioners  
169 can be both real and perceived. Rural areas are frequently stigmatised and portrayed as inferior and lacking compared  
170 to metropolitan areas, and metro-centric perspectives dominate the media and policy-making [37]. Policy makers  
171 need to critically evaluate how approaches to strengthening and increasing the rural health workforce influence these  
172 perceptions and make impactful change.  
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### 178 **2.3 Current approaches to managing rural health workforce maldistribution**

179 To address the maldistribution of the Australian rural health workforce, several strategies have been implemented,  
180 focusing on both educational and policy-based interventions [42, 44, 51]. The mainstay strategies for encouraging  
181 health professionals to work in rural areas include the preferential selection of rural students for university health  
182 courses and providing training experiences in rural areas. Both have been associated with increased rural recruitment  
183 and retention [51]. However, these approaches face several challenges. For instance, rural training experiences, such as  
184 student placements, can be prohibitively expensive and resource-intensive for all stakeholders involved [5]. Students  
185 undertaking rural placements may incur significant costs, such as accommodation near the host site, travel expenses,  
186 and loss of income due to their inability to engage in regular paid employment during the (typically unpaid) placement  
187 period. Additionally, universities must invest in building relationships with rural communities and healthcare services  
188 capable of providing placements that meet students' training needs, which includes having the necessary supervisory  
189 capacity. Furthermore, while preferential selection of students with a rural background is crucial, these students are  
190 still typically placed in metrocentric training models that offer limited rural exposure, resulting in graduates who may  
191 be less inclined to work in rural settings. It is also important to offer students of metropolitan origin rural exposure  
192 opportunities, as evidence suggests they are likely to consider rural practice if given rural immersion experiences [17].  
193

194 To assist with some of these issues, the Australian Government, through the Rural Health Multidisciplinary Training  
195 (RHMT) program [45], has invested in a National network of Rural Clinical Schools (RCS) and University Departments  
196 of Rural Health (UDRH). This initiative supports the establishment of rural training pathways, which involve medical  
197 and allied health students completing significant portions of their training in rural settings [45]. These programs are  
198 designed to expose students to rural practice early in their careers, thereby increasing the likelihood of them choosing to  
199 work in these areas post-graduation [52]. However, these training opportunities primarily target students, missing out  
200 on early-, mid-, and late-career health professionals who might be interested in rural health if given the right exposure.  
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## 2.4 The role of virtual reality in changing interest and intent

In recent years, the tourism industry has adopted VR as a marketing tool to enrich travellers' experiences before, during, and after their trips. VR's immersive capabilities allow users to experience destinations, attractions and accommodations in a highly engaging manner, profoundly affecting their perceptions, preferences and decision-making processes [13]. The research in this area shows that VR can enhance mental imagery [4, 39, 53, 69], foster a more positive attitude towards the destination [24, 29, 61], and increase the likelihood of visit intent [24, 27, 29, 39, 53, 61]. Furthermore, by offering a virtual tour, potential tourists can better assess the destination's appeal and suitability for their preferences and needs. This detailed pre-visit experience can reduce uncertainty and increase confidence in travel decisions, leading to higher booking rates [25, 53, 69]. VR also plays a role in fostering long-term engagement, with VR tourism experiences leading to higher satisfaction and a stronger connection to the destination, even in the post-vacation period [1, 65]. VR experiences have also been shown to increase revisit intention [39, 64] and intention to recommend [65]. While previous research indicates that individuals with prior destination experience may be less influenced by VR exposure in terms of intention to revisit [53], VR has the potential to augment and enrich existing knowledge, memories, and mental imagery for these consumers [13]. Finally, VR experiences are perceived as authentic [39], with low manipulative intent [55]. Authenticity has been described as a crucial factor impacting both users' perceptions of presence and their satisfaction with the VR experience [40].

One of the primary ways VR changes interests and intent is through its ability to create immersive experiences that capture users' attention more effectively than traditional media, such as websites or two-dimensional videos [8, 13, 31, 32, 36]. Researchers have suggested that this feeling of presence increases the enjoyment of the virtual tourism experience, eliciting a stronger liking and preference for the destination, and boosting the intent to visit [13]. Research on the use of VR for educational experiences also highlights how presence is known to increase the enjoyment of learning activities [32, 33], with enjoyment suggested to affect interest in certain educational pursuits [10, 48]. Where VR has been used to deliver educational experiences, research has demonstrated its ability to heighten students' interest in specific academic endeavours [35, 49] as well as increases in knowledge and academic intent [49].

## 2.5 The potential for virtual reality in the health workforce

While the current literature on VR in rural healthcare recruitment is non-existent (to the best of our knowledge), we believe there is promising potential in its application. VR allows prospective healthcare professionals to virtually step into the shoes of rural practitioners, offering a firsthand experience of the challenges, rewards, and nuances of rural healthcare settings. The immersive exposure could deepen understanding and foster a connection with rural communities and their unique healthcare needs, potentially bolstering interest in rural practice. By realistically simulating daily life in rural healthcare, VR can demystify and destigmatise these environments and make them more appealing, thus serving as a powerful tool to attract and retain healthcare professionals in under-reached rural areas.

## 3 Method

### 3.1 Ethics approval and consent

This research received ethics approval from The University of Melbourne (Project ID: 26916). Written consent was obtained for all participants. The researchers gave each participant a copy of the Plain Language Statement (PLS), provided a verbal explanation, and offered them a chance to ask any questions. Participants were then asked to sign a consent form.



Fig. 2. Sample scenes from the recordings.

### 3.2 Study Design

This study utilised a parallel convergent mixed methods design to concurrently collect quantitative and qualitative data using a pre- and post-survey and semi-structured interviews.

### 3.3 Participants and recruitment

Participants were metropolitan-based health students and health professionals living in Australia (classified according to the Modified Monash Model [43]). Participants were recruited through career-related events. The VR experience was advertised alongside the event, with people who were interested in participating able to book a specific time to complete the research activities.

### 3.4 Data collection

Participants were given a pre-assessment survey (approximately 5 minutes) consisting of demographic characteristics, and questions relating to self-efficacy (an individual's belief in their capacity to act in the ways necessary to reach a specific goal), interest in living and working rurally, intention to work and live rurally, and outcome expectations (expected results of a particular action) of living and working rurally (see appendix A). Following this, each participant was given a VR headset (Meta Quest 2) and asked to view (Figure 2) the VR experience (approximately 30 minutes). They then underwent a post-assessment survey (approximately 5 minutes) repeating all the pre-assessment measures except for demographics. They also answered questions related to their experience of feeling attached to and belonging to the place shown in the VR experience and completed a questionnaire measuring presence in virtual environments (Presence Questionnaire [67, 68]; see appendix A). A Presence Scale Score was calculated as the sum of all responses with reverse coding of relevant questions as appropriate. A subset of participants took part in a semi-structured interview focused

Table 2. Characteristics of participants.

<b>Age, M (SD)</b>	25.7 (5.7)
<b>Gender, n (%)</b>	
Male	8 (18.2)
Female	36 (81.8)
<b>Student Status, n (%)</b>	
Currently studying	42 (95.5)
Currently not studying	2 (4.5)
<b>Career Stage, n (%)</b>	
Early career/studying (less than 10 years' experience)	39 (97.5)
Mid-career (10-20 years' experience)	0
Late career (more than 20 years' experience)	1 (2.5)
<b>Discipline, n (%)</b>	
Medicine	13 (29.5)
Nursing	4 (9.1)
Allied Health/Public Health/Biomedicine	27 (61.4)
<b>Residential Location [43], n (%)</b>	
Metropolitan areas (MM1)	40 (95.2)
Regional centres (MM2)	2 (4.8)
<b>Rural Origin, n (%)</b>	
Yes	10 (22.7)
No	34 (77.3)
<b>Previous Rural Student Placement, n (%)</b>	
Yes	14 (31.8)
No	30 (68.2)
<b>Previous Rural Work Experience, n (%)</b>	
Yes	3 (6.8)
No	41 (93.2)
<b>Previous Rural Work, n (%)</b>	
Yes	1 (2.3)
No	43 (97.7)

on exploring their experience of the VR experience, and the impact it had on them (approximately 10 minutes; see appendix B). The inclusion of questions in the survey was guided by theoretical frameworks regarding career decision making and rural health workforce recruitment [3, 23, 28].

### 3.5 Analysis

Quantitative data were analysed using a combination of descriptive and inferential statistics. For descriptive analysis, categorical variables are presented as frequency (n) and percent (%), while continuous variables are presented as mean (M) and standard deviation (SD). The non-parametric Wilcoxon Signed Rank test was used to test two sets of scores from the same participants (i.e., geographical location of intended practice before and after watching the immersive VR

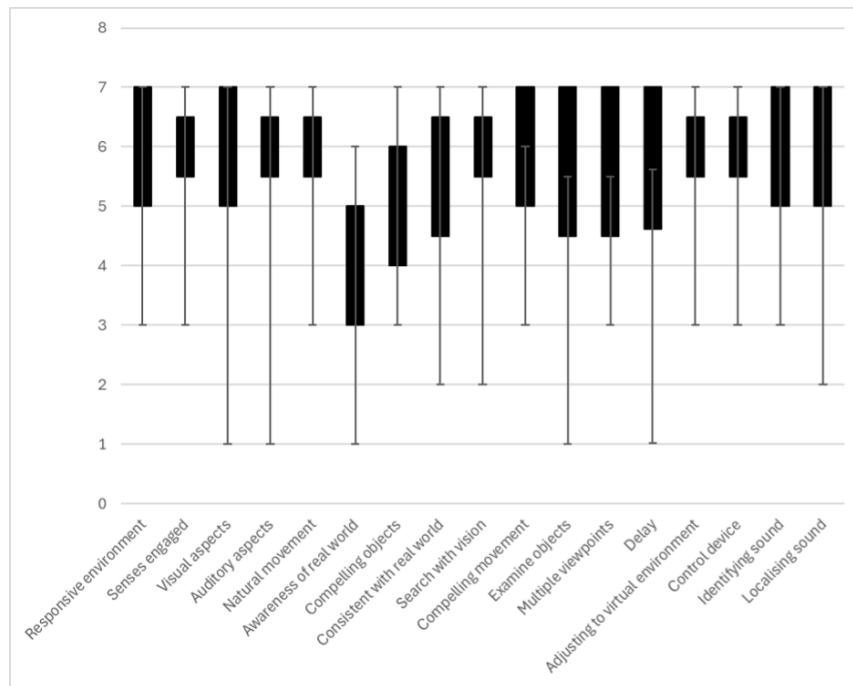


Fig. 3. Box-plot for the answers on the Presence questionnaire.

experience). A subset of questions from the full pre- and post-surveys were used in this analysis, chosen based on the research questions.

Interview data were subjected to an iterative process of reflexive thematic analysis, with a mixture of both inductive and deductive approaches. The analysis of the data followed a guide introduced by Braun and Clarke [7], which outlines a 6-step procedure to good thematic analysis. The approach by Tulip et al. [60] was also used as a guide in the analysis. In the first instance, interviews were transcribed using Otter AI<sup>1</sup> and checked for accuracy by the researchers. Multiple readings were undertaken of printed versions of the transcripts, with initial codes noted down. Transcripts were then uploaded to NVivo, where initial codes were generated. These codes were then collated into preliminary sub-themes and then themes as coding progressed. These themes and sub-themes were reviewed and refined, with ongoing analysis aiming to refine the specifics for each theme and generate clear names for each theme. Verbatim quotations were used to exemplify the themes identified. Results from the quantitative and qualitative analyses were integrated in the discussion [15] and related back to the research questions and existing literature.

## 4 Results

### 4.1 Survey results

A total of 44 students participated. Their demographic characteristics are shown in Table 2. Table 2 shows that most participants were female (81.8%), predominately studying (95.5%), and primarily from the allied health sector (61.4%). Most participants lived in a metropolitan area (95.2%), with few having a rural background (22.7%). Additionally, a

<sup>1</sup><https://otter.ai>



417 limited number had experienced rural placement (31.8%), rural work experience (work undertaken for learning; 6.8%),  
418 or rural work (work undertaken as a qualified health practitioner; 2.3%).

419 Figure 3 shows a summary of the result of the presence questionnaire. These results show strong positive responses  
420 to each of the individual Presence Scale score items, with the exception of awareness of the real world, which showed a  
421 range of positive and less positive responses.

422 A Wilcoxon Signed Rank Test revealed that a statistically significant change in the geographical location of intended  
423 practice followed viewing of the immersive VR experience  $z = 2.754, n = 44, p = 0.006$ , with a medium effect size  
424 ( $r = 0.294$ ). The median score prior to immersive VR experience was 1.00 (median indicative of practice in a metropolitan  
425 area) and this increased to 2.00 post viewing the immersive VR experience (median indicative of practice in an inner  
426 regional area).  
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429

## 430 4.2 Interview results

431  
432 A total of 27 people were interviewed following the completion of their post-survey (referred to as Interview 1-27 below).  
433 Interviews ranged from 6 to 23 minutes in length (average 10 minutes). Following reflexive thematic analysis, four key  
434 themes and nine sub-themes were developed. Themes and sub-themes, and their associated meanings are shown in  
435 Table 3.  
436

### 437 4.2.1 Overall perceptions of the virtual reality experience. **An immersive, engaging, and authentic experience:**

438 Participants described the virtual reality experience as immersive, enabling them to envision life in a rural community  
439 along with a rural health career. They felt that the experience gave them the ability to see, feel and sense the environment  
440 holistically. They particularly valued the emphasis on lifestyle, as an addition to the career aspect:  
441

442  
443 “I think it was a quite a broad experience of what it would be like in [rural town], instead of just showing,  
444 you know, the health care aspect, because obviously, health care is part of living there if you’re going to  
445 work there, but obviously, you want to know what the actual environments like and the people you’ll  
446 be around.” (Interview 1)  
447

448  
449 Participants thought that the experience held their focus throughout, allowing them to actively explore the environ-  
450 ment. In general, they found it more engaging than a two-dimensional video, as it required their full attention and  
451 prevented disengagement:  
452

453 “I think it was definitely more engaging than watching a video of the same thing, especially because I  
454 couldn’t disengage myself, I would actually have to pay attention. And looking around at the people  
455 also made it quite engaging.” (Interview 8)  
456

457 One participant expressed feeling like they are an outsider when they watch a two-dimensional movie, where the  
458 world on the screen seemed disconnected from their own. They found that the immersive 360-degree nature of VR  
459 allowed them to feel like they were really in the rural town, and a member of the community:  
460

461 “And in that kind of experience really gave me the sense of like, I am here, totally in this environment.  
462 I’m not the outsider. I’m totally one of the people here in this in this town, in this rural area.” (Interview  
463 18)  
464

465 Additionally, participants appreciated the authenticity and natural feel of the experience, noting that the experience  
466 felt less scripted and more genuine, rather than a polished advertisement.  
467  
468

Table 3. Themes, sub-themes, and associated description.

Themes	Sub-themes	Description
Overall perceptions of the virtual reality experience	An immersive, engaging, and authentic experience	Participants found the VR experience highly immersive and engaging, enabling them to envision life and a health career in a rural community with authenticity, which they felt was more captivating than traditional two-dimensional videos.
	A convenient way to have a rural health experience	Participants found the experience convenient and accessible for understanding rural life and health careers without needing to travel.
Rural recruitment themes captured in the Virtual Reality experience	–	Participants spontaneously identified relevant rural attraction themes, which helped to dispel negative preconceptions about rural living and healthcare.
Impacts of viewing the Virtual Reality experience	Challenging preconceived ideas	Participants found the VR experience effective in challenging their negative preconceptions about rural living and healthcare, positively influencing their views on rural hospitals, healthcare opportunities, available resources, and lifestyle similarities with metropolitan areas.
	Reinforcing previous experiences	The experience reinforced participants' positive past rural experiences, effectively conveying rural life and healthcare, and sparked greater interest in exploring rural opportunities.
	Being able to visualise myself "in place"	Participants found the VR experience helpful in imagining themselves in both the town and hospital, which enhanced their sense of connection and potential. Integrating the VR footage with their own career and lifestyle aspirations provided a realistic depiction of what it would be like to live and work in the rural community.
	Reducing anxiety about a rural health experience	Participants found that visualising the town and hospital setting through VR made the idea of a rural lifestyle less intimidating, easing their anxiety about moving to or working in such an area. They felt more comfortable and confident about experiencing rural health firsthand.
Future considerations	Usability considerations	Most participants enjoyed the VR experience but noted areas for improvement, including comfort issues with the headset, technical concerns like sound clarity and scene transitions, and a desire for more interactive elements in the footage.
	Filling a gap in rural experiences	Participants found the VR experience valuable for overcoming challenges in accessing accurate career advice and bridging gaps for those unable to undertake rural placements.
	Market segmentation and tailored content	Participants felt the VR experience should broaden its focus beyond medicine, nursing, and physiotherapy to include diverse allied health professions, while also highlighting its potential for showcasing different healthcare environments in recruitment strategies across career stages.

521 **A convenient way to have a rural health experience:** Participants described the experience as a convenient way to  
522 understand what living in a rural area, and working in rural health, would be like, without “*actually having to travel*  
523 *and go there*” (Interview E). They appreciated that the experience was easily accessible and provided an opportunity to  
524 better understand the environment, noting that it would be hard for everyone to have a similar in-person experience.  
525

526  
527 **4.2.2 Rural recruitment themes captured in the Virtual Reality experience.** Participants spontaneously discussed the  
528 themes that the researchers had aimed to include in the final VR experience. They emphasised aspects such as availability  
529 of modern equipment, opportunities for professional development and skills building, attractive physical environment  
530 and lifestyle, and a sense of community belonging, although participants also mentioned most other themes:  
531

532 “Well, I mean, as I was sitting [in the VR experience], I was looking around, I just felt like a really strong  
533 sense of community.” (Interview 24)  
534

535 These themes were instrumental in participants’ discussions, as they helped dispel preconceived, negative notions  
536 about rural living and pursuing a career in rural health. For example, participants were surprised by how well-equipped  
537 and modern the partnering rural hospital’s infrastructure was, and picked up on an approach to healthcare that centred  
538 the needs of the community, which was seen as different to metropolitan-based healthcare:  
539

540  
541 “What struck me in particular was when they said that role is a bit more like tight knit, where like, they  
542 care about the community. I think it was in the last bits of the video that they said, in the metro, you  
543 know, they’re very quick [with their patient care], and they don’t really think about like things in a  
544 community setting and how it impacts the community. So yeah, that has changed, like my perception, I  
545 think, like, like, the differences in how healthcare is being approached in regional versus, I mean, rural  
546 versus Metro.” (Interview 11)  
547  
548

549 **4.2.3 Impacts of viewing the Virtual Reality experience . Challenging preconceived ideas** Participants found the VR  
550 experience particularly effective in challenging their negative preconceptions about rural living and pursuing a career  
551 in rural health:  
552

553 “I think it debunked a lot of things that I was expecting about the rural health experience itself.” (Interview  
554 19)  
555

556 Participants reflected that the VR experience positively influenced their perceptions of rural hospitals, healthcare  
557 opportunities, available support and resources, and isolation in rural living. Some noted that they were surprised by  
558 the hospital’s appearance, adjusting their views on rural hospitals lacking resources and capacity for diverse cases.  
559 Interestingly, some felt more confident referring patients back to rural hospitals, visualising the care they could receive  
560 post-metropolitan treatment:  
561

562  
563 “But obviously, you see patients transferred in from country towns here [metropolitan area], especially.  
564 And so you’re like, Oh, well, they’re here, because, you know, they can’t do it there... It’s in your mind  
565 that these people might need some extra help accessing services, accessing specialists. And I think  
566 COVID in terms of telehealth accessibility has really helped and in a way, but you’re not sending them  
567 home to nothing, like there’s an amazing service there that will be able to follow up and they’ll be able  
568 to have that, that follow up care. And it’s nice to be able to picture that, as much as someone can tell  
569 you it’s there, seeing it is different, I think, yeah.” (Interview 3)  
570  
571  
572

573 Participants also highlighted lifestyle similarities between rural and metropolitan areas, noting access to facilities  
574 and social activities that they previously associated only with metropolitan areas. These new ideas had the benefit of  
575 making them feel more motivated about exploring a rural health career, and allowed them to picture themselves in a  
576 rural town:  
577

578 “What I liked was the interviews with people working there, I really liked it, hearing their point of  
579 views, and they asked for the career trajectory. That was nice to see like, what do they do to get there  
580 and what they’re learning, and also the prospects. So they say that they are - here’s one of the things  
581 that I still makes me a bit hesitant to go to the rural areas is career prospects, It’s like what are the  
582 opportunities there – so yeah, after watching the video, it was a bit more motivated.” (Interview 23)  
583  
584

585 Many of these assumptions were based on anecdotes shared by others who had had negative rural experiences, along  
586 with participants previous rural experiences and understandings, which were not necessarily formed in Australia:  
587

588 “So, I come from a very small city in China, and the rural places in that in that region are very under  
589 development. So, I kind of feel like I don’t want to go to rural places like that because everything  
590 there is so under development, and the houses are very tiny and small, and especially when you go  
591 to the hospitals in the rural places, the hospital, the equipment in the hospital are very limited and  
592 the environments of the hospital are not as satisfied. So, when I think about, when I think of the rural  
593 places in Australia, I can’t, I kind of like, using my past experiences in China to imagine what kinds of  
594 places it will be in Australia. This video totally changes that.” (Interview 18)  
595  
596

597 **Reinforcing previous experiences:** Some participants drew from their childhood or past rural placements to inform  
598 their perspectives. Where these reflections were positive, the VR experience reinforced and solidified their existing  
599 understanding of rural life. They noted that the footage aligned well with their previous experiences and believed it  
600 would effectively convey to others what practicing and living in a rural health setting is like. This rekindling of their  
601 experiences also sparked a greater interest in exploring rural opportunities:  
602

603 “Like I said before, you know, I went to [rural town] for my placement. So yeah, I had a very positive  
604 experience engaging with, you know, the video and just brought back very good memories of the time I  
605 had there... I would say my experience on my placement was overall very positive. So obviously, it  
606 made me, I always had an interest since that placement, but yeah, it’s brought back oh perhaps I might  
607 want to explore that a little bit more.” (Interview 27)  
608  
609

610 **Being able to visualise myself “in place”:** Participants expressed that the VR experience enabled them to visualise  
611 themselves in the town and hospital, fostering a sense of personal connection and possibility. They found it particularly  
612 helpful to integrate the footage with their own ideas about the lifestyle and career they wanted, enhancing their  
613 conceptualisation process. This ability to visualise themselves in the environment and listen to the perspectives of  
614 others provided a realistic and immersive depiction of what it would be like to live and work in the town:  
615

616 “Like I felt, like I could find, I could do something in that community. I felt that I could probably  
617 participate in doing whatever they, whatever I would be choosing to do. I know I want to go into  
618 healthcare, but I feel like I could see myself being able to work in that environment in the future, or  
619 study.” (Interview 14)  
620  
621

622 **Reducing anxiety about a rural health experience:** Participants mentioned that being able to visualise the town  
623 and hospital settings made the idea of a rural lifestyle feel more familiar, and less intimidating and daunting. It helped  
624

ease their anxiety about potentially moving to or working in a rural town, and made them feel more comfortable and confident about the prospect of having an in-person rural health experience:

“I feel like more comfortable with trying it out. I think I was definitely more anxious at first because I was just like, afraid of it, I don’t know, it being a big change from going, you know, from like a really large city to, you know, a rural area. But it made me feel better about trying it out.” (Interview 20)

One participant mentioned that one of their peers had recently had a negative experience with a rural placement, primarily due to a lack of information about what to prepare for, rather than the placement itself. While this anecdote had made them hesitant to have a rural placement experience, they spoke about the VR experience changing their thoughts about a rural health career in a positive way and felt that the VR experience could help others by providing essential information prior to a placement, thereby making them feel more comfortable and prepared (Interview 16).

**4.2.4 Future considerations. Usability improvements:** Most participants enjoyed the VR experience but suggested a few areas for improvement when pressed. Some found the headset to be a bit heavy on their heads, which affected their comfort levels during the viewing session. Some pointed out technical issues such as poor sound clarity in the final footage and editing between scenes not being as smooth as they would like. Interestingly, for one participant, this lack of smoothness helped with their engagement:

“Especially because, I think because it was unexpected, and it added to the immersion. And also because I think maybe it’s something that’s not really used in a lot of the gaming was like, the location of the sound like, when you had the video there, and someone was talking, and I could tell it was behind me, and then you can turn around and then watch the person talking behind you.” (Interview 1)

Some participants expressed a desire for a higher level of interaction with the footage, wanting more immersive and interactive elements with increased user input:

“I would like to, like, engage more interactive actions, like, I’m the one like, like, from a first-person perspective. And, like, there is some like, interaction with the other participants and like, when they were showing the room that is useful, like nursing and medical students to know how to do like, injection or something, and I would like to, like, try a bit about the like, stuff so that I can know. Because I, even though I was able to move around, but I couldn’t like touch them... And you know, like, just have a look at the whole setting.” (Interview 16)

**Filling a gap in rural experiences:** Participants discussed the usefulness of the VR experience in bridging gaps for students and health professionals seeking rural exposure. One participant highlighted the challenges for undertaking a rural placement at her current career stage due to existing family responsibilities but expressed a desire for information that would help her consider a rural career. She found the VR experience invaluable as it allowed her to envision what a rural career might be like, and saw it as a helpful alternative for those unable to undertake a rural placement during their degree:

“I think for those people that like myself that that can’t commit to doing that rural placement, I think it would be really helpful, yeah, as sort of in lieu of that rural placement. So not to opt for I know, I want to do a virtual sort of placement rather than rural placement. Like I think it’s really important to, you know, obligate students as much as possible to do a rural placement. But for those students that really can’t, I think it would be, I think it would be really beneficial to have that kind of an experience where it is accessible to them, it is something they can do, and they can get some insight into what it’s like,

677 and have in the back of their mind okay it's not for me right now but you know, I have a whole career  
678 ahead of me and at some point it might be something I want to do." (Interview 13)  
679

680 Participants also highlighted the challenges of obtaining advice about rural health careers from peers and professionals  
681 in the field. They noted that such advice often comes in the form of anecdotes from their peers who have had a rural  
682 health opportunity or their own investigations, and it was difficult to obtain up to date and correct career guidance.  
683 This information was viewed as being difficult to access if they did not know whom to approach, or they felt they were  
684 wasting someone's time by approaching them. The VR experience was seen as a valuable proxy for connecting with  
685 professionals practicing in the areas or jobs they were interested in. One placement coordinator also spoke about how  
686 valuable the VR experience would be to their role:  
687  
688

689 "I think it probably enhances my, it has helped with enlightening what it would be like doing a rural  
690 placement because the only information I've gotten about doing a rural placement or doing work in a  
691 rural area was more so anecdotes, or just what people have heard from another person as well. So, this  
692 did open up being able to actually fully immerse myself more than usual, into what it might be like  
693 working rural... It made me more inclined to consider it more seriously." (Interview 14)  
694

695 **Market segmentation and tailored content:** The VR experience was perceived as being primarily focused on  
696 medicine, nursing, and physiotherapy, leaving out many other allied health professions. While participants appreciated  
697 seeing the work of these disciplines, they expressed a desire for a more comprehensive understanding of the diverse  
698 range of healthcare professions and the roles they play within the healthcare system:  
699

700 "I think like, generally, it's more focused on nursing and doctors and physio, and you're not sure about  
701 the other aspects of allied health?" (Interview 11)  
702

703 One participant expressed a desire to see what it would be like to work at the hospital on a bad day, when things  
704 were more stressful, and resources were more strained. They thought this information would help them to prepare:  
705

706 "Anywhere can look good if you kind of pick the best bits. And you know, obviously it makes sense  
707 because they're trying to advertise and but, you know, part of me if I'm going to want to work there, if  
708 anything... I kind of want to know what's it gonna look like on a bad day, if anything, because that's  
709 probably what I'm a bit more worried about what I want to kind of prepare myself for. So, I think  
710 something like that would definitely help... what access to help and assistance do you have at any  
711 given time, how far away [is that assistance], where's the nearest tertiary hospital that you can transfer  
712 somebody to, what services are available or is it just depending on who's visiting on what particular  
713 day of the week?" (Interview 2)  
714  
715  
716

717 Many participants spoke about the helpfulness of the VR experience in terms of a broad recruitment strategy, where  
718 you could look at different disciplines, workplaces and geographical locations at any point in your career:  
719

720 "You're like, okay, where, you know, where would I consider moving to? When do you consider moving  
721 to places that you've heard about, you know, or, you know, places where people, you know, live?  
722 And so, that would be really helpful for what, what are the possibilities out there? And yet, not just  
723 Victorian, like, you know, Nationally, what are the possibilities? And then looking yeah, via your specific  
724 profession, what that looks like, Yeah, I think that would be, that would be amazing, and to be able to  
725 access it at any point in your career not just when you're a student, I think that would be incredibly  
726 helpful as well." (Interview 13)  
727  
728

## 5 Discussion

This study aimed to explore important aspects of the impact of viewing a VR experience designed to provide a unique opportunity for participants to experience what it might be like to live rurally and have a rural health career.

### 5.1 Impact on engagement and intention to practice rurally

One of the primary objectives of this study was to explore the impact of the VR experience on engagement and intent to practice rurally. The results indicated a noticeable shift in participants' intended location of future practice, from a metropolitan area towards considering practice in inner regional areas post-experience. This finding aligns with the existing VR and tourism literature, which had demonstrated that tourism via a virtual reality experience increases travel intention and purchasing decisions [13]. Similarly, the VR and educational decision-making literature has highlighted how VR experiences can increase interest in specific educational topics [34].

The results from the presence questionnaire revealed that the VR experience successfully allowed participants to feel as though they were in the rural town and work environment, even though they were physically located elsewhere. This included factors influencing their level of involvement (i.e. how well the VR experience attracted and held participants' attention) and immersion (i.e. how much participants felt they were in the simulated environment [68]). While participant responses were mixed as to how aware they were of events occurring in the physical world, this is only an issue when attention is diverted away from the virtual experience [68]. For this study, participants reported that the VR experience held their attention, and was more engaging than 2-dimensional media, indicating that their awareness of the physical world did not greatly impact presence. Participants also noted that the immersive and engaging nature of the VR experience allowed them to envision a rural lifestyle and rural health career more vividly than other forms of media, with many being able to visualise themselves living and working in the rural town. This enhanced participants' sense of connection to the rural community.

Collectively, these findings suggest that the immersive nature of the VR experience contributed to a broader appreciation and contemplation of rural practice environments, making the prospect of rural practice more attractive. While this study is unable to determine the mechanism by which this occur, drawing from tourism literature in this area (e.g. [4, 13, 46, 61]), it is possible that the feeling of presence in the VR experience led to favourable mental imagery and attitudes towards the rural town and healthcare setting, which in turn increased the intention to live and work there by participants.

### 5.2 Participant reflections on guiding themes

The themes guiding the filming and editing of the VR experience were intended to showcase the various aspects of rural health practice and lifestyle that influence rural health recruitment and retention [11]. Participant feedback reflected these themes accurately, highlighting access to modern equipment, professional development opportunities, lifestyle attractiveness and community integration. These themes effectively challenged preconceived negative notions about rural living and healthcare careers, positively influencing participants' perceptions of rural health and rural communities and fostering greater interest in rural health opportunities. This contributes to the body of literature that outlines the career and lifestyle factors that influence individuals to live and work in rural areas [9, 11, 12, 26, 38, 50, 57], suggesting that these themes should be integrated into rural health recruitment efforts. Importantly, this study employed a place-based approach, embedding these themes with community involvement that specifically addressed the unique circumstances of the rural hospital and town depicted in the VR experience. Place-based recruitment strategies are vital

781 because they tailor recruitment efforts to the specific cultural, economic, and social contexts of rural areas, and allow  
782 potential candidates to consider how they would fit within this larger environment [16].  
783

784 Additionally, participants noted that many aspects of rural health practice were not significantly different from their  
785 metropolitan experiences. Participants saw the rural hospital as like the ones they had experienced in larger cities, and  
786 they believed they could maintain a comparable lifestyle. This observation underscores a metro-centric perspective  
787 prevalent in career decision-making, where metropolitan standards are the benchmark against which rural environments  
788 are measured. This bias likely plays a key role in perpetuating workforce shortages and health inequalities in rural  
789 areas [37]. Recognising and addressing this perspective is essential for developing effective recruitment strategies that  
790 emphasise the unique benefits and opportunities of rural health practice.  
791  
792

### 793 **5.3 Broader implications for rural health recruitment**

794  
795 This project has broader implications for rural health recruitment. Overall, participants enjoyed the VR experience, and  
796 saw it as a feasible and acceptable way to have a rural health experience. They found it to be an accessible method for  
797 experiencing rural healthcare settings. Rather than replacing in-person experiences, some participants viewed VR as  
798 bridging a gap for those unable to undertake in-person rural placements. Thus, this approach might help to open rural  
799 experiences to a greater number of people, mitigating many of the cost and capacity barriers that limit participation in  
800 rural health placements and opportunities [6, 47]. Additionally, participants reflected that the VR experience reduced  
801 anxiety about having a ‘real-life’ rural experience. According to the VR and tourism literature, this could enhance  
802 subsequent in-person rural experiences [13, 54, 64]. Given positive rural experiences are related to future intent to  
803 practice rurally [52], this could improve the outcomes of in-person experiences. Second to this, participants found that  
804 the VR experience reinforced positive rural experiences. This is a finding that needs further investigation given the  
805 VR and tourism literature suggests those with prior destination experience may be less influenced by VR exposure in  
806 terms of intention to visit [53]. It is possible that by continually exposing participants to these favourable experiences,  
807 participants mental images are enriched and reinforced, helping to maintain and strengthen their interest in rural  
808 health practice, and ultimately contributing to a more stable and committed rural health workforce. Finally, participants  
809 expressed that the VR experience was authentic. This is an important finding given the significance of authenticity in  
810 VR experiences for enhancing presence and satisfaction with the simulation [40]. Showcasing rural areas authentically,  
811 and based on local knowledge and experience, could also help to destigmatise rural living by providing and promoting  
812 alternative narratives about rural towns and workplaces.  
813  
814  
815  
816

817 The scalability of the project was enhanced by using readily available, consumer-level equipment and editing software.  
818 These tools offer significant advantages, including availability and cost-effectiveness. For instance, the equipment  
819 used in this study is readily available off-the-shelf, and costs approximately 800 AUD for the 360-degree camera and  
820 400 AUD for the VR headset. VR is also becoming more popular, and in the future is likely to be easily accessible at  
821 home. Furthermore, the entire filming and editing process was completed by the rural researchers, who were complete  
822 novices in this technology and had limited prior experience with content creation. This makes this technology easily  
823 scalable, with the primary constraint for the health service and town being time commitments. However, there are also  
824 disadvantages to this technology, such as the less powerful and sophisticated nature of consumer-level tools and a steep  
825 learning curve for those unfamiliar with the technology and editing software. Overall, the findings indicate that rural  
826 VR experiences have the potential play an important role in broad rural health recruitment strategies, appealing to  
827 health professionals at various career stages and across diverse disciplines, and supporting ongoing efforts to alleviate  
828 rural health workforce shortages.  
829  
830  
831



## 5.4 Limitations and future research

Despite the promising findings, this study has some limitations. Participants were self-selected, with many already having an interest in rural health, which may introduce bias. Repeating this study with health professionals with well established careers may provide complementary insights. Validation studies could be undertaken to assess fidelity of the immersive experience and correlation with both effectiveness and realistic expectations of a rural health career. Additionally, the study focused primarily on immediate reactions to the VR experience, with no long-term follow-up to assess sustained changes in attitudes and career intentions. Further research should aim to include larger, more diverse samples and longitudinal designs to evaluate the enduring impact of VR experiences on rural health recruitment, including post-graduation and across career lifespan. Further investigation into the technical aspects of VR, such as improving headset comfort and sound clarity, as well as expanding the content to include a broader range of allied health professions, would also be useful. Inclusion of interactive elements in the experience may also be beneficial.

## 6 Conclusion

The findings from this study highlight the transformative potential of VR technology in addressing rural workforce challenges. The immersive VR experience enhanced participant's engagement, and allowed them to authentically connect with the rural community and envision a rural lifestyle without the logistical challenges of in-person visits. The experience also positively influenced attitudes towards rural practice, dispelling negative preconceptions about rural healthcare and lifestyles, while also reinforcing positive experiences and boosting confidence in integrating into rural settings. Importantly, post-viewing, the simulation led to a statistically significant shift in intended practice location, from a metropolitan area towards an inner regional area.

Moreover, the study demonstrates the scalability and cost-effectiveness of VR technology in broadening the reach of rural health recruitment efforts and effectively addressing some of the limitations of traditional recruitment methods. Participants valued the VR experience for its accessibility and convenience, suggesting its potential to bridge gaps in career advice and support. Recommendations for improving the VR experience – such as enhancing comfort, technical aspects, and interactivity, and including diverse allied health professions – indicate a clear path for refining this tool. By promoting authentic rural narratives and challenging negative perceptions, VR can play a crucial role in attracting healthcare professionals to rural areas, ultimately contributing to alleviating rural health workforce shortages and improving healthcare equity in Australia.

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## 1010 A Appendix 1: Survey questions

1013 Question	1013 Responses	1013 Pre	1013 Post
1014 What is your age?	1014 Free text	1014 Yes	1014 No
1016 What is your gender?	1016 Male 1017 Female 1018 Non-binary	1016 Yes	1016 No
1020 What is your residential postcode?	1020 Free text	1020 Yes	1020 No
1022 If you are still studying, which year are 1023 you studying?	1022 Not studying 1023 First year (undergraduate) 1024 Second year (undergraduate) 1025 Third year (undergraduate) 1026 Fourth year (undergraduate) 1027 Fifth year (undergraduate) 1028 Other (undergraduate) 1029 Postgraduate year one 1030 Postgraduate year two 1031 Postgraduate year three 1032 Other (postgraduate)	1022 Yes	1022 No
1036 If you are a healthcare professional, how 1037 would you describe your career stage?	1036 Early career (less than 10 years' experience) 1037 Mid-career (10-20 years' experience)	1036 Yes	1036 No

		Late career (more than 20 years' experience)		
			Yes	No
1041				
1042				
1043	Please describe the health discipline in which you are currently working or are currently studying.	Aboriginal/Torres Strait Islander Health	Yes	No
1044		Audiology		
1045		Dental Hygiene/Therapy		
1046		Dentistry		
1047		Oral Health Therapy		
1048		Diagnostic Radiography		
1049		Exercise Physiology		
1050		Medical Laboratory Science		
1051		Medicine		
1052		Midwifery		
1053		Nuclear Medicine Science		
1054		Nursing		
1055		Nursing & Midwifery		
1056		Nursing & Paramedicine		
1057		Nutrition		
1058		Nutrition & Dietetics		
1059		Occupational Therapy		
1060		Optometry		
1061		Orthotics & Prosthetics		
1062		Paramedicine		
1063		Pharmacy		
1064		Physiotherapy		
1065		Podiatry		
1066	Psychology			
1067	Public Health			
1068	Radiation Therapy			
1069	Social Work			
1070	Speech Pathology			
1071	Other (please describe)			
1072				
1073				
1074				
1075				
1076				
1077				
1078				
1079	Did you grow up, or have you lived (10 years cumulatively or 5 years consecutively) in a regional, rural, or remote area?	Yes	Yes	No
1080		No		
1081				
1082				
1083	Have you had any of the following rural training opportunities (tick all that apply)?	Student placement in a rural area	Yes	No
1084		Work experience in a rural area		
1085		Work in a rural area		
1086				
1087				
1088				
1089				
1090				
1091				
1092				

1093 The following statements relate to your feel-  
 1094 ings about rural practice. Please rate your  
 1095 level of agreement with each statement on a  
 1096 scale of 1 (strongly disagree) to 5 (strongly  
 1097 agree).  
 1098

1099	Rural practice is too hard.	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	Yes	Yes
1100				
1101	I have the necessary skills to practice in a 1102 rural setting.	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	Yes	Yes
1103				
1104	I get a sinking (anxious) feeling when I think 1105 of working in a rural setting.	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	Yes	Yes
1106				
1107	I have a strong positive feeling when I think 1108 of working in a rural setting.	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	Yes	Yes
1109				
1110	People tell me I should work in a rural set- 1111 ting.	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	Yes	Yes
1112				
1113	I see people like me taking up rural clinical 1114 practice.	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	Yes	Yes
1115				
1116	I could see myself living in a rural area. 1117	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	Yes	Yes
1118				
1119	I could learn how to be a good rural practi- 1120 tioner.	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	Yes	Yes
1121				
1122	I am interested in living rurally. 1123	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	Yes	Yes
1124				
1125	I am interested in a rural health career. 1126	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	Yes	Yes
1127				
1128	If I work in a rural area, there will be many 1129 opportunities to improve my career.	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	Yes	Yes
1130				
1131	If I work in a rural area, I will be able to 1132 practice a variety of skills.	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	Yes	Yes
1133				
1134	If I worked in a rural area, I will be able to 1135 have a successful career.	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	Yes	Yes
1136				
1137	If I live in a rural area, I will be able to do 1138 things I enjoy.	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	Yes	Yes
1139				
1140	If I live in a rural area, I will be able to enjoy 1141 a vibrant social life.	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	Yes	Yes
1142				
1143				
1144				

1145	In which geographical location within Australia would you most like to practice?	Major city or capital city	Yes	Yes
1146		Inner regional city or large town		
1147		Outer regional or smaller town		
1148		Small rural community		
1149		Remote community		
1150		Very remote community		
1151		I am not considering working within Australia		
1152				
1153				
1154				
1155	On a scale of 1 (no previous experience) to 5 (very familiar), please indicate your current level of familiarity with Virtual Reality technology.	5-point Likert Scale (1 = no previous experience to 5 = very familiar)	Yes	No
1156				
1157				
1158				
1159				
1160				
1161	Thinking about the town of Wangaratta (where this footage was filmed), please rate your level of agreement with the following statements on a scale of 1 (strongly disagree) to 5 (strongly agree).			
1162				
1163				
1164				
1165				
1166				
1167	I could identify with the people in this community.	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	No	Yes
1168				
1169				
1170	The landscape of this area makes me feel strong positive emotions.	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	No	Yes
1171				
1172				
1173	I feel connected to this place.	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	No	Yes
1174				
1175				
1176	This place reflects the type of person I am.	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	No	Yes
1177				
1178				
1179	This is the best place for what I like to do.	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	No	Yes
1180				
1181				
1182	I would like to spend time in this place.	5-point Likert Scale (1 = strongly disagree to 5 = strongly agree)	No	Yes
1183				
1184				
1185				
1186				
1187				
1188				
1189				
1190				
1191				
1192				
1193				
1194				
1195				
1196				

1197 The following questions ask about your ex-  
 1198 perience with the Virtual Reality footage.  
 1199 Please read the responses carefully as the op-  
 1200 tions change for each question. Please rate  
 1201 your level of agreement with the following  
 1202 statements on a scale of 1 (low levels) to 7  
 1203 (high levels). Please consider the entire scale  
 1204 when making your responses, as the inter-  
 1205 mediate levels may apply.  
 1206  
 1207

1208	How responsive was the environment to ac-	7-point Likert Scale (1= not responsive to 4	No	Yes
1209	tions (e.g. your movements) that you initi-	= moderately responsive to 7 = completely		
1210	ated (or performed)?	responsive)		
1211				
1212	How completely were all of your senses en-	7-point Likert Scale (1= not at all to 4 = some-	No	Yes
1213	gaged?	what to 7 = completely)		
1214	How much did the visual aspects of the en-	7-point Likert Scale (1= not at all to 4 = some-	No	Yes
1215	vironment involve you?	what to 7 = completely)		
1216				
1217	How much did the auditory aspects of the	7-point Likert Scale (1= not at all to 4 = some-	No	Yes
1218	environment involve you?	what to 7 = completely)		
1219				
1220	How natural was the mechanism which con-	7-point Likert Scale (1= extremely artificial	No	Yes
1221	trolled movement through the environment?	to 4 = borderline to 7 = completely natural)		
1222				
1223	How aware were you of events occurring	7-point Likert Scale (1= completely aware	No	Yes
1224	in the physical world around you? (Reverse	to 4 = somewhat aware to 7 = completely		
1225	scored)	unaware)		
1226				
1227	How compelling was your sense of objects	7-point Likert Scale (1= not at all to 4 = mod-	No	Yes
1228	moving through space?	erately compelling to 7 = very compelling)		
1229				
1230	How much did your experiences in the vir-	7-point Likert Scale (1= not consistent to 4 =	No	Yes
1231	tual environment seem consistent with your	moderately consistent to 7 = very consistent)		
1232	real-world experiences?			
1233				
1234	How completely were you able to actively	7-point Likert Scale (1= not at all to 4 = some-	No	Yes
1235	survey or search the environment using vi-	what to 7 = completely)		
1236	sion?			
1237				
1238	How compelling was your sense of moving	7-point Likert Scale (1= not compelling to 4	No	Yes
1239	around inside the virtual environment?	= moderately compelling to 7 = very com-		
1240		PELLING)		
1241				
1242	How closely were you able to examine ob-	7-point Likert Scale (1= not at all to 4 = pretty	No	Yes
1243	jects in the virtual reality experience?	closely to 7 = very closely)		
1244				
1245				
1246				
1247				
1248				



1249	How well could you examine objects from multiple viewpoints (e.g. Moving head)?	7-point Likert Scale (1= not at all to 4 = somewhat to 7 = extensively)	No	Yes
1250				
1251				
1252	How much delay did you experience between your actions and expected outcomes? (Reverse scored)	7-point Likert Scale (1= no delays to 4 = moderate delays to 7 = long delays)	No	Yes
1253				
1254				
1255				
1256	How quickly did you adjust to the virtual environment experience?	7-point Likert Scale (1= not at all to 4 = slowly to 7 = less than one minute)	No	Yes
1257				
1258				
1259	How much did the control devices interfere with the performance of assigned tasks or with other activities? (Reverse scored)	7-point Likert Scale (1= not at all to 4 = interfered somewhat to 7 = interfered greatly)	No	Yes
1260				
1261				
1262				
1263	How well could you identify sounds? 7-point Likert Scale (1= not at all to 4 = somewhat to 7 = completely)		No	Yes
1264				
1265				
1266				
1267	How well could you localize sounds? 7-point Likert Scale (1= not at all to 4 = somewhat to 7 = completely)		No	Yes
1268				
1269				
1270				
1271	Please add any comments here	Free text	No	Yes
1272				
1273				

## B Appendix 2: Semi-structured interview questions

- How did you feel about the VR simulation?
  - What did you like/not like?
  - What could be improved about the simulation?
- Do you see yourself in a rural health career?
- Do you think the VR simulation changed your thoughts about a rural health career? Why/why not?
- Do you see yourself living rurally?
- Do you think the VR simulation changed your thoughts about rural places? Why/why not?

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