

# Factors Influencing Health Career Choices During Clinicians' First Three Years in Practice

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## Article abstract

**Background:** Health systems globally need more clinicians to work rurally and in community-based primary care. This study explores factors influencing health graduates' choice of clinical setting and geographical location during early careers, across a range of disciplines that work together to support the health of people in community-based and rural locations.

**Methods:** Students from eight disciplines (n = 611) were recruited prior to their final year of pre-registration training. Data were collected via three electronic surveys completed at the end of participants' first, second, and third year of clinical practice. Data were managed and analyzed with Template Analysis.

**Findings:** Similar factors influenced clinical setting and location choice but differed in relative importance for each. The nature of the job itself was the most important factor influencing clinical setting choices. A broader range of influences were important to geographical location choices including personal reasons, the nature of the job, the nature of the location, and job availability and opportunities. Regulatory or training requirements limited choices available to some clinicians, particularly those from medicine.

**Conclusion:** A range of complex and interacting factors influenced health graduates' career choices. Findings indicate that a broad system-wide approach is needed to address community and rural health workforce needs.



# Factors Influencing Health Career Choices During Clinicians' First Three Years in Practice

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Lesley Gray<sup>a</sup>, & Sue Pullon<sup>a</sup>

## Abstract

**Background:** Health systems globally need more clinicians to work rurally and in community-based primary care. This study explores factors influencing health graduates' choice of clinical setting and geographical location during early careers, across a range of disciplines that work together to support the health of people in community-based and rural locations.

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**Conclusion:** A range of complex and interacting factors influenced health graduates' career choices. Findings indicate that a broad system-wide approach is needed to address community and rural health workforce needs.

**Keywords:** interprofessional education, career choice, professional practice location, rural health services, longitudinal study, qualitative research

## Introduction

Many health systems across the world need more clinicians to work within community-based primary care, particularly in rural and regional environments where health outcomes often lag well behind those in metropolitan areas [1]. When considering this, the ecology of the whole health workforce needs to be considered as clinicians from different disciplines depend on each other, particularly in remote locations[2]. In Aotearoa, New Zealand, the health system aspires to have at least half of the workforce working in primary or community care, and around half of the workforce working outside of major cities. This is achieved in many regions and for some disciplines, but not all. These gaps have a considerable negative impact on the

health of communities and health workforces [3]. A shortage of one discipline can adversely affect the roles (and sustainability) of others [4].

A number of education-based approaches have been recommended to increase rural and community health workforce participation, such as selecting or funding health students from rural backgrounds, bonded medical placement schemes, incorporating rural health topics and competencies in undergraduate curricula, and providing undergraduate students with clinical placements and community experiences in rural settings [5]. A small number of studies have gathered empirical data to understand the impact of these initiatives (e.g., Brown, Smith, Wakely, Wolfgang, Little, & Burrows, 2017) or observational cohort data to determine factors that influence health graduates' choices about employment setting and location (e.g., Campbell, Farthing, Witt, Anderson, Lenthall, Moore, & Rissel, 2021). However, much of these data focus on one or two disciplines, usually medicine and sometimes nursing, rather than the range of disciplines required to support the health of people in rural locations.

In New Zealand, the Longitudinal Interprofessional (LIP) Study was conducted to explore the impact of the Tairāwhiti Interprofessional Education Programme (TIPE) on learner outcomes and careers [6]. The program provides students with an immersive interprofessional education experience in a rural, primary healthcare environment that focuses on Hauora Māori (indigenous health). The program is underpinned by adult learning theory, with a focus on building relationships and creating non-threatening learning environments [7-9]. It involves a five-week placement in a relatively remote location, in a region that has a high Māori population and low levels of income and employment [10-11]. Pre-registration students from eight health disciplines live in shared accommodation and participate in unidisciplinary and interdisciplinary educational activities across diverse town and rural settings.

The LIP study was a non-randomized trial in which students who were eligible to attend TIPE were recruited prior to their final year of training and followed up at graduation and yearly for the first three years of professional practice. The primary aim was to assess the impact of TIPE on interprofessional attitudes and skills; these results have been published previously [12]. Data were also collected to assess the impact of TIPE on career trajectories (clinical setting and geographical location) and explore factors that influenced participants' choices. At three years post-graduation, approximately 60 percent of the entire cohort were working in primary care and just over half were working outside of a major city. There was substantial interdisciplinary variation, with most physiotherapy graduates and nearly all dentistry and pharmacy graduates working in community settings, but far fewer medicine and nursing graduates in this setting. There was no measurable additional impact on the setting or location where health graduates worked, but free-text responses indicated learner-perceived influences of TIPE on rural health skills and a desire to work rurally or with Māori [13]. The aim of this article is to explore factors that influenced career trajectories, reported in the free-text comments by this large cohort of graduates (combining those who did and did not attend TIPE) from eight health disciplines.

## Methods

### Participants

Participants consisted of 611 dentists, dietitians, medical doctors, nurses, occupational therapists, oral health therapists, pharmacists, and physiotherapists. These participants were recruited as students prior to their final year of pre-registration training between October 2014 and February 2016.

### Data collection

The study methods are described comprehensively elsewhere [6]. In brief, data were collected annually for five years via electronic survey, with email updates in-between surveys to encourage ongoing engagement. Surveys 3 to 5, representing the first three years of participants' graduate professional practice, included free-text items relating to the clinical setting (primary care/community or hospital) and geographical location (rural and remote, small town, regional city, major city) in which graduates were working. All data collection was completed by November 2019.

### Data analysis

Participants' free-text comments in surveys 3 to 5 about why they chose to work within their current clinical setting and location were analyzed. In-depth description of the free-text data analysis methodology has been published previously [14]. Data were managed in NVivo 12 (QSR International) and analyzed using Template Analysis, a systematic way of analyzing a large dataset while allowing in-depth thematic analysis [15]. Template Analysis uses hierarchical thematic coding (often with many levels of coding to allow fine grained analysis) within a coding template that is initially developed based on a subset of data, then subsequently revised and refined. Template Analysis can be used with a range of epistemological positions; for this study, a constructivist approach was adopted [15]. Top-level themes were created *a-priori* (based on the survey item being responded to) while all sub-themes in the initial template were identified in a subset of data by four researchers (BD, MB, EM, SP) [14]. New versions of the template were created as initial themes changed and new codes emerged. Initial coding was undertaken independently by one researcher (MB) on a line-by-line basis, exploring variations and similarities across surveys and within the context of related quantitative findings (such as participant age, gender, discipline, clinical setting, and geographical location). This enabled the data to be analyzed as a whole, whilst considering differences related to participant context. Formal subgroup analyses (such as comparing disciplines) were not undertaken. Codes and categories were developed iteratively across surveys. Rigour was increased by a second researcher (BD) reviewing a subset of data to identify missing codes or alternative data interpretations. Following this, the first researcher applied these new codes and interpretations to the whole data set and checked each code across all surveys to assess changes and consistency over time. Finally, the second researcher independently checked all coded extracts in the full data set. All differences were resolved through regular discussions. Theme documentation was checked and discussed with other authors on multiple occasions throughout the analyses, from initial template development and template modifica-

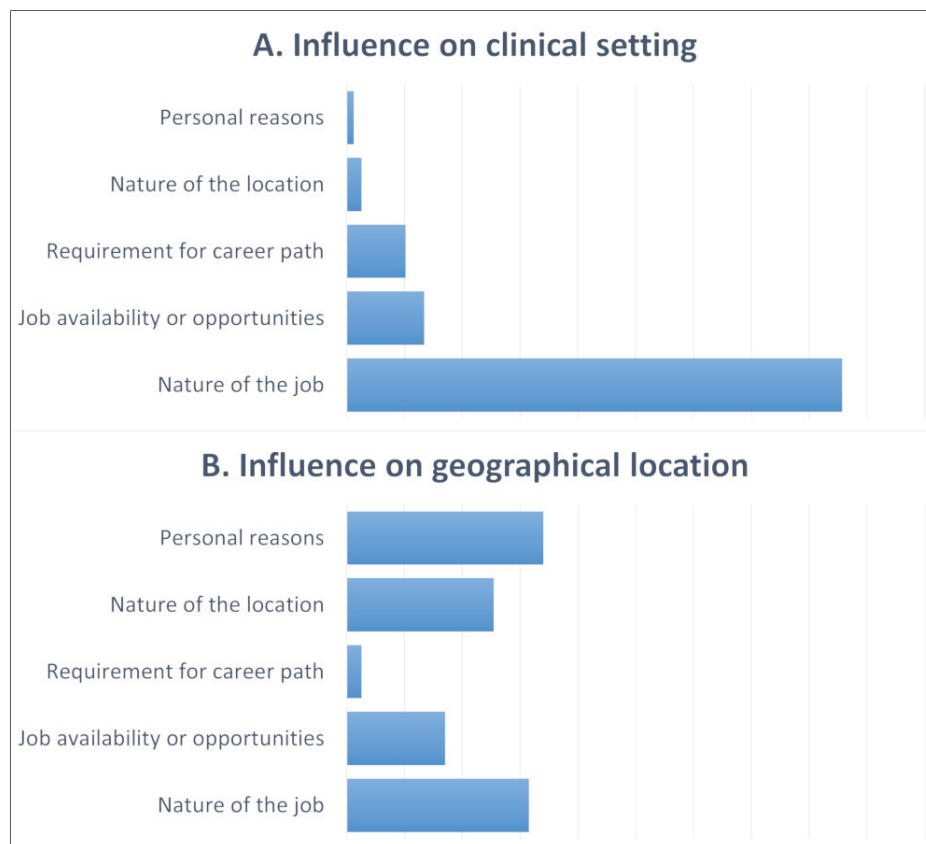
tions until final themes and sub-themes were agreed upon by all researchers to ensure themes represented the data.

### Ethical considerations

The study received approval from the University of Otago Ethics Committee (D13/019) and participants gave written consent.

### Results

Participant retention was high, with 419 of 611 participants (69%) completing the final survey after five years (at three years post-graduation). Across the three post-graduate surveys, participants made 2259 free-text comments in relation to choice of clinical setting and 2215 free-text comments in relation to choice of geographical location. Despite data related to the clinical setting and geographic location items being analyzed separately, there was strong conceptual overlap. A consistent coding framework emerged, with the themes in response to the two items being similar yet differentiating between clinical setting and geographical location by the nature and frequencies of comments. Key themes influencing graduates' career choices were the nature of the job, personal reasons, nature of the location, job availability and opportunities, and regulatory requirements of career paths (Figure 1). Theme and subtheme frequencies are shown in Table 1. Examples of participant comments reflecting themes and subthemes are presented in Table 2.



**Figure 1: Relative influence of factors affecting health professionals' choice of a) clinical setting and b) geographical location**

**Table 1. Factors influencing where health professionals work:  
qualitative theme frequencies**

Factors influencing where health professionals work in early career	Frequencies of comments*					
	Choice of clinical setting			Choice of location		
	One year post-graduation (n = 432)	Two years post-graduation (n = 418)	Three years post-graduation (n = 412)	One year post-graduation (n = 432)	Two years post-graduation (n = 418)	Three years post-graduation (n = 412)
Nature of the job						
Enjoyment/interest in clinical field (e.g., Māori health)	171	209	222	39	26	23
Gain experience, learn (e.g., variety, progression)	164	158	121	66	62	36
Job conditions (e.g., remuneration, hours, flexibility)	54	65	121	15	25	33
Where I can make an impact (e.g., first port of call)	47	40	31	7	8	8
Patient interaction/relationship	41	42	27	11	4	8
Health practitioner interaction	37	39	39	41	28	19
The specific workplace (e.g., size, work culture)	15	24	35	61	52	51
Recommended by others	1	3	2	4	0	2
Prestige, recognition	3	2	2	2	0	1
<b>Total</b>	<b>533</b>	<b>582</b>	<b>600</b>	<b>246</b>	<b>205</b>	<b>181</b>
Personal reasons (home, family, friends)						
Family, partner	9	7	8	104	115	143
Home/where I live	0	0	0	48	40	42
Hometown/where I grew up	0	0	0	34	33	26
Friends	0	0	1	25	36	34
<b>Total</b>	<b>9</b>	<b>7</b>	<b>9</b>	<b>211</b>	<b>224</b>	<b>245</b>
Nature of the location						
Familiarity	0	1	1	44	46	45
Convenience (e.g., proximity from house)	4	4	7	18	19	28
Like this (or this type of) location (e.g., lifestyle, weather, rural)	9	8	18	88	109	112
<b>Total</b>	<b>13</b>	<b>13</b>	<b>26</b>	<b>150</b>	<b>174</b>	<b>185</b>
Availability of job / opportunities						
<b>Total</b>	<b>83</b>	<b>95</b>	<b>85</b>	<b>132</b>	<b>116</b>	<b>92</b>
Requirement for career path (e.g., PGY1, NEPT, internship)						
<b>Total</b>	<b>99</b>	<b>58</b>	<b>47</b>	<b>27</b>	<b>9</b>	<b>15</b>

Note: \* Number of comments exceeds number of participants because a single response could contain more than 1 theme



**Table 2: Factors influencing where health professionals work: qualitative theme examples**

Factors influencing where health professionals work in early career	Examples	
	Choice of clinical setting	Choice of location
Nature of the job		
Enjoyment/interest in clinical field (e.g., Māori health)	I'm passionate about working for the community. (Survey 5, Dentist, #6457)	I moved cities for the position I have now. It was an opportunity to work with children. (Survey 3, Occupational Therapist, #0351)
Gain experience, learning (e.g., variety, progression)	A good place to get maximum experience with top-level care in a Quaternary hospital before going rural or community. (Survey 4, Medical Doctor, #8376)	More variety of experience in a smaller town setting vs a large city as you are at times required to treat when no one else is available. (Survey 4, Dentist, #8098)
Job conditions (e.g., remuneration, hours, flexibility)	Better work life balance due to relatively fixed working hours. Better pay. (Survey 3, Dentist, #7262)	Nice size city to live and raise a family, while continuing to work in a job I love. Work life balance is much easier. (Survey 4, Nurse, #3786)
Where I can make an impact (e.g., first port of call)	I really like community pharmacy because of its ability to reduce barriers in access to health care. (Survey 4, Pharmacist, #7676)	Good [small town] place where my skills were needed. (Survey 4, Dentist, #2821)
Patient interaction/relationship	I get to see patients over a longer period of time and follow their journey. (Survey 4, Dietitian, #1094)	I enjoy working in a rural environment. You form strong relationships with patients. (Survey 4, Pharmacist, #3922)
Health practitioner interaction	Working in hospital involves far more interaction with the MDT than community, which I enjoy. (Survey 3, Pharmacist, #7374)	Better communication with colleagues in provincial sized hospital/work culture. (Survey 3, Medical Doctor, #6503)
The specific workplace (e.g., size, work culture, previous placement experience)	[They are] great believers in the MDT approach. Working within a tight succinct team. (Survey 3, Dietitian, #3319)	Enough different areas to get good experience in lots of different areas, but not too big that you feel like a number. (Survey 4, Physiotherapist, #4124)
Recommended by others	Recommendation from teacher. (Survey 4, Dentist, #3721)	Recommended by friends to work in city. (Survey 5, Pharmacist, #6284)
Prestige, recognition	Working as a hospital based clinical dietitian is what most new grads want, so there is some prestige in the role. (Survey 3, Dietitian, #4569)	Physios are respected more [overseas]. (Survey 3, Physiotherapist, #7441)

**Table 2 (continued)**

Factors influencing where health professionals work in early career	Examples	
	Choice of clinical setting	Choice of location
Personal reasons (home, family, friends)		
	Working hours flexibility for family reasons. (Survey 5, Nurse, #0502)	Close to family. (Survey 2, Oral Health Therapist, #6457)
Nature of the location		
Like this (or this type of) location (e.g., lifestyle, weather, rural, overseas experience)	[Regional City] doesn't feel overwhelming as far as cities go. Still has much to do but doesn't take long to get away from the city if wanting to explore. (Survey 5, Pharmacist #0720)	Always wanted to work in a smaller town as I come from one myself. (Survey 4, Physiotherapist, #5515)
Familiarity	Convenient, it is familiar. (Survey 5, Nurse, #0043)	Primarily for lifestyle reasons, I was born and raised in cities, I appreciate access to the food, shows, culture etc. (Survey 5, Medical Doctor, #2894)
Convenience (e.g., close to home)	Proximity of work to home. (Survey 4, Occupational Therapist, #2978)	Easy transport and cheaper cost of living. (Survey 4, Medical Doctor, #2079)
Availability of job or opportunities		
	Good job opportunity arose. Enjoyed previous placements here and the support hospitals have to offer for new graduates. (Survey 3, Occupational Therapist, #4360)	More job opportunities and more connections to other health care professionals. (Survey 3, Occupational Therapist, #9999)
Requirement for career path (e.g., PGY1, NEPT, internship)		
	It is requirement to work in hospital to gain general registration. (Survey 5, Medical Doctor, #1254)	I was placed there as part of the NEtP programme. (Survey 4, Nurse, #0433)



### Choice of clinical setting

The *nature of the job* was the strongest theme affecting choice of clinical setting (Figure 1A). This overwhelmed all other themes, with the influence appearing to increase with each year of practice. Within the *nature of the job*, “enjoyment or interest in the field” was the most prevalent sub-theme and this grew with each survey. This included the types of patients or cases (e.g., Māori health), finding the clinical field rewarding, suiting one’s skillset, or preferring one setting over another (e.g., community vs. hospital). “Gaining experience or learning” was the next most common sub-theme, both as a clinician and as preparation for a specific planned career move (such as moving rurally); however, this appeared to become less influential over time. “Job conditions” (including remuneration and work-life balance) were also commonly described and more so over time. The ability to make an impact was prevalent across the three years, but the form of this varied: some chose hospital-based settings to achieve this (e.g., acute care, in-patient rehabilitation) whereas others selected primary care settings (e.g., first port of call or serve the community). The final subthemes of note were “patient interaction or relationships” (often associated with working in primary care or the community), “health practitioner interactions” (such as interacting with colleagues of other disciplines, receiving mentoring, or being in a good team), or “the specific workplace” (such as work culture or place of previous clinical experience).

The *availability of jobs or opportunities* was the second strongest influence on choice of clinical setting; this was relatively stable across the three years. Most responses related to specific job offers (or the lack thereof), but others related to general opportunities in the setting. The final influence of importance was the prescribed *requirements of career paths*, such as medical postgraduate years (PGY1 to 3), Nurse Entry to Practice Programme (NETP) in graduate year-1, or pharmacy internships in graduate year-1. This was the only theme with clear disciplinary differences. The influence of these requirements decreased substantially over time.

### Choice of geographical location

*Personal reasons* was the strongest theme affecting choice of geographical location, but this was followed closely by the *nature of the job* and the *nature of the location* (Figure 1B). The most common *personal reasons* subtheme was “family” (including partners or children) and this became more prevalent over time. Other common subthemes were the location someone identified as their “current home” or “returning to their hometown or to where they grew up.”

*Job-related factors* that were commonly described included the “specific workplace” (such as workplace size, resources, nature of the workload, culture, or previous placement experience), and the ability to “gain experience or learn” (including a broad variety or challenging cases). The few location responses related to “making an impact” usually related to working in small towns, where skills were needed or to give back to the community the participant was originally from. The *nature of the job* appeared to become less important over time whereas the *nature of the location* became more dominant over time, particularly in relation to “liking the location.”

Finding a location to be “familiar” or “convenient” was also important. Job availability was also a consideration but appeared to become less important over time.

Desire to work rurally did not always equate with outcome; participants described several barriers that usually related to job availability for self or partner and lack of housing. Others held the intention to work rurally in the future but were currently working in larger centres for personal reasons (e.g., move rural when ready to settle down) or professional reasons (e.g., undertaking prescribed training programs, such as medical pre-vocational training).

## Discussion

The recruitment and retention of health professionals to work in rural settings is a perennial problem that health planners are anxious to address [16]. Various interventions to improve rural health workforce participation have been explored, but the bulk of the literature focuses on medical graduates, has low methodological quality, and lacks cost-effectiveness data [17]. Some strategies that contain educational pathways and financial incentives to attract and retain medical practitioners have questionable transferability to nursing and allied health professions [18] and there are few studies about the effects of student placements on allied health professionals' decisions to work rurally [19].

The LIP study of 611 health graduates across eight disciplines found no impact of a five-week interprofessional rural immersion program on career trajectories in the first three years of professional practice [13], but free-text findings from the entire cohort indicated that a range of factors had important influences on where early-career health graduates chose to work. Moreover, these choices were complex and multifactorial. Similarly, an Australian qualitative study of 85 nursing and allied health participants (36 students, 34 recent graduates, and 15 industry stakeholders) found that early career rural relocation decisions were influenced by a complex interplay of personal, professional, and practical factors that were balanced by students' knowledge about working in rural locations [20].

The nature of the job or workplace itself had an overwhelming influence on LIP study participants' choice of clinical setting and an important influence on the choice of location. Personal reasons, including family and personal connection, also had strong influences on choice of location. Such factors may not be static as new relationships and connections are developed over time. Job availability influenced choice of both clinical setting and geographic location, with this severely restricting some graduates' options but others commenting that a less desired option had worked out for the best. Desire to work rurally did not always equate with outcome, with participants describing several barriers that usually related to job availability for self or partner and accommodation issues. Similar to findings by Sutton, Waller, Fisher et al. (2016), the same factor could have very different influences on individuals. For example, in the LIP study, some graduates wanted to work rurally early in their career to gain broad experience, whereas others wanted to gain experience in a major hospital to prepare them for rural work. Some wanted to live in a location similar in size to where they grew up, while others wanted to experience a change.

Likewise, the importance of work-life balance was seen by some to mean either an adventurous or a quiet rural lifestyle, whereas others perceived better lifestyle options in a city.

Some (but relatively few) LIP study participants reported that they chose their location based on their hometown or where they came from. Preliminary one-year findings in a five-year longitudinal study of workplace outcomes for Australian allied health students following a full-year rural immersion program found that, while those of rural background were more likely to return to a rural location for work, there was a positive influence on those of metropolitan background to work rurally. The authors cautioned that funding efforts tend to focus on rural graduate return, but the likely return of non-rural background graduates should not be under-estimated [21].

Some factors (such as someone's geographical background) are beyond the influence of university curricula and individual workplaces; however, many factors (such as rural placement experiences and workplace environments) can be directly influenced [19], particularly because many of the intrinsic and extrinsic motivators to work rurally are related to personal or professional support [22]. The LIP study participants' responses—particularly the dominant themes of the *nature of the job* in relation to clinical setting and geographical location choices, as well as the road-blocks identified to working rurally—support Sutton et al.'s (2016) recommendations for workplaces to entice graduates to work rurally. These recommendations include providing positive experiences for students on clinical placements and giving attention to the personal and professional needs of new employees. Examples of ways to address this include providing support to maintain family connections and assistance to settle into a new community, and providing clear and supported career pathways, professional development opportunities, and supportive mentoring.

### **Strengths and limitations**

The LIP study developed novel methodology to enable collection, management, analysis, and integration of a large volume of longitudinal free-text data, as well as quantitative items. This enabled assessment of not only the impact of the TIPE programme but also the range of factors that influenced career choices. The wide range of health professions included in the LIP study has allowed nuanced insights into factors that influence health professionals' early career trajectories that could be considered at workplace and health system levels when designing solutions to workforce challenges. This enables consideration of the whole health workforce rather than a limited number of disciplines. The long follow-up period has also improved understanding of how these factors change over time. Three years post-graduation is still relatively early in health professional careers, especially for disciplines that have prescribed training pathways such as medicine. It is likely that many LIP study graduates were yet to settle into their final clinical setting or geographical location when they completed their final survey.

This analysis is limited to comments that participants chose to share in relation to their career choices, and participants could choose to answer items either broadly or

specifically. It is likely that an individual's decisions were also influenced by other (non-recorded) factors; however, key factors of importance are likely to have been identified through gathering these data from a large group of individuals over a long period.

The key themes that emerged in relation to clinical setting and geographical location were similar, albeit with very different frequencies of reporting. It is possible that respondents viewed their answers as a "continuous" narrative and therefore did not mention the same thing twice (e.g., not mentioning a factor for Location because they already said it in the previous item about Clinical Setting). Nevertheless, clear patterns emerged differentiating the nature and frequency of responses in relation to these two items that appear to have strong external validity.

### Implications

This study has identified a number of modifiable (such as the nature of the job or job availability) and non-modifiable factors (such as where someone grew up or where their friends and family live) that influence health graduates' career choices, and the complex interaction between these. It has also highlighted the limitations inherent in health funders and educators designing interventions to increase the rural workforce by focusing on a limited range of factors (such as student background or rural clinical placements) when other factors (such as job availability, cost of living, and the needs of partners or family) are probably more influential. The range of factors described by these graduate clinicians indicate that single-factor approaches to solving issues with the rural health workforce (such as selecting students from these areas) are unlikely to solve the problem. Rather, a multifactorial approach that also considers requirements for speciality training in some disciplines, housing, jobs for partners, the quality of rural jobs available, and these being available in the locations to which graduates feel connected, will be more likely to succeed. When considering this, the ecology of the whole health workforce needs to be considered. Clinicians from different disciplines depend on each other, particularly in remote locations [2]. A shortage of one discipline can adversely affect the roles (and sustainability) of others [4].

Findings suggest that initiatives aiming to increase graduate participation within any clinical setting (e.g., primary and community care) need to focus on the nature of the job. Factors that will likely optimize this will be providing enjoyable pre-registration clinical placements with supportive staff to increase interest in the area, providing supportive opportunities to learn and gain diverse experience in graduate jobs, optimizing job conditions, promoting the local community, and explaining the ways in which clinicians make an impact in this location and setting. In addition to making jobs attractive, these jobs also need to be available.

### Conclusion

Attending a five-week rurally and primary care-focused immersive interprofessional training program did not additionally increase graduates' likelihood of working outside of major cities or in primary care in the first three years of their careers, although it is important to note that the overall numbers working in primary care were already high by international standards. Early career choices were influenced by several com-

plex and interacting factors that need to be considered together by initiatives that aim to increase participation in rural or primary care health workforces.

## References

1. World Health Organization. (2016). *Working for health and growth: Investing in the health workforce — High-Level Commission on Health Employment and Economic Growth*. Geneva, CH: World Health Organization.
2. Health and Disability System Review. (2020). *Health and Disability System Review: Final report — Pūrongo Whakamutunga*. Wellington, NZ: Health and Disability System Review.
3. Ministry of Health. (2018). *Tackling rural health workforce issues* [press release]. Wellington, NZ: Ministry of Health
4. Tomblin Murphy, G., Gilbert, J.H., & Rigby, J. (2019). Integrating interprofessional education with needs-based health workforce planning to strengthen health systems. *Journal of Interprofessional Care*, 33(4), 343–346.
5. World Health Organization. (2010). *Increasing access to health workers in remote and rural areas through improved retention: Global policy recommendations*. Geneva, CH: World Health Organization.
6. Darlow, B., Brown, M., Gallagher, P., Gray, L., McKinlay, E., Purdie, G., Wilson, C., & Pullon, S. (2018). Longitudinal impact of interprofessional education on attitudes, skills and career trajectories: A protocol for a quasi-experimental study in New Zealand. *BMJ Open*, 8(1), e018510.
7. Frenk, J., Chen, L., Bhutta, Z., Cohen, J., Crisp, N., Evans, T., Fineberg, H., Garcia, P., Ke, Y., Kelley, P., Kistnasamy, B., Meleis, A., Naylor, D., Pablos-Mendez, A., Reddy, S., Scrimshaw, S., Sepulveda, J., Serwadda, D., & Zurayk, H. (2010). Health professionals for a new century: Transforming education to strengthen health systems in an interdependent world. *Lancet*, 376(9756), 1923–1958.
8. Hean, S., Craddock, D., Hammick, M., & Hammick, M. (2012). Theoretical insights into interprofessional education: AMEE Guide No. 62. *Medical Teacher*, 34(2), e78–101.
9. Oandasan, I., Baker, G., Barker, K., Bosco, C., D'Amour, D., Jones, L., Kimpton, S., Lemieux-Charles, L., Nasmith, L., Rodriguez, L., Tepper, J., & Way, D. (2006). Teamwork in health-care: Promoting effective teamwork in health care in Canada. *Canadian Health Services Research Foundation*.
10. McKinlay, E., Gallagher, P., Wilson, C., Gray, L., McHugh, P., & Pullon, S. (2016). Social learning, shared accommodation and interprofessional education: I think those conversations that you have at the dinner table. *Journal of Interprofessional Education & Practice*, 5(1), 1–6.
11. Pullon, S., Wilson, C., Gallagher, P., Skinner, M., McKinlay, E., Gray, L., & McHugh, P. (2016). Transition to practice: can rural interprofessional education make a difference? A cohort study. *BMC Medical Education*, 16(1), 154.
12. Darlow, B., Brown, M., McKinlay, E., Gray, L., Purdie, G., & Pullon, S. (2022). Longitudinal impact of preregistration interprofessional education on the attitudes and skills of health professionals during their early careers: A non-randomised trial with 4-year outcomes. *BMJ Open*, 12, e060066.
13. Darlow B., Brown M., McKinlay E., Gray L., Purdie G., Pullon S. (In press.). The influence of a rural interprofessional education placement on the rural health workforce: Working in primary care, rural settings, and with Māori. *Journal of Primary Health Care*.
14. Brown, M., Pullon, S., McKinlay, E., Gray, L., & Darlow, B. (2022). Template analysis of a longitudinal interprofessional survey: Making sense of free-text comments collected over time. *Journal of Research in Interprofessional Practice and Education*, 12.
15. Brooks, J., McCluskey, S., Turley, E., & King, N. The utility of template analysis in qualitative psychology research. *Qualitative Research in Psychology*, 12(2), 202–222.
16. Ministry of Health. (2020). *Health Workforce Advisory Board annual report to the Minister of Health*. Wellington, NZ: Ministry of Health.
17. Russell, D., Mathew, S., Fitts, M., Liddle, Z., Murakami-Gold, L., Campbell, M., Ramjan, M., Zhao, Y., Hines, S., Humphreys, J.S., & Wakerman, J. (2021). Interventions for health workforce retention in rural and remote areas: A systematic review. *Human Resources for Health*, 19(1), 1–24.
18. Cosgrave, C., Malatzky, C., & Gillespie, J. (2019). Social determinants of rural health workforce retention: A scoping review. *International Journal of Environmental Research and Public Health*, 16(3), doi:10.3390/ijerph16030314.



19. Campbell, N., Farthing, A., Witt, S., Anderson, J., Lenthall, S., Moore, L., & Rissel, C. (2021). Health professional student placements and workforce location outcomes: Protocol of an observational cohort study. *JMIR Research Protocols*, 10(1), e21832.
20. Sutton, K., Waller, S., Fisher, K., Farthing, A., McAnnally, K., Russell, D., Smith, T., Maybery, D., McGrail, M., Brown, L., & Carey, T. (2016). *"Heck Yes"—Understanding the decision to relocate rural amongst urban nursing and allied health students and recent graduates*. Victoria, AU: Monash University, Department of Rural Health.
21. Brown, L., Smith, T., Wakely, L., Wolfgang, R., Little, A., & Burrows, J. (2017). Longitudinal tracking of workplace outcomes for undergraduate allied health students undertaking placements in rural Australia. *Journal of Allied Health*, 46(2), 79–87.
22. Campbell, N., McAllister, L., & Eley, D. (2012). The influence of motivation in recruitment and retention of rural and remote allied health professionals: A literature review. *Rural Remote Health*, 12. doi:10.22605/RRH1900