

Do general practice capitation fees account for concentrations of complexity?

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Executive Summary

Background

Capitation funding formulas take into account the characteristics of the population served as a way of estimating the funding required to meet varying levels of need. Capitation is a well-established method of funding health care in many different countries, especially in primary care. In Aotearoa New Zealand, a capitation formula has been used since 2002 to fund all general practices to meet the needs of their enrolled populations. However, general practices who service greater numbers of people with complex health needs may not be funded accurately using the current formula if the characteristics used in the formula do not appropriately reflect the varying needs of those enrolled. We sought to quantify the levels of funding received by general practices who serve high proportions of high needs people, in order to assess if general practices are adequately funded to do so.

Methods

Ministry of Health enrolment data was used to inform the demographic spread of five hypothetical 5,000 patient practices consisting of; 30%, 50%, 70%, 90% and 100% high needs people. High needs were defined as those who fit one or more of these three criteria: Māori; Pacific ethnicity; and residing in an area of high socioeconomic deprivation. Annual funding for capitation payments for first level services, High User Health card (HUHC), and additional funding streams including Very Low-Cost Access (VLCA), Community Service Cards (CSC) and Fees-free under 14s were taken from the Primary Health Organisation Services Agreement contract to calculate levels of income for all five hypothetical practices.

Results

Age is a strong determinant of capitation funding. Practice level funding does not increase in proportion to the level of need of the population served. VLCA funding is higher for the 70% high need than the 90% high need practice. CSC and Fees-free under 14s funding increase as the percentage of high needs people increase but not proportionally to the level of need, but much like HUHC, these streams do not increase practice funding by a meaningful amount.

Conclusion

Use of age and sex as the main determinants for capitation funding shows evidence of structural discrimination within the health system. Funding schemes aimed at helping high needs populations do not always result in adequate funding for general practices to serve these communities well.

Introduction

Capitation formulas are used in many OECD countries, including the United Kingdom (UK), Italy, Australia and Aotearoa New Zealand to fund primary and/or secondary health care services. A capitation funding formula takes into account size and characteristics of the population served, as a way to estimate the funding required to meet their health needs (1). These formulae are largely modelled on historic general practice utilisation, do not account for the issues some populations face in accessing care and often serve to reinforce existing health disparities (2).

Primary care services in Aotearoa New Zealand are mainly funded through capitation-based payments to general practices, supplemented by a user co-payment. The introduction of capitation was part of a radical reform in 2001, through the Primary Health Care Strategy (PHCS) (3). Through the PHCS, first level services capitation payments are provided to practices on the basis of the age and sex of people enrolled, as determined by the Primary Health Organisation Service Agreement Amendment Protocol (PSAAP) (4). To account for the poorer health of key groups, various additional policies have been introduced.

First, higher levels of capitation funding are provided according to whether someone has a High Use Health Card (HUHC) or not. To be eligible, a patient must have visited a practice 12 or more times in one year, for specific ongoing condition(s).

Second, between 2006 and 2009, Very Low Cost Access (VLCA) practice funding was introduced (5). These practices must serve at least 50% “high needs” patients; high needs being defined as those who fit one or more of these three criteria: being Māori or Pacific ethnicity, or living in an area that is classified as NZDep quintile 5. The NZDep is an area-based measure of socioeconomic deprivation; deprivation scores are ranked and split into quintiles, 1 being the lowest level of deprivation and 5 being the highest (6). VLCA practices receive a higher amount of funding in exchange for capping user co-payments.

Third, in 2018, additional funding was provided to allow similar benefits for holders of Community Service Cards (CSC), an initiative aimed at reducing the cost of health care for low income families. Non-VLCA practices receiving such funding must agree to cap user co-payments (to the same level as VLCA practices).

Each of these policies were designed to provide more equitable funding for practices (7). Yet in spite of such policies, Aotearoa New Zealand’s funding formula have continued to be

criticised for failing to recognise differing health needs by ethnicity (8). The current formula also does not recognise the earlier onset of chronic diseases such as diabetes and cardiovascular in Māori compared to non-Māori (9).

Despite the PHCS objective to reduce health inequities between different population groups, primary care funding has not been redressed to achieve this goal. A recent report concluded that the mandatory capping of patient co-payments, means that VLCA practices often receive less revenue than non VLCA practices (10). Further burdens such as higher patient turnover, higher level of non-payment of co-payments and higher patient complexity lead to further financial hardship for VLCA practices. We have recently demonstrated that high needs populations have higher levels of morbidity, multimorbidity and general practice utilisation than non-high needs populations (11). The aim of this research is to determine whether the current formula accounts for this increased financial burden, and contribute to the assessment of whether there is evidence of structural discrimination within the health sector based on capitation formula.

Methods

Our work was based on five hypothetical practices, each with an enrolment of 5,000 patients, but differing according to levels of high need patients; 1) 30% high needs, 70% non-high needs, 2) 50% each of high and non-high needs, 3) 70% high needs, 30% non-high needs, 4) 90% high needs, 10% non-high needs, and 5) a side-by-side comparison of a 100% high needs practice next to a 100% non-high needs practice. We assumed that the high needs populations in each of our hypothetical practices had an age distribution of the Māori population, and that the non-high needs population had an age distribution of the non-Māori population. Using the general population to create our practices would mean that age would confound our results as we know high needs groups have a different age distribution (12). Age categories were those defined by the Ministry of Health funding formula; 0-4, 5-14, 15-24, 25-44, 45-64 and 65+.

Aggregated Ministry of Health Primary Health Organisation (PHO) enrolment data is publicly available. These data are collected from the patient at the point of enrolment with a practice and hence with a PHO. The data consists of personal demographic variables and PHO details. This information was used to determine the age and sex distribution and the need status (high need/non-high need) of our population which informed our five hypothetical practices. The enrolment data also provided us with a breakdown of people with and without a CSC and HUHC.

The PHO Services Agreement is a contract between PHOs and the Government. It outlines rates and funding criteria. This agreement is updated every year; we used the most up to date edition available at the time of conducting our research (4), dated June 2021. This document includes funding figures which we used to inform our models for capitation funding, VLCA, CSC and HUHC. All funding figures are annual.

First-level services capitation

There are two types of first-level services capitation funding, one for Access Practices and one for non-Access practices. The categories are historical, being put in place in the early years of the PHCS, to enable new funding for primary care to be rolled out first to Access practices and then, by age groups, to non-Access practices. Since the completion of the roll out in 2007, there now exists little difference between the funding amount of these two practice types. There is a very slightly higher level of funding for younger people, who do not have a HUHC, in an Access practice but not enough to make a meaningful difference in overall funding. We

chose to use figures for the Access practices because these practices were originally intended to serve a high needs population.

High user health cards

These cards are applied for by the practice, on behalf of the patient. They are allocated to patients who consult a GP 12 or more times a year. Funding for HUHC is part of the capitation payment; we present the HUHC payments separately for transparency. For example, capitation rates for someone with a HUHC, for a female age 0-4, is \$682.27; rates for someone without a HUHC are \$456.42, the difference (\$225.85) is the HUHC payment that we used in our calculations.

VLCA practices

To be a VLCA practice, 50% or more of their enrolled population must be high needs. These practices also agree to keep patient co-payment fees capped (currently at \$ 19.50 for adults) in return for receiving an additional payment on top of the capitation funding, for each enrolled person in the practice.

Community Services Card holders

CSCs are available to those households with a low household income, in public housing, or receiving an accommodation supplement. This qualifies many people including older people on government superannuation, students, veterans or people over 16 and living away from home to be eligible for a card. Since 2018, practices have been entitled to a higher rate of capitation funding for each enrolled person who holds a CSC, provided that co-payments are capped (to the same level for VLCA practices).

Statistical methods

To obtain an accurate demographic structure of our population, we used Ministry of Health enrolment data (June, 2021). We did this by taking general population totals, and calculating what percentage of the population made up each demographic group. For example, our population contains 43,360 high need males aged 0-4, which equals 5.3% of the high needs population. These proportions were then applied to our hypothetical 5,000 person practice, e.g., 5.3% of our 5,000 person practice with 50% high needs patients would be 133 people. This gave us our total number of enrolled patients, in each practice, by age, needs status and sex. These proportions were then used to build our hypothetical practices and to calculate their capitation funding totals.

Current funding formulas from the PHO agreement were used to inform our models for capitation and VLCA funding. For example, we have 133 patients in our 0-4 years, high needs male group in our 50% practice. This age group receives \$480.55 in capitation, per patient; therefore this group would receive \$63,913.15 per year ($\480.55×133). This approach was then repeated for each age/sex category in each of the five hypothetical practices. We repeated this distribution formula for the VLCA payments. We did not include the 30% high needs practice in these calculations as they would not qualify for VLCA payments based on the criteria of needing 50% high needs enrollees to qualify.

Unlike capitation and VLCA payments which are applied to every person in our hypothetical practice, CSC and HUHC are different as not all patients qualify for this payment. Our method for calculating these payments was slightly different because we had to include the proportion of people who do and do not have one of the cards. The enrolment data provided us with these totals; we then used the same calculations as with the capitation funding to find the proportion of our hypothetical practice who would and would not have the cards.

Results

We show below results for two hypothetical practices, one with 100% high needs enrolment and one with 100% not high needs enrolment (Figure 1). This shows that age is a strong determinant of capitation funding. The funding levels reflect the different age distributions of the populations – with Māori and Pacific populations having a younger age profile, and non-Māori, non-Pacific having an older age profile; this interacts with the funding formula which provides significant funder for older people (65+).

Figure 1: Hypothetical capitation funding for 100% high need and 100% not high need practices

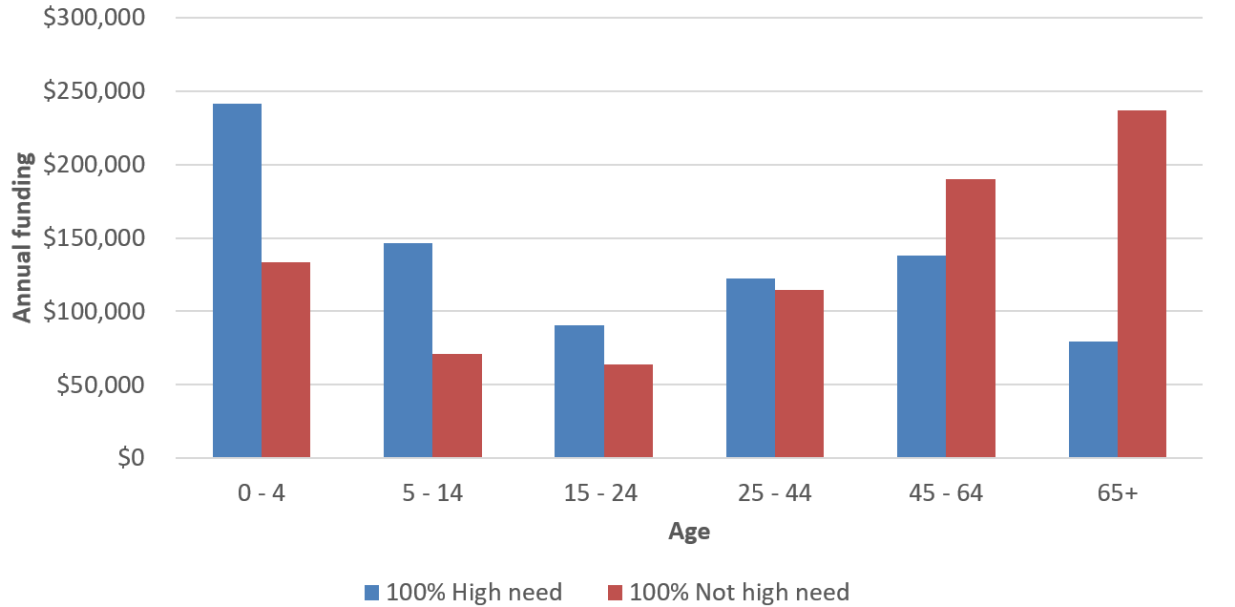


Figure 2 shows the capitation funding of all four of our hypothetical practices. This shows that the capitation rates are similar for all our practices and there is not a proportionate increase in funding for practices that cater for a higher proportion of high needs people.

Figure 2: Capitation funding totals for each hypothetical practice

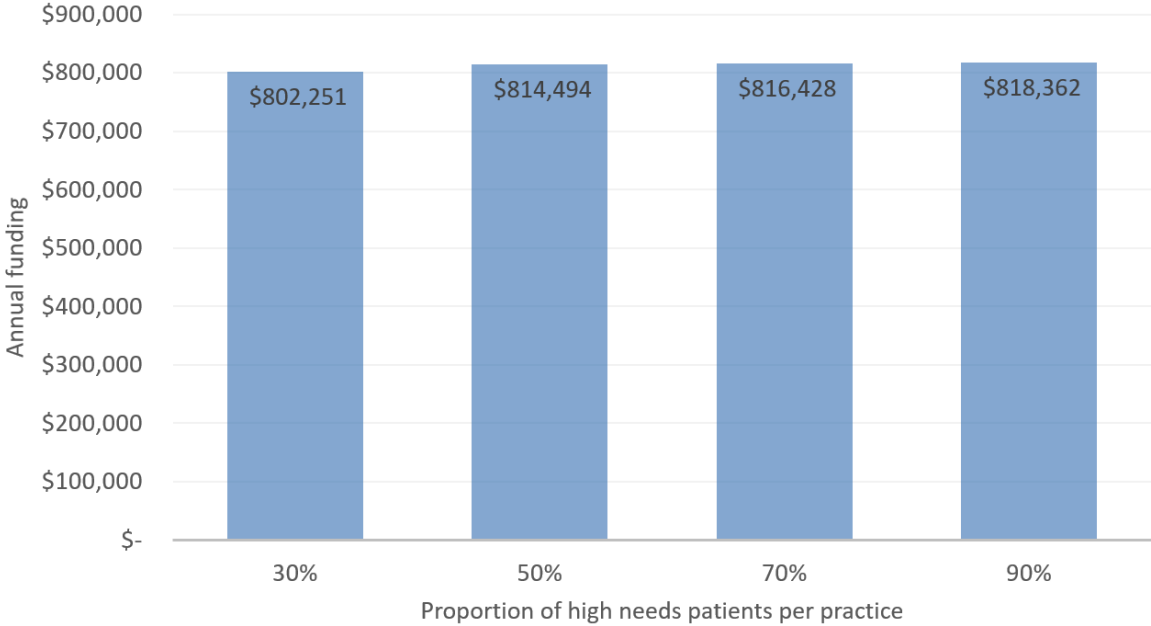
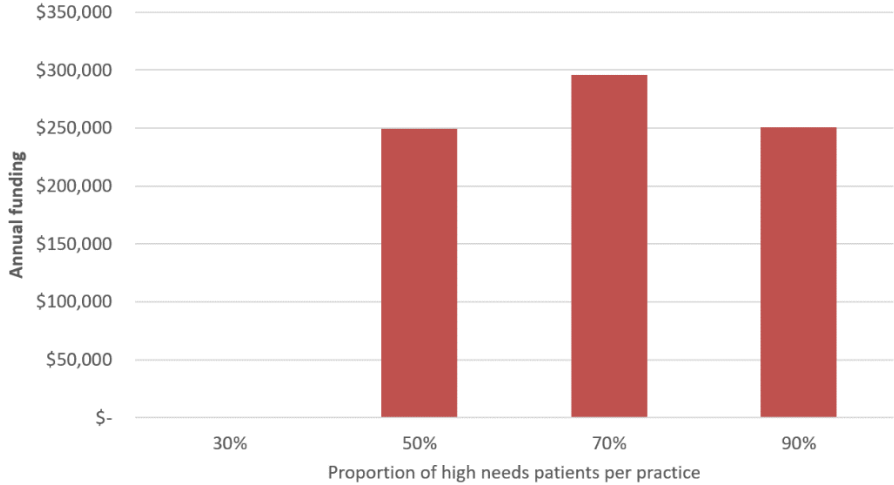


Figure 3 shows the VLCA funding that each hypothetical practice receives. The 90% hypothetical practice has a lower amount of funding than the 70% practice. This is due to the age distribution; the high needs population has a lower proportion of older people due to lower median age of Māori and Pacific people.

Figure 3: VLCA funding for each hypothetical practice



Summary of income for Non-VLCA practices

Table 1 shows the overall income, from the streams we have modeled, for a non-VLCA practice. Both CSC and fees-free Under 14s funding increase in a sequential way, although not proportionally to the increase in high needs patients. HUHC has minimal impact in relation to other funding sources.

Table 1: Annual practice funding according for various funding streams for non-VLCA practices

	Capitation	Fees-free under 14s	CSC	HUHC	Totals
Proportion of high needs patients					
30%	\$802,251	\$91,763	\$170,178	\$1,942	\$1,066,134
50%	\$814,494	\$102,413	\$185,864	\$1,917	\$1,104,688
70%	\$816,428	\$113,063	\$201,550	\$1,890	\$1,132,931
90%	\$818,362	\$123,713	\$217,235	\$1,865	\$1,161,175

Summary of income for VLCA practices

Table 2 shows the overall revenue, from the streams we have modelled, for a VLCA practice. The same figures as Table 1 apply here, except for the addition of VLCA funding and the exclusion of Fees-free under 14s funding.

Table 2: Annual practice funding according for various funding streams for VLCA practices

	Capitation	VLCA	CSC	HUHC	Totals
Proportion of high needs patients					
30%	\$802,251	N/A	\$170,178	\$1,942	\$974,371
50%	\$814,494	\$312,961.18	\$185,864	\$1,917	\$1,315,236
70%	\$816,428	\$273,813.14	\$201,550	\$1,890	\$1,293,681
90%	\$818,362	\$251,256.54	\$217,235	\$1,865	\$1,288,719

Discussion

Based on our five hypothetical practices, the levels of revenue show that capitation funding alone does not account for the concentrations of complexity associated with serving high needs populations in primary care. Our study shows that VLCA practices, who are required to serve at least a 50% proportion of high needs people, are no more financially advantaged than practices who do not serve these populations. We highlight the inequitable funding implications of a formula that uses age and sex as its key demographics to inform need status amongst Māori, Pacific people and people living in areas of high deprivation.

VLCA funding, a resource designed to improve access to care for high needs populations, appears to not cover the loss of copayments or the extra cost associated with serving this group. Despite population differences, the VLCA funding formula uses the same demographic information as the capitation formula. This formula is not weighted according to prevalence of illness despite this being shown to increase accuracy when harnessing funds for an established priority (13). For example, our hypothetical practices with 90% high needs people has a lower income than that of a practice with 70% high needs people. Although we did not model user copayments, others have done so (10). They show that the small increase in funding with the caveat of capped co-payments and other drawbacks associated with serving high needs populations, means that VLCA practices stand to be financially burdened by serving elevated levels of high needs people.

As these practices also have to cap their fees, so cannot recoup income through higher co-payments, they suffer doubly. A recent report concluded that the mandatory capping of patient co-payments means that VLCA practices often receive less total revenue than non VLCA practices (10). Further burdens such as higher patient turnover, higher level of non-payment of co-payments, lead to further financial hardship for VLCA practices.

Strengths and weaknesses

Whilst this study covers the main sources of funding for general practice, some are left out. Some, we considered the contribution to net income as negligible and for some the information was not accessible or relevant for inclusivity. Service to improve access scheme, for example, was designed to improve access to primary care services. It was designed to recognise that high needs groups had been shown to have very similar rates of use of primary care services, likely due to significant barriers to accessing care (e.g, from co-payments, lack of transport or caregiving support, inability to get time off work, etc). This scheme is funded

on a case-by-case basis for specific initiatives, with the funding going to PHOs in the first instances rather than practices. Whilst it is targeted specifically for high needs populations, it serves a different purpose, and it is difficult to quantify using our modelling approach. Other streams we did not incorporate include rural funding, Care Plus for patients with long term conditions, and funds delegated to help practices serving a high proportion of tourists.

One strength of this study is the use of up-to-date enrolment data which provided us with an accurate demographic spread. This means our results can be generalisable to the population of Aotearoa New Zealand. However, the hypothetical nature of our models limits the inferences that we can make for real practices. The actual demographic breakdown will differ from one practice to another, and hence so will the revenue earned from capitation funding.

Use of enrolment data was appropriate for our study but does not show the level of unmet need (11) or unenrolled people who are seeking care (14). Future research could further address high needs populations to assess the number of people with multiple chronic conditions who go on to use greater levels of secondary or tertiary care due to their condition not being appropriately treated at a primary level.

Relevance to other literature

The finding that a capitation formula which is determined only by age and sex does not account for differences between populations, is supported by Penno et al (15). They state that if demographic-based models are not risk adjusted, they can stand to perpetuate long standing health disparities. The same paper found that Aotearoa New Zealand and Stockholm were the only regions which depended on age and sex as a predictor of need rather than using this in conjunction with disease status. The former implies that consideration of chronic disease is a crucial factor when deciding how much funding a population should be allocated. This supports literature from Canada who report physicians serving low-income patients are often underfunded due to longer consultation time and case complexity (16). Our findings also grow the body of knowledge that highlight the structural discrimination towards Māori in the health system. (17)(18)(19)

Implications

The implications of this study are that practices may be forced to make a choice between financial stability and serving people who are most in need of care. This may lead to 'cream skinning'. When applied in this context, it means that practices may choose to not enrol high needs patients through fear of case complexity. Capitation formulas transfer financial risk

from payers to providers; if the primary care provider cannot afford this risk, then the consequences transfer down to patients. Aotearoa New Zealand and Australia are the only countries which recognise indigenous ethnicity as a determinant for being in a higher needs category. This study could be used to inform decisions on funding formula for other countries such as Canada or the United States who have indigenous populations who suffer poorer health status than non-indigenous populations.

Structural inequity

Based on the funding available to practices who serve greater levels of high needs patients, there is evidence of structural discrimination in the health sector. When formulas continue to use age as the primary determinant of funding, we continue to underfund practices which serve higher proportions of Māori and Pacific people.

Funding formula must recognise differences in needs if they are to be fair, if those with higher needs are to get the services they require, and if the practices serving a higher needs population is to be financially sustainable.

It has been widely documented that these populations suffer from premature mortality and morbidity and have a higher proportion of young people relative to the rest of the Aotearoa New Zealand population (12). Initiatives including HUHCs and CSC aim to reduce this inequity, but their efficacy is debatable. We have demonstrated that the practice level revenue they reap is negligible in reducing the deficit between those serving low and high proportions of high need patients. Issues such as low level of uptake and inefficiency at capturing the nuance of low income (for example, some eligibility thresholds for single people sit below the minimum wage) mean that the CSC scheme does not always reach its intended population (7). HUHC have not been evaluated in the literature, but Ministry of Health data shows that the uptake may be far less than eligible population (20).

Conclusion

In conclusion, information from our hypothetical modelling shows the existence of structural discrimination within the capitation funding formula of Aotearoa New Zealand. Use of age as a main determinant for capitation funding perpetuates the longstanding neglect, from the health system, to acknowledging the younger age distribution of high needs populations. Initiatives such as High Use health and Community Service Cards, struggle to achieve this target and do not contribute meaningfully to overall funding. We do not believe that general practices who serve a high proportion of high needs patients are adequately funded to do so.

References

1. Smith, Peter C. Formula Funding of Public Services [Internet]. 2007 [cited 2021 Nov 2]. Available from: <https://library.oapen.org/viewer/web/viewer.html?file=/bitstream/handle/20.500.12657/24246/1005885.pdf?sequence=1&isAllowed=y>
2. Penno E, Gauld R, Audas R. How are population-based funding formulae for healthcare composed? A comparative analysis of seven models. *BMC Health Serv Res*. 2013 Nov 8;13(1).
3. The Primary Health Care Strategy [Internet]. Ministry of Health NZ. [cited 2021 Oct 8]. Available from: <https://www.health.govt.nz/publication/primary-health-care-strategy>
4. PHO-Services-Agreement-Version-6.3-1-July-2021.pdf [Internet]. [cited 2021 Nov 2]. Available from: <https://tas.health.nz/assets/Primary-Care/PHO-Services-Agreement-Version-6.3-1-July-2021.pdf>
5. Downs A Fulbright New Zealand, Ian Axford (N.Z.) Fellowships in Public Policy. From theory to practice: the promise of primary care in New Zealand [Internet]. 2017 [cited 2021 Oct 8]. Available from: <http://www.fulbright.org.nz/wp-content/uploads/2017/09/DOWNS-From-Theory-to-Practice-The-Promise-of-Primary-Care-in-New-Zealand-.pdf>
6. Atkinson J, Salmond C, Crampton P. NZDep2018 Index of Deprivation. 2020;65.
7. Crampton P. The ongoing evolution of capitation funding for primary care: the December 2018 PHO capitation funding changes for Community Services Card holders. *N Z Med J Online*. 2019 Jul 12;132(1498):69–78.
8. H-and-D-interim-report-August-2019-Section-C.pdf [Internet]. [cited 2021 Nov 2]. Available from: <https://systemreview.health.govt.nz/assets/HDSR-interim-report/3315fe374c/H-and-D-interim-report-August-2019-Section-C.pdf>
9. bpj13_cardio_pages_15-19.pdf [Internet]. [cited 2021 Oct 8]. Available from: https://bpac.org.nz/bpj/2008/may/docs/bpj13_cardio_pages_15-19.pdf
10. Young M, Comendant C. Methodology for Estimating the Underfunding of Māori Primary Health Care. :66.
11. Hau, Kenny, Cumming, Jacqueline, Irurzun Lopez, Maite, Jeffreys, Mona, Crampton, Peter P. Submitted manuscript: Concentrations of compleity in primary care: analysis of New Zealand Health survery data. 2021.
12. Flynn M, Carne S. Māori Housing Trends 2010. :96.
13. Miller HD. The Building Blocks of Successful Payment Reform: 2015;(3):85.
14. Irurzun-Lopez M, Jeffreys M, Cumming J. The enrolment gap: who is not enrolling with primary health organizations in Aotearoa New Zealand and what are the implications? An exploration of 2015–2019 administrative data. *Int J Equity Health*. 2021 Dec;20(1):93.
15. How are population-based funding formulae for healthcare composed? A comparative analysis of seven models - Document - Gale Academic OneFile [Internet]. [cited 2021 Oct 8]. Available from: <https://go-gale-com.helicon.vuw.ac.nz/ps/i.do?p=AONE&u=vuw&id=GALE%7CA534637149&v=2.1&it=r>
16. Shin S, Schumacher C, Feess E. Do Capitation-based Reimbursement Systems Underfund Tertiary Healthcare Providers? Evidence from New Zealand. *Health Econ*. 2017;26(12):e81–102.

17. Langton J, Crampton P. Capitation funding of primary health organisations in New Zealand: are enrolled populations being funded according to need? *N Z Med J Online*. 2008 Apr 18;121(1272):47–58.
18. Came H, Baker M, McCreanor T. Addressing Structural Racism Through Constitutional Transformation and Decolonization: Insights for the New Zealand Health Sector. *J Bioethical Inq*. 2021 Mar;18(1):59–70.
19. Chin MH, King PT, Jones RG, Jones B, Ameratunga SN, Muramatsu N, et al. Lessons for achieving health equity comparing Aotearoa/New Zealand and the United States. *Health Policy*. 2018 Aug;122(8):837–53.
20. Enrolment in a primary health organisation [Internet]. Ministry of Health NZ. [cited 2021 Nov 2]. Available from: <https://www.health.govt.nz/our-work/primary-health-care/about-primary-health-organisations/enrolment-primary-health-organisation>