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Nicole Black, Anthony Harris, David W. Johnston and Trong-Anh Trinh

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Nicole Black: Centre for Health Economics, Monash Business School, Monash University (email: Nicole.Black@monash.edu); Anthony Harris: Centre for Health Economics, Monash Business School, Monash University (email: anthony.harris@monash.edu); David W. Johnston: Centre for Health Economics, Monash Business School, Monash University (email: David.Johnston@monash.edu); Trong-Anh Trinh: Centre for Health Economics, Monash Business School, Monash University (email: trong-anh.trinh@monash.edu).

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Workforce Impacts of Subsidised Mental Healthcare: Evidence on Supply, Earnings, and Geographic Distribution*

NICOLE BLACK, ANTHONY HARRIS, DAVID W. JOHNSTON, and TRONG-ANH TRINH

Centre for Health Economics, Monash Business School, Monash University

Abstract

To improve access to affordable mental healthcare, Australia introduced a national, publicly-funded program in 2006 to subsidise psychological services, which were previously privately funded. Theory suggests that by increasing demand, subsidies should incentivise providers to expand supply, either by entering the workforce or by increasing hours. However, expansion depends on supply constraints, particularly in non-metropolitan areas with pronounced workforce shortages. This study examines the program's effects on the size, work hours, demographic composition, earnings, and location of practising psychologists. Using a difference-in-differences approach with census data and Australian Tax Office records, we find that the program: (1) increased the supply of practising psychologists by 47% within five years, with minimal effect on average hours worked per psychologist; (2) raised psychologists' annual personal incomes by 17%; and (3) increased the likelihood of psychologists working in non-metropolitan areas by 8%, supporting broader access to mental healthcare.

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* *Addresses for correspondence:* Black: Centre for Health Economics, Monash Business School, Monash University, 900 Dandenong Road, 3145 Caulfield East, Vic Australia, Nicole.Black@monash.edu. Harris: Centre for Health Economics, Monash Business School, Monash University, 900 Dandenong Road, 3145 Caulfield East, Vic Australia, anthony.harris@monash.edu. Johnston: Centre for Health Economics, Monash Business School, Monash University, 900 Dandenong Road, 3145 Caulfield East, Vic Australia, David.Johnston@monash.edu. Trinh: Centre for Health Economics, Monash Business School, Monash University, 900 Dandenong Road, 3145 Caulfield East, Vic Australia, trong-anh.trinh@monash.edu.

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Disclaimer: This paper uses data from the annual curated tax and superannuation records, known as the Australian Taxation Office (ATO) Longitudinal Information Files (ALife), which is produced by the ATO. All findings, opinions and conclusions are those of the authors and do not represent the views of the Australian government or any of its agencies.

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1 Introduction

Mental health disorders are a major contributor to poor health and disability worldwide. Although effective treatments exist, many individuals in need of care do not access mental health services, often due to high out-of-pocket costs, which make these services unaffordable (Wang et al., 2007). Until late 2006, Australia’s public health system provided no subsidy for psychological therapy services, leaving most psychological care entirely self-funded. To improve affordability and accessibility, Australia introduced a nation-wide publicly-funded program in November 2006 that subsidised the cost of psychological services. The policy, known as the Better Access Initiative (BAI), subsidised over 30 services provided primarily by psychologists, as well as eligible general practitioners, social workers, and occupational therapists. Since its introduction, the use of BAI services has steadily risen, with government expenditure reaching \$1.2 billion in 2021 (Pirkis et al., 2022).

The impact and value of the BAI policy remain uncertain, especially given current issues like long wait times, high out-of-pocket costs, and inequities in access to care (Productivity Commission, 2022). While several studies have examined the BAI’s effects on patient outcomes (Pirkis et al., 2011; Whiteford et al., 2013; Jorm, 2018; Pirkis et al., 2022), there remains a notable gap in understanding the policy’s supply-side effects.¹ Understanding these effects is especially important in the mental health sector, where severe provider shortages and escalating demand for services are persistent challenges. Large-scale healthcare reforms like this one can significantly alter provider behaviour, reshaping the availability, quality, and accessibility of services (Clemens and Gottlieb, 2014; Einav et al., 2018; Alexander and Schnell, 2024). Insights gained from this study may also provide valuable lessons for implementing similar health policies in other high-income countries or across different healthcare professions.

Standard economic theory suggests that a price subsidy, which raises patients’ willingness to seek mental health services, should incentivise providers to expand their supply. Psychologists may respond by entering or re-entering the market (extensive margin) or by working longer hours (intensive margin), and they may also adjust pricing in response to increased demand. Price responses are possible in this context as the Better Access Initiative did not constrain the prices that mental healthcare professionals could charge patients for subsidised services. The extent and timing of these supply and price changes, however, depend on the relative elasticity of the supply of psychologists and the demand for mental health services. Importantly, while demand likely increased rapidly, the change in supply may have been slower if it required the training of new providers, whereas an existing pool of qualified but non-practicing psychologists could have led to a faster response. Given the different possible responses to the BAI, understanding the effects requires detailed empirical analysis.

Our research addresses three main questions. First, did the BAI increase the total supply of psychologist working hours, through either a higher number of practitioners or more hours worked per practitioner, and did it alter the demographic composition of the workforce? Second, to what extent did the BAI impact psychologists’ incomes over time, given that income increases are a primary mechanism through which the program might incentivise greater supply? Third, did the program lead to an increased concentration of psychologists in non-metropolitan areas, potentially improving accessibility in these regions?

To address these questions, we use data from the Population Census and the Australian Taxation Office (ATO). The Census data captures nearly the entire population of healthcare workers, including psychologists, and provides information on their work hours, enabling us to analyse changes in supply

¹Jorm (2018) finds a significant increase in mental health services post-BAI, yet there is no discernible effect on psychological distress prevalence or suicide rates. Several studies have documented geographical and socioeconomic disparities in mental health service utilisation after the introduction of the BAI, with urban populations benefiting more (Pirkis et al., 2011; Harrison et al., 2012; Meadows et al., 2015; Pirkis et al., 2022). The inconclusive evidence regarding BAI’s impact can be partly attributed to the lack of a robust research design, specifically the absence of a proper control group or data from before the policy was introduced (Allen and Jackson, 2011).

and work patterns. We complement this with data from a 10% random sample of all registered tax filers from the ATO, offering insights into psychologists' incomes and workforce location. Our identification strategy employs a Difference-in-Differences (DiD) model to estimate the causal effects of the initiative.

Our first analysis reveals a significant increase in the number of psychologists relative to a control group of allied health professionals unaffected by the policy. This increase is estimated at approximately 47% five years after the policy's introduction. Further examination shows that specific demographic groups, such as older workers, women, and recent migrants, largely drove this growth. While the initiative successfully expanded the number of psychologists, we observe no corresponding increase in average work hours.

Our second analysis finds that the BAI led to a 17% increase in psychologists' total incomes, with the effect being stronger for those continuously practicing from 2001 to 2012. An event-study analysis shows that income gains increased over time, likely reflecting growing demand for services and a gradual increase in supply. Our third analysis finds that the probability of psychologists working in non-metropolitan areas increased by 8%, with the effect size highest several years post-policy. Together, these findings suggest that the BAI not only increased the supply and incomes of psychologists but also contributed to a more equitable distribution of mental health professionals across urban and rural areas.

Beyond psychologists, we also examine the BAI's impact on accredited mental health social workers, a smaller workforce eligible for BAI subsidies for psychological services. Social workers in Australia play an essential role in addressing diverse social and mental health issues, often in community settings. However, their fewer years of formal university-level education, less intensive training in clinical psychology, and lower level of regulatory oversight might lead to perceived differences in service quality, impacting patient preferences (Koeske et al., 1993; Ivey et al., 1998; Robiner, 2006). Consistent with economic theory, which suggests that increased subsidies for close substitutes drive demand toward the perceived higher-quality service, we find that social workers did not experience significant income gains post-BAI. Instead, evidence suggests that some social workers transitioned into psychology roles in response to the new financial incentives.

This study contributes to the growing international literature on the impact of health policies and programs on healthcare providers. While previous studies in the United States have explored the supply-side effects of Medicaid expansions, they have primarily focused on primary care physicians, examining outcomes such as labour supply (Neprash et al., 2021), number of work hours (Courtemanche et al., 2019; Garthwaite, 2012; Miller and Wherry, 2017), job postings and participation (Buchmueller et al., 2016; Dillender, 2022; Frakes et al., 2020). Only a few studies have explicitly focused on mental healthcare providers. For instance, Grooms and Ortega (2019) find that Medicaid expansion did not significantly alter the supply of mental health facilities or affect patient waiting times, and Maclean et al. (2018) show that expanded private health insurance for substance-use-disorder treatment led to reduced price discounts and lower participation in public insurance markets. Outside the U.S., Douven et al. (2015) evaluate the implementation of a new reimbursement schedule in Dutch mental healthcare and find that providers extended patient treatment durations to reach higher fee thresholds.

Our study differs from this mental healthcare literature in a critical way. While most previous studies focused on expansions of existing insurance programs to cover new subpopulations or specific treatments, the BAI introduced public subsidies for a whole category of services that were previously private. This policy shift effectively transformed clinical psychology nationwide from a predominantly privately funded service to one largely supported by public funds.

Our study also connects to the literature examining the geographical decisions of healthcare providers, particularly the choice between urban and rural practice locations (Chen et al., 2018; Huh, 2021; Ma et al., 2022). This decision carries significant implications for healthcare accessibility and equity, especially in the context of mental health services, due to the scarcity of professionals choosing to practice in these

areas. Understanding factors that influence the geographical distribution of mental health professionals, including policy changes like the BAI, is an important step towards mitigating these disparities.

The rest of the paper is organised as follows. Section 2 provides an overview of mental health issues in Australia and the introduction of the BAI in 2006. Section 3 gives information on the data we use, while Section 4 discusses our econometric approach. In Section 5, we show and discuss our results. Section 6 concludes.

2 The Better Access Initiative

Before the Better Access Initiative (BAI), Australia’s healthcare system provided limited financial support for psychological services targeting common anxiety and depressive disorders. While psychiatry services were subsidised, these primarily served individuals with more severe and complex mental health needs (Bassilios et al., 2010). To address this gap, the Australian Government introduced the BAI in November 2006, aiming to increase access to psychologists and other allied health providers through new Medicare (subsidised) services. A central feature of the BAI were rebates covering up to 10 individual and 10 group sessions of evidence-based psychological therapy per calendar year, reducing patient out-of-pocket costs.² Uptake of the program has been substantial, with over 10% of the Australian population receiving a BAI service in 2021 (Pirkis et al., 2022). Figure A1 in the Appendix shows the rapid increase in subsidised services provided by psychologists following the initiative’s introduction. It also shows that in contrast to psychologists, there was little change in the quantity of subsidised services provided by psychiatrists.

A subsidy lowers patients’ out-of-pocket costs, which theoretically increases demand and encourages supply either through existing providers working longer hours or new entrants. The impact on psychologists’ annual income is expected to be positive due to both increased service provision and the potential for higher fees per service, as psychologists capture part of the subsidy benefit. The extent of these income gains and the resulting distribution of benefits between providers and consumers depends on the relative elasticities of supply and demand: if the psychology workforce supply is inelastic, higher income per service will dominate; if demand is inelastic, consumers gain more through reduced costs. Given typical labour market frictions in healthcare, a portion of the subsidy is likely to translate into increased fees, especially in cases where the supply of services cannot adjust quickly to meet demand.

3 Data

Our first source of workforce data comes from multiple Australian Censuses, conducted in 2001, 2006, 2011, and 2016, which covered approximately 95% to 98% of the population.³ This dataset provides detailed information on healthcare workers, with psychologists and comparison healthcare groups identified through 4-digit Australian and New Zealand Standard Classification of Occupations (ANZSCO) codes. We focus specifically on healthcare workers in the allied health sector using the 2006 Australian and New Zealand Industry Classification (ANZSIC), which allows us to isolate psychologists delivering focussed psychological strategies and other therapeutic services, rather than those working in sectors such as education, government, or research.⁴ Using these definitions, there were 3,835 psychologists in

²While the BAI provides a mechanism for subsidised services, psychologists may continue to offer unsubsidised (privately funded) services to patients, either as an alternative or in conjunction with the subsidised sessions.

³The Census occurs every five years and all Australians are required by law to take part in the Census, with fines applied to those who do not. Nevertheless, there is a small proportion (about 2%–5%) of non-responders in each Census. The percent of non-responders among our populations of interest – healthcare professionals – is likely lower than this, given their average age, English-speaking ability, and education levels.

⁴There is not a consistent definition of allied health professionals across countries. The Australian Government recognises allied health professions that have: an accredited university qualification; a national professional organisation; national

2006 (just before the initiative) and 7,914 in 2011 (after the initiative).

The census data also includes information on work hours, which we use to examine psychologists’ work patterns before and after the introduction of the BAI. Notably, work hours were recorded differently across the two censuses: the 2011 and 2016 Censuses captured weekly work hours as a continuous variable, while the 2001 and 2006 Censuses used categorical intervals.⁵ To ensure comparability, we assigned the midpoint of each 2006 interval as the number of hours worked.⁶ Based on this, average weekly work hours were 30.5 in 2006 and 29.8 in 2011 for psychologists.

Our second data source is the Australian Longitudinal Information Files (ALife), a dataset comprising a 10% random sample of all tax filers as recorded by the Australian Tax Office. ALife provides longitudinally linked tax records from the financial year 1996-97 onwards (in Australia the financial year is from 1 July to 30 June), with a high retention rate (96.5%) between consecutive years: approximately 96.5% of tax filers who lodge in a given year also lodge in the subsequent income year (Abhayaratna et al., 2022). We use the same ANZSCO codes as in the Census data to identify psychologists and other healthcare workers.

Our principal measure from ALife is real total taxable income, a comprehensive income measure that includes wages, allowances, personal service income, bonuses, and fringe benefits, adjusted for inflation using the 2011 Consumer Price Index (CPI). In addition to income, ALife data includes information on workers’ residential locations, categorised into major cities, inner regional, outer regional, remote, and very remote. We define non-metropolitan areas as the latter three categories, allowing us to examine shifts in mental health professionals’ location due to the BAI. Finally, we use individual characteristics available from ALife, such as age, gender, and self-employment status, to explore the varied effects of the initiative.

4 Methodology

We employ a Difference-in-Differences (DiD) approach to estimate the impact of the BAI on psychologists’ outcomes. This approach allows us to isolate the BAI’s effects on the psychology workforce by comparing changes in outcomes for psychologists (the treatment group) with those of a control group of allied health professionals unaffected by the policy. To control for variations over time in the demand for allied healthcare, we selected four allied health occupations as controls: physiotherapists (62%), optometrists (15%), chiropractors (13%), and podiatrists (10%). These professions are comparable to psychologists in important respects—they operate primarily in private practice settings, adhere to similar regulatory and educational standards, and face similar market dynamics. Importantly, these professionals do not provide mental health services and were therefore unaffected by the BAI. During our study period, they also did not experience major policy changes that could alter service demand or supply, providing a stable comparison group.⁷

To capture the initiative’s effects, we employ the DiD model for two analyses. For the census data, we treat 2006 as part of the pre-BAI period since the policy was introduced in November, making its impact unlikely to appear in that year’s data. In contrast, for the ALife tax data, which is based on financial years, we use 2006-07 as the first period when the BAI comes into effect. Our primary model

competency standards and assessment processes; autonomy of practice; and a clear scope of practice.

⁵In the 2001 and 2006 Census, work hours were recorded in the following categorical intervals: 1-15 hours, 16-24 hours, 25-34 hours, 35-39 hours, 40 hours, 41-48 hours, and 49 hours and over.

⁶As a robustness check, the continuous work hours data from the 2011 and 2016 Censuses were also categorised, and midpoints were selected for both census years. The results from this approach were consistent with our primary analysis.

⁷Appendix Table A1 provides descriptive statistics, showing psychologists tend to be older and more often female than the control health workers; however, differences in education and other characteristics are minimal and generally statistically insignificant except for age.

for analysing individual i at time t is as follows:

$$y_{it} = \beta_0 + \beta_1(\text{Psych}_i \times \text{BAI}_t) + \mu_i + \delta_t + \epsilon_{it} \quad (1)$$

where Psych_i indicates the person is a psychologist and BAI_t is a binary variable equal to 1 in the years after the introduction of the BAI. For the analysis using the longitudinal tax data (2001 – 2012), we include individual fixed effects (μ_i), effectively comparing outcomes of the same psychologists and control-group healthcare workers before and after the BAI’s introduction, which removes the need to include occupation (treatment) indicators. Year fixed effects are denoted by δ_t . The coefficient of interest, β_1 , captures the change in psychologists’ outcomes relative to the control group.

The census data, being cross-sectional, requires a simplified version of Equation (1) in which we compare the number of workers and average work hours for treatment and control groups in 2001 and 2006 (pre-BAI), and 2011 and 2016 (post-BAI). Since individuals cannot be matched across census years, individual fixed effects are not included in this analysis.

Our baseline analysis using the tax data is conducted on a balanced sample, including only those workers who remained in the same occupation before and after the BAI. To account for the potential return of qualified psychologists who may have left the workforce for other roles or reasons (e.g., caregiving or early retirement), we extend our analysis to include individuals identified as psychologists at any point from 2001 to 2012, alongside control-group workers who may have similarly varied their occupational status.

In addition to our main DiD model, we employ an event-study specification to assess the parallel trends assumption and explore the time-dynamics of BAI effects. For this, we replace the single post-BAI treatment indicator in Equation (1) with a series of year dummies (γ_τ) interacted with the treatment indicator, where the financial year 2005-06 serves as the baseline year and is omitted from the model:

$$y_{i,t} = \alpha_0 + \sum_{\tau=2001}^{2012} \alpha_1^\tau (\text{Psych}_i \times \gamma_\tau) + \mu_i + \delta_t + \epsilon_{i,t} \quad (2)$$

The α_1^τ estimates allow us to examine shifts in outcomes for psychologists relative to the control group over time.

While the Difference-in-Differences approach offers a robust approach for estimating the BAI’s causal impacts, the validity of our analysis relies on the assumption that, in the absence of the BAI, outcome trends for psychologists and the control group would have followed similar trajectories. Although we cannot entirely rule out the possibility that external factors unique to psychology, such as a growing societal awareness of mental health, might have influenced our results, the later reported results support the parallel trends assumption. For an unobserved shock to fully explain our findings, it would need to have coincided with the BAI’s introduction rather than representing a gradual change in relative outcomes over time.

A limitation of our analysis is the inability to estimate changes in the number of services provided or the prices charged by our treatment and control healthcare workers. This constraint arises because, before the BAI’s introduction, psychologists’ services were predominantly privately funded, leaving no Medicare data for a baseline comparison. Similarly, services provided by physiotherapists, chiropractors, and podiatrists are still largely privately funded and not covered by Medicare. Consequently, we focus on workforce outcomes such as worker counts, work hours, income, and geographic location – data we can observe pre- and post-BAI for both treatment and control groups.

5 Results

5.1 Effects of Better Access Initiative on number of workers and work hours

We begin by using Census data to examine whether the Better Access Initiative (BAI) influenced the number of practising psychologists and their average work hours. Figure 1 illustrates trends in these outcomes, using the 2001 Census as the baseline. The left panel shows that the number of psychologists and the control group (other allied health professionals) both increased by similar amounts during the pre-treatment period between 2001 and 2006 (17.7% for psychologists and 19.4% for the control group). However, following the BAI's introduction in 2006, the number of psychologists grew substantially, with a 143% increase in workforce size from 2001 to 2011, compared to a 53.9% increase in the control group. This marked expansion suggests a strong response in workforce supply to the policy.

The right panel of Figure 1 shows a gradual decline in work hours over time for both psychologists and other healthcare workers, with a slightly more pronounced reduction for psychologists post-BAI. However, it is not immediately clear whether this trend differs significantly between the treatment and control groups.

To formally assess these effects, we use a Difference-in-Differences framework, comparing changes in workforce size and work hours across the 2006 and 2011 Census periods for each group. The results in Table 1 show a 47% increase in the number of psychologists relative to the control group, suggesting that financial incentives under the BAI effectively increased the supply of psychologists. This finding aligns with previous research showing that expanding public insurance programs often boosts workforce participation in healthcare (Chen et al., 2018; Huh, 2021).

Conversely, we find no significant change in average work hours for psychologists compared to the control group post-policy. This may suggest that existing psychologists did not increase their work hours, or that any increase by existing professionals was offset by newly recruited psychologists joining the workforce on a part-time basis. However, this steady average combined with the large increase in workforce size implies a substantial rise in the total hours of psychological services provided. From a government policy perspective, this was a desirable outcome, as the BAI appears to have successfully responded to the increased demand through an increase in total service capacity.

Given the significant increase in the number of psychologists following the policy's introduction, we examine which demographic groups primarily drove this change. Using Census data on age, gender, education, migration background, and work location, we calculate workforce changes across these groups between 2006 and 2011, with results presented in Figure 2. The data indicates that older workers, particularly those aged 40 and above, contributed notably to the increase in psychologists, with this group seeing a 1.1% rise among psychologists compared to a 3.3% decline in the control group of allied health workers. Additionally, women psychologists experienced a 4% increase in workforce representation, which was higher than the 1.5% increase seen in the control group. Combining these groups, we observe that women aged 40 and above saw the largest increase, with a 5% rise for psychologists compared to a 2% decline in the control group. One possible explanation for this increase is that the BAI encouraged women who were previously out of the workforce, often due to caregiving responsibilities or early retirement, to re-enter professional practice.

Looking at other characteristics, the expansion among psychologists was also more pronounced for those with higher education levels (master's or doctorate degrees) and recent migrants (those arriving in Australia within the past decade), although the differences were not statistically significant compared to the control group. Overall, these results suggest that the BAI not only expanded the psychology workforce but also encouraged a greater demographic diversity within the profession.

To better understand the source of the substantial increase in psychologists post-BAI, we examined

the labour market status of individuals with postgraduate psychology degrees in the 2006 Census, conducted just months before the policy was introduced. People with advanced psychology degrees could transition relatively easily into clinical roles within allied health, so this analysis highlights potential flows of workers across employment states and sectors following the BAI's introduction.

We categorised individuals with postgraduate psychology degrees in 2006 into groups based on occupation, sector, and employment status: those working as psychologists in allied health, those employed as psychologists in non-allied health sectors (such as in hospitals or community services), those not employed in psychology-related roles (i.e., a different occupation), and those outside the labour force. Figure A2 in the Appendix shows that before the BAI, a significant number of trained psychologists were employed in non-allied health roles. For reference, the first bar represents psychologists already working in allied health, while the second and third bars depict psychologists employed in hospitals and education and community service sectors. Notably, these latter two bars together form a potential workforce nearly double the size of those in allied health in 2006. Among individuals not working as psychologists in 2006, most held positions in non-health sectors or were not active in the labour force, possibly due to early retirement or caregiving responsibilities. This group represents another potential source of professionals who could have re-entered clinical practice in response to the BAI incentives.

Overall, these findings suggest that the rapid growth in the psychology workforce following the BAI was likely driven by redeployment of trained professionals from non-clinical sectors and returnees to the workforce. This flexibility may be a unique feature of the mental healthcare workforce compared to other largely unsubsidised professions, like dentistry or physiotherapy, contributing to the policy's effectiveness in expanding mental health service capacity.

5.2 Effects of Better Access Initiative on psychologists' income

In the next part of our analysis, we use administrative tax data to examine the impact of the BAI on incomes. We begin with Figure 3, which illustrates income trends for psychologists and the control group of allied health workers from 2001 to 2012. Importantly, both groups' incomes trended similarly from 2001 to 2006, supporting the parallel trends assumption underlying our DiD approach. This pre-policy alignment suggests that, absent the BAI, psychologists' incomes would have likely continued to follow a similar trajectory to those in the control group.

After the BAI's introduction in 2006, psychologists' incomes diverge quickly from control group incomes. This increase suggests that new or existing clinical psychologists were able to capture a portion of the new government funding. Likely, they passed only a fraction of the subsidy to patients as reduced out-of-pocket costs, while retaining some themselves, leading to increased revenue per service.

Table 2 presents results from our DiD model using two samples to estimate income effects. Column 1 shows results for our baseline sample, a balanced panel including only psychologists who consistently remained in their profession, alongside control group members who also remained in the same occupation. Column 2 includes an expanded sample of all psychologists employed at any point from 2001 to 2012, capturing income effects on those potentially induced back into the profession by the BAI.⁸

The results in Column 1 indicate a 17.4% increase in psychologists' income due to the BAI, while Column 2 shows a smaller increase of 12% for the broader sample. These findings indicate that the income gains were somewhat larger for psychologists consistently active in their profession, aligning with the hypothesis that those already in practice were able to leverage the subsidy more quickly. Both results highlight the significant positive impact of the BAI on psychologists' earnings, leading to increased

⁸We apply the same criteria to individuals in the control group occupations to ensure that our analysis accounts for the dynamic nature of the labour market, where individuals may transition between occupations or re-enter their profession. However, it is important to note that, given the predominantly physical health focus of the control group occupations, transitions into psychology are less likely.

revenue per service and likely contributing to the policy’s success in expanding the workforce to meet higher demand.

Figure 4 displays the annual income effects using an event-study design based on Equation (2) and the balanced panel sample, with the financial year 2005-06 as the reference period. The coefficients for the income indicator (with 95% confidence intervals) remain close to zero in the pre-BAI years, which supports the parallel trends assumption and strengthens our claim that, absent the policy, income trends would have likely continued similarly between treatment and control groups. In the initial year post-BAI, income effects are modest, but by the third year, the effects are more pronounced, and by the fifth year, psychologists’ incomes are 14% higher than those of the control group of allied health workers.⁹

5.3 Geographical implications of Better Access Initiative

The BAI’s impact on the geographic distribution of psychologists is also important to evaluate. Understanding where healthcare professionals choose to practice helps assess the policy’s success in improving mental health service access across urban, regional, and remote areas. Access challenges are especially acute outside urban centres, where community and hospital-based services for mild to moderate anxiety and depression are limited, leading to longer waiting times. Using administrative tax data, Figure 5 shows the proportion of psychologists and control group workers residing in non-metropolitan areas (outer regional, remote, and very remote) before and after the BAI’s introduction. The figures reveal similar trends for the treatment and control groups, pre- and post-BAI.

However, using the DiD model with individual fixed effects, we observe that psychologists were more likely to work in non-metropolitan areas post-BAI, as presented in Table 3. The inclusion of individual fixed effects means these estimates represent changes in psychologists’ work locations over time. Specifically, the results suggest either an increased movement from metropolitan to non-metropolitan areas or a reduction in movement from non-metropolitan to metropolitan areas. The baseline estimates show a 1.6 percentage point increase, or 8% relative to the sample mean (0.2). When we expand the sample to include psychologists who practiced at any point from 2001 to 2012, the likelihood of working in non-metropolitan areas rises by 1.3 percentage points, or 6.8%.

The event study results shown in Figure 6 reveal statistically insignificant effects in every pre-BAI year, supporting the parallel trends assumption and reinforcing the validity of our DiD approach. From 2008 onward, however, we observe a clear and increasing positive effect on psychologists’ likelihood of working in non-metropolitan areas, with most post-BAI years showing statistically significant estimates. An explanation for these results is that, prior to the BAI, establishing a psychology practice in some rural areas was financially unviable, likely due to a lower willingness or ability to pay for services in these communities. By subsidising patient costs, the BAI boosted demand, enabling rural-based practices to become profitable and drawing psychologists to these regions.

Overall, the results indicate that the BAI contributed to a geographic shift in psychology services towards non-metropolitan areas, where mental health service shortages are prevalent. This shift is significant for improving access to care in underserved regions, which could lead to better mental health outcomes and reduced inequities.

⁹The apparent speed of income changes for psychologists post-2006 differs between Figure 3 and Figure 4. One explanation is the sample variation: Figure 3 uses the full sample, while Figure 4 is based on a balanced panel. This difference suggests that psychologists entering the clinical workforce in the initial BAI period may have earned higher wages and/or worked longer hours than those in the pre-existing workforce, contributing to the rapid income growth seen in the full sample. These new entrants, without pre-BAI patient lists, may also have had greater flexibility in setting fees, allowing them to respond more directly to the increased demand.

5.4 Heterogeneity analysis

We further explore heterogeneity in the effects of the BAI on psychologists' income and work location by examining variations across gender, age, geographic location, and self-employment status. First, we consider potential differences between male and female psychologists, as responses to the initiative may reflect broader societal and professional trends. For instance, female psychologists may be more likely to increase their labour supply in response to the policy, particularly if they are transitioning from part-time to full-time employment. Our census data analysis indicates that the increase in the number of psychologists post-BAI is notably higher among women. While Appendix Figures A3 and A4 reveal somewhat higher estimates of the effects of the BAI on both income and the likelihood of working in non-metropolitan areas for females compared to males, these gender differences are not statistically significant.

Second, we examine potential age-based differences by dividing the sample into psychologists under 40 and those aged 40 and above, given that the BAI may have affected younger and older psychologists differently. Figure A3 reveals a noticeable difference in estimated effects between these age groups, though, as with gender, the difference is not statistically significant. Further analysis shows that the impacts of the BAI are especially pronounced among women over 40, with an estimated 35.9% income increase for this group relative to similarly aged women in control allied health professions. This finding suggests that older female psychologists, who may have greater flexibility to expand their clinical practices and work hours, responded particularly strongly to the BAI's new financial incentives.

Third, we investigate the impact of self-employment status on psychologists' responses to the BAI, as self-employed practitioners might have greater flexibility to adjust hours, pricing, and practice location in response to financial incentives. The results indicate statistically insignificant effects of the BAI on the incomes and location choices of self-employed psychologists, due to high estimate imprecision. This limits the conclusions we can draw regarding employment type-specific responses to the policy. Finally, we assess whether the BAI had different impacts on psychologists based on geographic location, comparing those practicing in metropolitan versus non-metropolitan areas (Figure A4). Similar to the self-employment analysis, we find no statistically significant differences between metropolitan and non-metropolitan psychologists. This suggests that the policy's geographic impact was more about redistributing the workforce than creating location-specific income gains.¹⁰

5.5 Effects of Better Access Initiative on social workers

In the final results section, we extend our analysis to social workers, another group of mental health professionals affected by the Better Access Initiative. Social workers in Australia, particularly those with mental health accreditation, are integral to the healthcare system, often providing critical services in community settings. Unlike psychologists, the social work profession is self-regulated, with professional accreditation handled by the Australian Association of Social Workers (AASW), distinguishing them from the more stringently regulated psychology sector, which is subject to a range of regulatory requirements by the Psychology Board of Australia (PsyBA) and the Australian Health Practitioner Regulation Agency (AHPRA). Moreover, the workforce of social workers is considerably smaller, most often employed in the public sector treating those with complex social issues, and they generally possess less postgraduate education compared to psychologists, as shown in Appendix Figure A5. Although, it should be noted that social workers are required to undergo additional training (at least 2 years) to be an accredited mental health social worker who can provide psychological services under the BAI.

¹⁰We also conduct equality tests to validate our findings. The obtained p -values for the income dimensions are as follows: gender, 0.158; age group, 0.143; self-employment, 0.226; and working area, 0.301. Similarly, for working in non-city areas, the p -values are: gender, 0.073; age group, 0.450; and self-employment, 0.149.

These differences in regulation, workforce size, and qualifications likely contribute to a perceived difference in psychological service quality between the two professions, influencing consumer choice in a setting where both services are subsidised. Theory suggests that when subsidies reduce the price gap between two substitutes, consumers tend to favour the good perceived to be of higher quality, in this case, psychologist services over social workers services, especially when the out-of-pocket costs for each service become comparable (see Appendix Figure A6). This preference likely impacts not only consumers but also GPs, who act as gatekeepers in directing patients to BAI psychological therapies. As a result, while BAI subsidies lowered patient costs across both provider types, the demand shift towards psychologists may have kept demand for social workers relatively constrained.

Using a DiD approach with social workers as the treatment group and other allied health workers as the control, we find that, unlike psychologists, social workers' incomes did not experience a significant increase nor did their likelihood of practicing in non-metropolitan areas (Table 4). Additionally, we observe a noteworthy transition, with many new psychologists post-BAI having previously been social workers, as shown in Appendix Figure A7.¹¹ This finding suggests that rather than competing with psychologists by reducing prices, some social workers responded to the BAI by investing in additional education and moving into the psychology field, where financial incentives were greater.¹² Thus, not only did the BAI alter service provision within the psychology sector, but it also influenced career trajectories and professional development within the broader healthcare workforce.

6 Conclusion

This paper contributes new insights by examining the effects of a distinct policy intervention in mental healthcare. Unlike typical expansions of existing insurance programs, the Better Access Initiative (BAI) in Australia introduced public subsidies for a category of healthcare services that had previously been entirely privately funded. While the policy aimed to improve access to mental healthcare, it also had potentially large implications for healthcare workforces.

Results from the Difference-in-Differences models reveal wide-ranging supply-side effects. First, the large-scale public subsidies led to a substantial increase in the number of practicing psychologists, alongside shifts in workforce demographics. For example, estimates indicate that the BAI increased the number of practicing psychologists by approximately 47% within five years, with the workforce becoming older and more female. This shift suggests that older female professionals, who may have been previously underemployed or outside the workforce returned to practice, filling gaps in service demand. These changes illustrate the potential for targeted policy to expand mental healthcare supply, a pressing issue given shortages of mental health providers and rising global demand for services.

Second, BAI subsidies significantly increased psychologists' incomes, with effects that became more pronounced over time, as shown in our event study analysis. This gradual income growth suggests that, as demand rose, psychologists retained part of the subsidy instead of passing it all to patients through reduced out-of-pocket costs, effectively increasing revenue per service. In contrast, social workers saw no significant income changes, likely due to differences in demand, as patients and GPs tend to preference psychologists for psychological therapy. Theory indicates that when substitutes vary in perceived quality, subsidies will primarily drive demand toward the preferred option – in this case, psychological services – resulting in a larger share of the subsidy benefits being captured by psychologists.

¹¹Appendix Figure A7 also highlights that counsellors comprise the largest share of transitions to psychologists. Counsellors operate in a different market from social workers and psychologists—focusing more on vocational and educational concerns rather than clinical mental health services—and are not subsidised under the BAI.

¹²To transition from social work to psychology, social workers may undertake either a 2-year master's program in psychology or a 1-year master's in professional psychology plus a 1-year supervised internship.

A third important result is that the BAI increased the likelihood of psychologists practicing in non-metropolitan areas. Subsidies likely made practices in these areas financially viable by allowing psychologists to maintain adequate patient volumes and service fees. This finding is significant given the persistent challenges rural communities face in accessing mental healthcare: shortages of providers in these areas often lead to longer wait times and limited care options.

The generalisability of these results may depend on the unique characteristics of the psychology workforce. In Australia, a substantial number of trained psychologists were working in other sectors, such as education and community services, before the BAI, providing a ready pool of workers who could transition into clinical settings when demand increased. This may not be the case for other healthcare sectors. For example, if comprehensive subsidies for dental care or physiotherapy were introduced, the impact on workforce numbers might be limited by the lack of dentists and physiotherapists working outside clinical roles or in non-health fields.

Our findings underscore the importance of considering both patient demand and workforce supply in healthcare policy design. Expanding access to healthcare services requires not only increased affordability for patients but also sufficient workforce capacity to meet demand. This study suggests that careful planning for workforce capacity and regional distribution is essential to ensure that subsidies translate into tangible improvements in service accessibility and equity, particularly in underserved areas.

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Figures

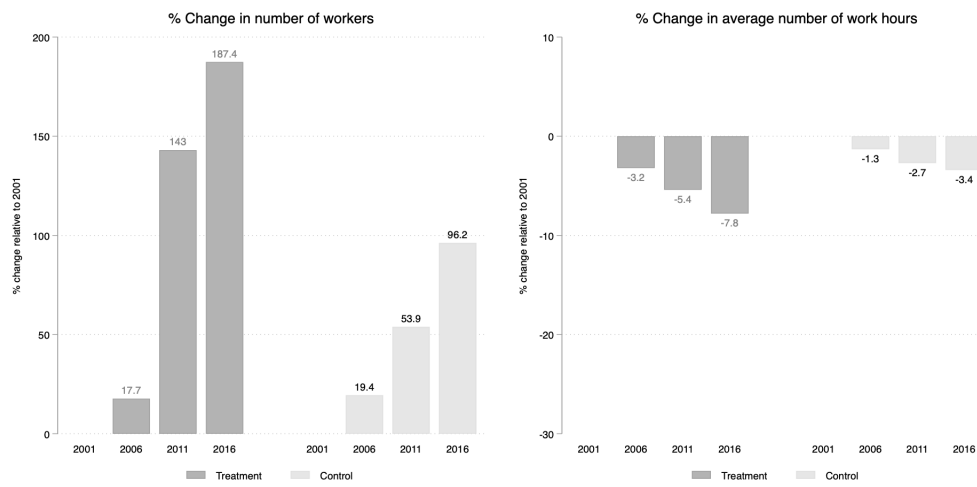


Figure 1: Changes in workforce composition

Notes: Data are from the Censuses of 2001, 2006, 2011, and 2016. The figure shows the percentage change in the total number of workers and average weekly work hours for the treatment group (psychologists) and control group (optometrists, physiotherapists, chiropractors, and podiatrists) from 2001 to subsequent censuses.

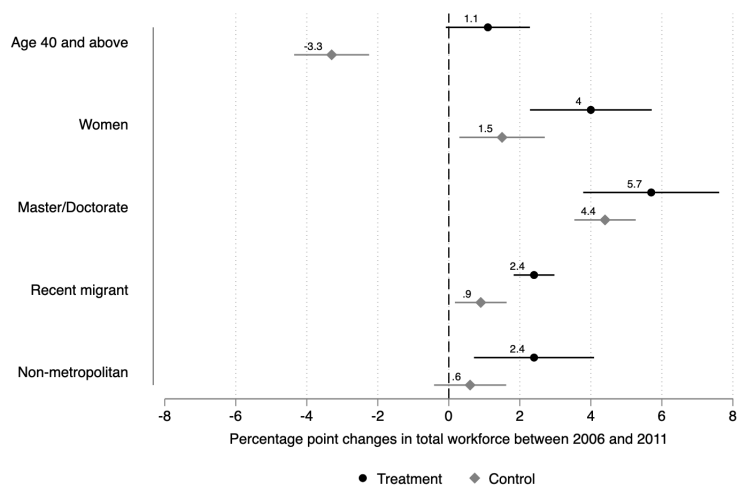


Figure 2: Changes in workforce composition by demographic group

Notes: Data are from the 2006 and 2011 Censuses. The figure shows the percentage change in the total number of workers for the treatment group (psychologists) and the control group (optometrists, physiotherapists, chiropractors, and podiatrists) between 2006 and 2011. A ‘recent migrant’ is defined as an adult who arrived in Australia within 10 years of the Census date. Non-metropolitan areas are defined as inner regional, outer regional, remote, and very remote areas.

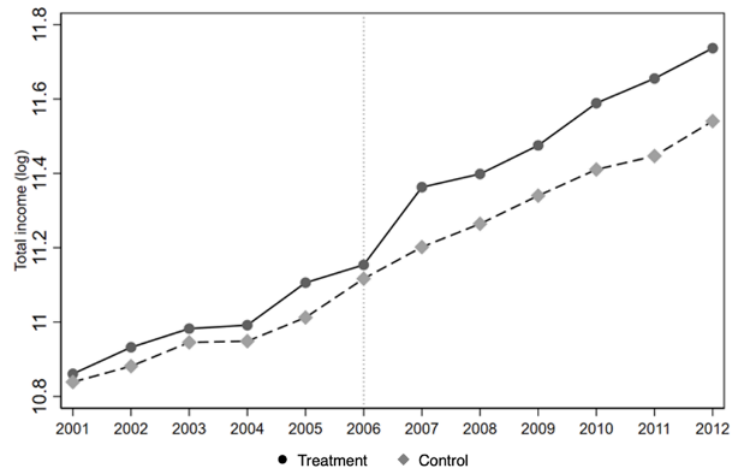


Figure 3: Psychologist’s income over time

Notes: Data are from the ALife. The figure shows the average net income (in log) for the treatment group (psychologists) and control group (optometrists, physiotherapists, chiropractors, and podiatrists) covering the financial years from 2001-02 to 2011-12. Each year on the x-axis represents a financial year, running from July of the first year to June of the following year.

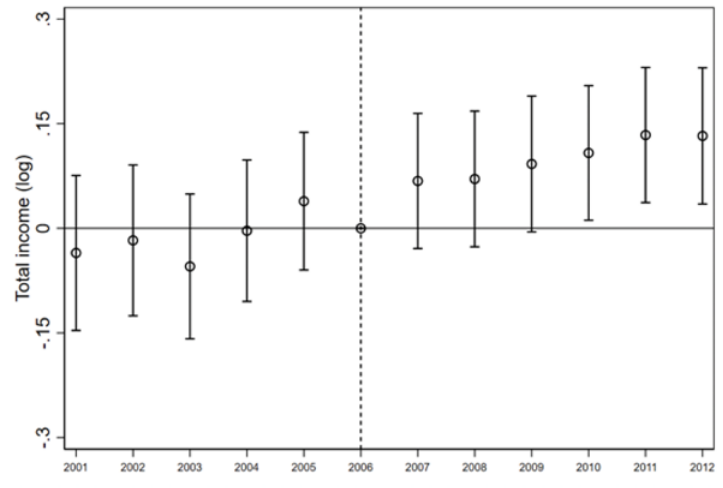


Figure 4: Effects of Better Access Initiative on psychologist's income – Event study analysis

Notes: Data are from the ALife. The figure shows the point estimates and their 95% confidence intervals for the treatment variable using event-study regression with individual and year fixed effects. The outcome measure is psychologists' income. The treatment group includes psychologists, while the control group comprises optometrists, physiotherapists, chiropractors, and podiatrists. The analysis covers financial years from 2001-02 to 2011-12. Each year on the x-axis represents a financial year, running from July of the first year to June of the following year.

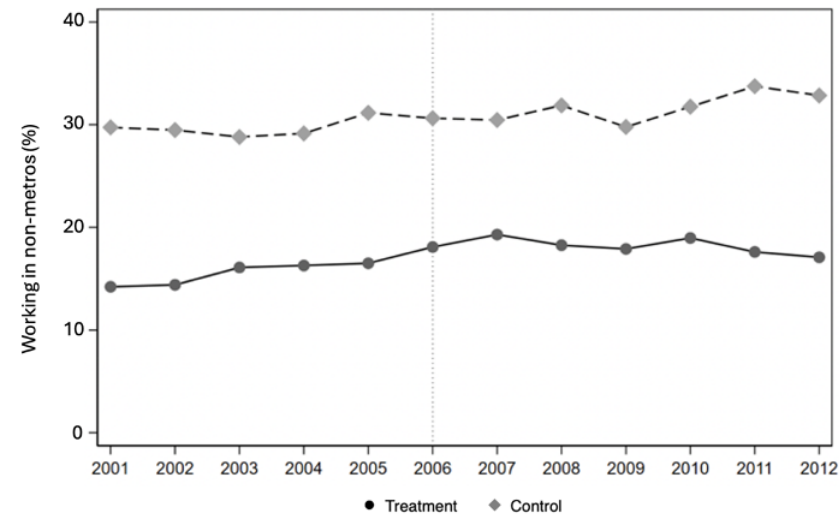


Figure 5: Proportions of healthcare workers in non-metropolitan areas

Notes: Data are from the ALife. The figure shows the proportion of healthcare workers in non-metropolitan areas for the treatment group (psychologists) and control group (optometrists, physiotherapists, chiropractors, and podiatrists) covering the financial years from 2001-02 to 2011-12. Each year on the x-axis represents a financial year, running from July of the first year to June of the following year.

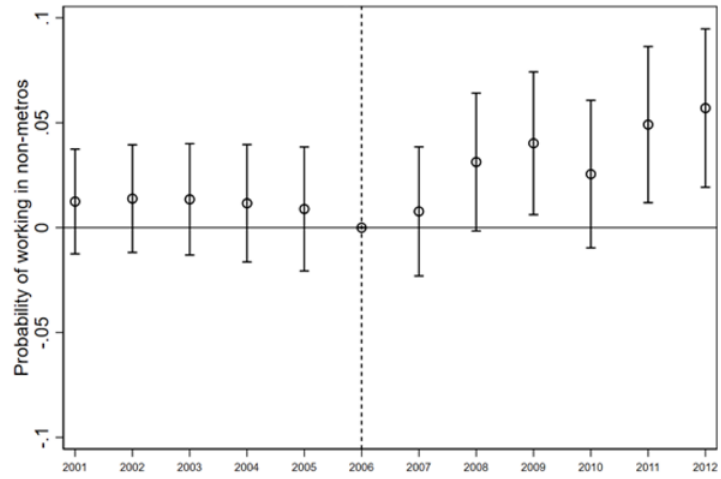


Figure 6: Effects of Better Access Initiative on psychologist's location – Event study analysis

Notes: Data are from the ALife. The figure shows the point estimates and their 95% confidence intervals for the treatment variable using event-study regression with individual and year fixed effects. The outcome measure is the likelihood of psychologists practicing in non-metropolitan areas. The treatment group includes psychologists, while the control group comprises optometrists, physiotherapists, chiropractors, and podiatrists. The analysis covers financial years from 2001-02 to 2011-12. Each year on the x-axis represents a financial year, running from July of the first year to June of the following year.

Tables

Table 1: Effects of Better Access Initiative on number of workers and work hours

	Number of workers (log)			Number of hours (log)		
	2006 (1)	2011 (2)	Diff. (2) - (1)	2006 (3)	2011 (4)	Diff. (4) - (3)
Treatment	8.252	8.976	0.724	3.396	3.419	0.023
Control	9.556	9.810	0.254	3.530	3.544	0.014
Diff. (Treatment – Control)			0.470			0.009 (0.331)

Notes: Data are from the 2006 and 2011 Censuses. Results represent a simplified version of the DiD model analysis. The treatment group consists of psychologists, while the control group includes optometrists, physiotherapists, podiatrists, and chiropractors. The number of workers closely approximates the entire population, with more than 95% of the population surveyed in each census. For the 2006 Census, the number of hours is calculated using the midpoint of hour groups. Differences in number of workers are calculated by comparing the growth rates in the treatment and control groups between 2006 and 2011. Differences in work hours are derived from a DiD estimation, which reflects the difference in the outcome between treatment and control groups over the two censuses.

Table 2: Effects of Better Access Initiative on psychologist's income

Dependent variable:	Total income (log)	
	Always psychologists (1)	Anytime psychologists (2)
Treatment effect	0.174*** (0.050)	0.120*** (0.038)
Observations	9,993	34,220
Mean dep.	11.32	11.15
Individual/Year FEs	Yes	Yes

Notes: Data from the ALife. Robust standard errors are shown in parentheses. Results represent the DiD model analysis. The treatment group consists of psychologists, while the control group includes optometrists, physiotherapists, podiatrists, and chiropractors. In column 1, the sample includes individuals who remained in their profession throughout the period 2001–2012. In column 2, the sample includes individuals (both psychologists and healthcare workers in the control group) who were in their professions at any time during the period 2001–2012. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 3: Effects of Better Access Initiative on working in non-metropolitan areas

Dependent variable:	Total income (log)	
	Always psychologists (1)	Anytime psychologists (2)
Treatment effect	0.016*** (0.006)	0.013*** (0.004)
Observations	9,026	30,107
Mean dep.	0.20	0.19
Individual/Year FEs	Yes	Yes

Notes: Data from the ALife. Robust standard errors are shown in parentheses. Results represent the DiD model analysis. The treatment group consists of psychologists, while the control group includes optometrists, physiotherapists, podiatrists, and chiropractors. In column 1, the sample includes individuals who remained in their profession throughout the period 2001–2012. In column 2, the sample includes individuals (both psychologists and healthcare workers in the control group) who were in their professions at any time during the period 2001–2012. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4: Effects of Better Access Initiative on social workers

Dependent variable:	Total income (log)	Working in non- metropolitan areas
	(1)	(2)
Treatment effect	0.006 (0.041)	-0.005 (0.004)
Observations	13,197	13,197
Mean dep.	11.22	0.24
Individual/Year FEs	Yes	Yes

Notes: Data from the ALife. Robust standard errors are shown in parentheses. Results represent the DiD model analysis. The treatment group consists of social workers, while the control group includes optometrists, physiotherapists, podiatrists, and chiropractors. The sample includes individuals who remained in their profession throughout the period 2001–2012. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Online Appendix

Workforce Impacts of Subsidised Mental Healthcare: Evidence on Supply, Earnings, and Geographic Distribution

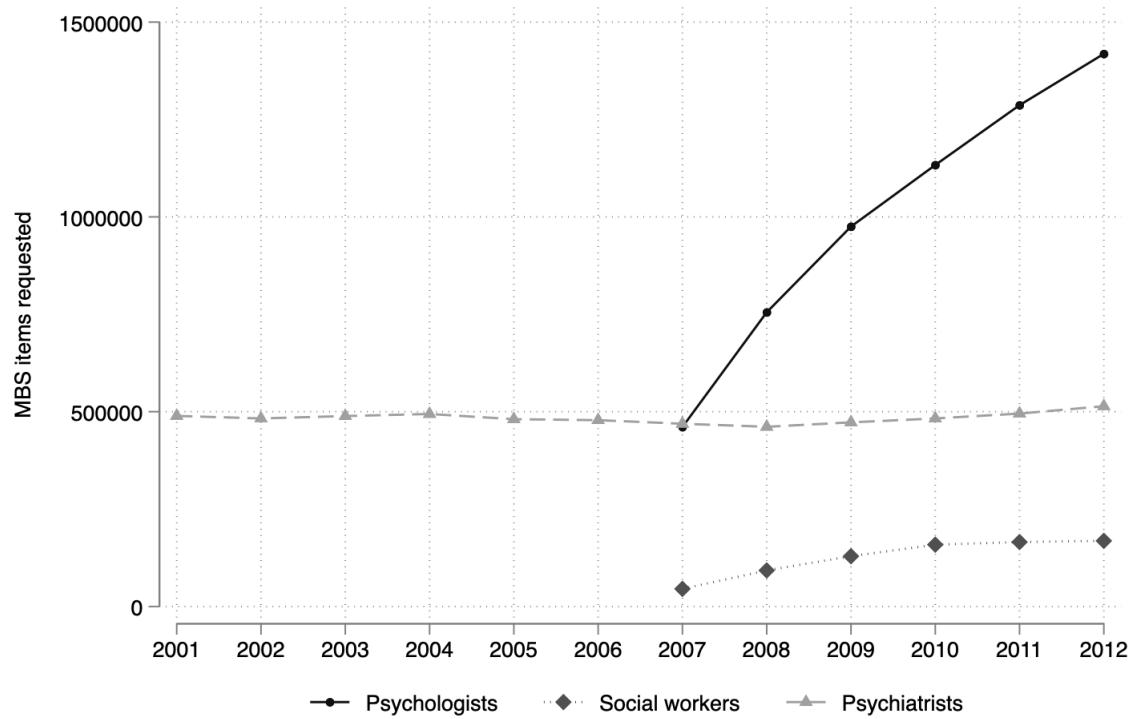


Figure A1: Number of subsidised Medicare services

Notes: Medicare item reports are from Services Australia, available at: <https://www.servicesaustralia.gov.au/>. The figure shows the number of Medicare items provided by psychologists, psychiatrists, and social workers from 2001 to 2012. Services provided by psychiatrists were available before the Better Access Initiative, while new Medicare items for psychologists and social workers became available starting in 2007.

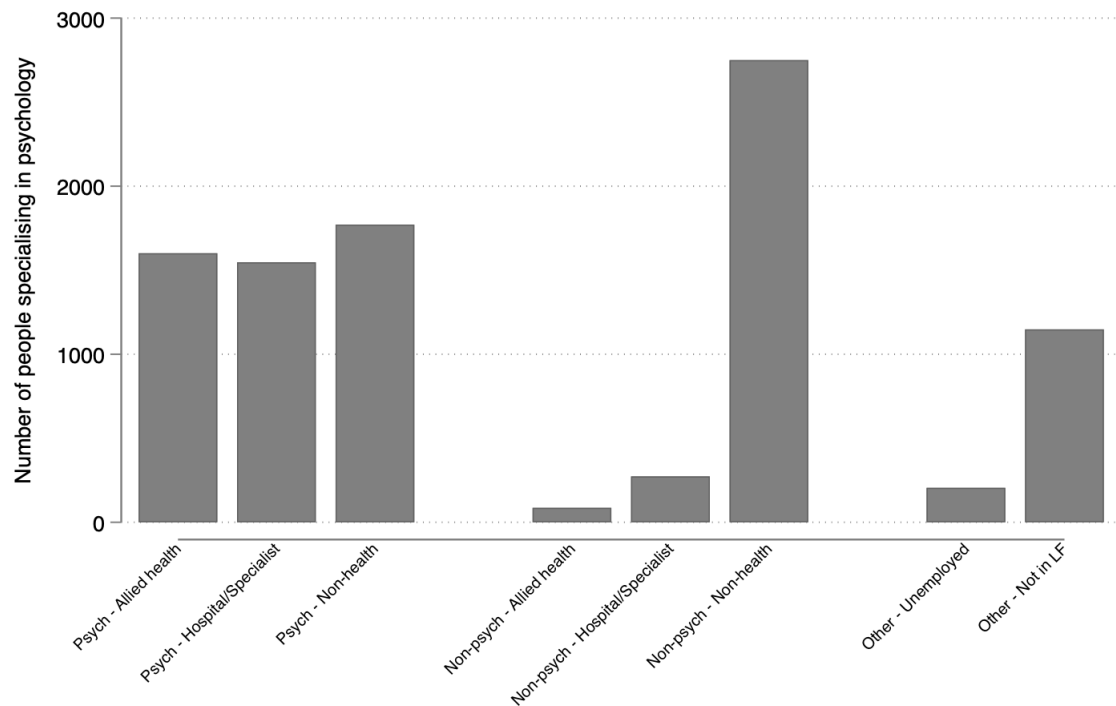


Figure A2: Distribution of individuals with postgraduate degrees in psychology in 2006

Notes: Data from the 2006 Census. The figure shows the distribution of individuals with postgraduate degrees in psychology across different sectors, including allied health, hospitals/specialists, non-health sectors, and those who were not working in 2006 (either unemployed or not in the labour force). Non-health sectors include education, public administration, and community services.

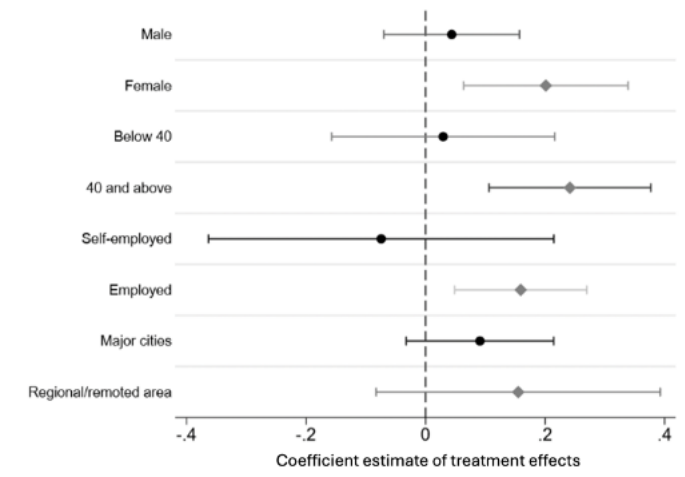


Figure A3: Effects of Better Access Initiative on psychologist’s income – Heterogeneity analysis

Notes: Data from the ALife. The figure shows the point estimates and their 95% confidence intervals for the treatment variable, using DiD regressions with individual and year fixed effects. The outcome is the psychologists’ income. The treatment group includes psychologists, while the control group comprises optometrists, physiotherapists, chiropractors, and podiatrists. The analysis covers the financial years from 2001-02 to 2011-12.

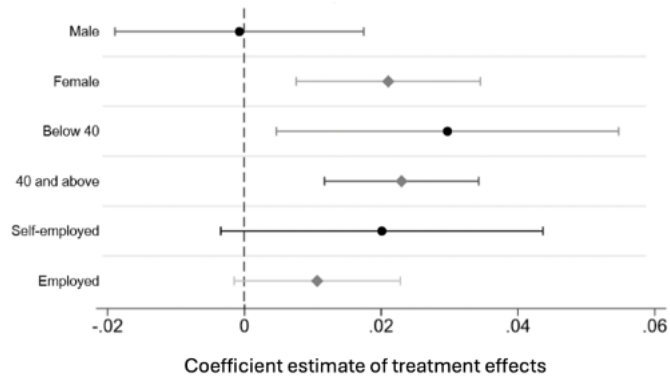


Figure A4: Effects of Better Access Initiative on psychologist's location – Heterogeneity analysis

Notes: Data from the ALife. The figure shows the point estimates and their 95% confidence intervals for the treatment variable, using DiD regressions with individual and year fixed effects. The outcome is the likelihood of psychologists practicing in non-metropolitan areas. The treatment group includes psychologists, while the control group comprises optometrists, physiotherapists, chiropractors, and podiatrists. The analysis covers the financial years from 2001-02 to 2011-12.

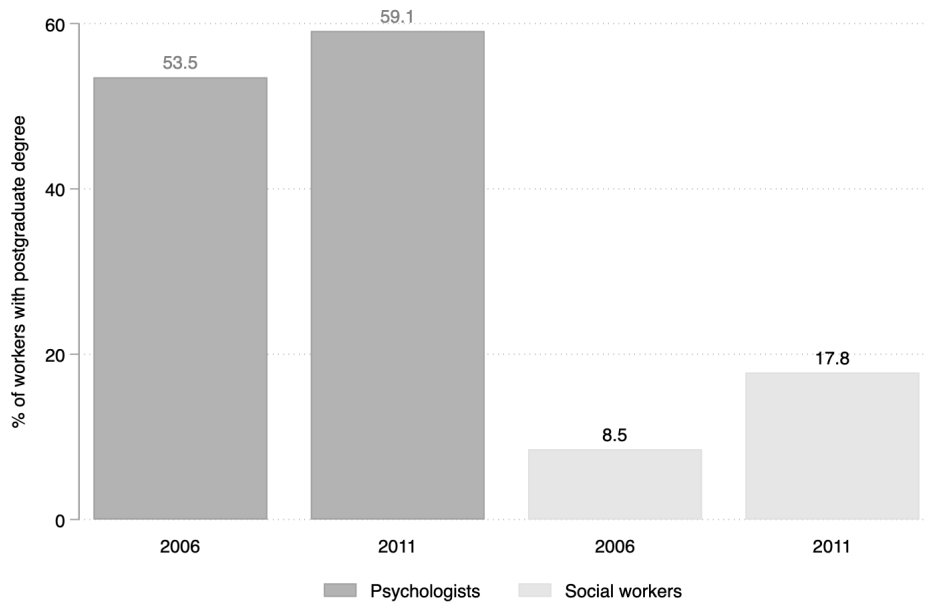


Figure A5: Share of workers with postgraduate degree

Notes: Data are from the Censuses 2006 and 2011. This figure shows the proportion of workers with postgraduate degrees among psychologists and social workers. Postgraduate degrees are defined as qualifications obtained after a bachelor's degree, including master's degrees, doctoral degrees, and postgraduate diplomas.

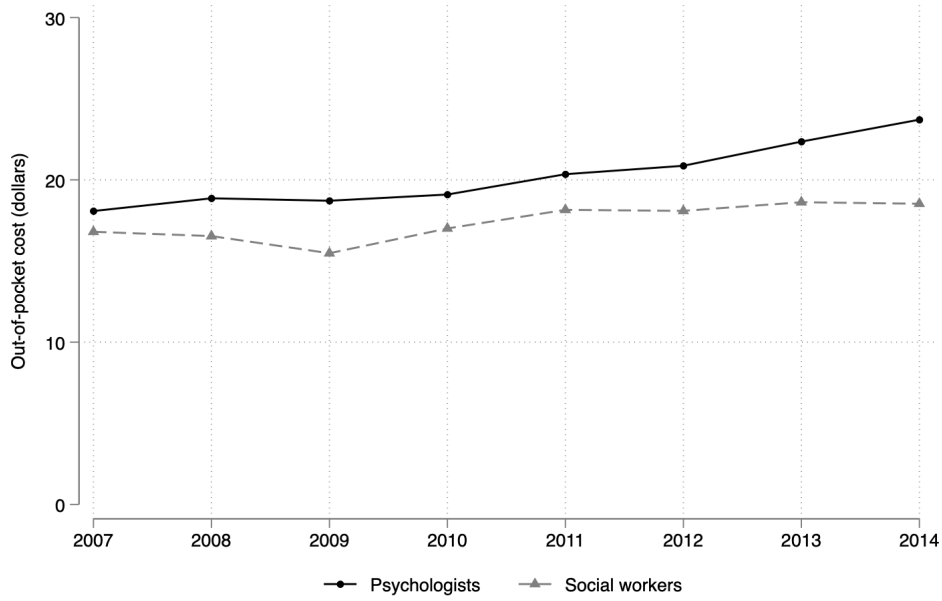


Figure A6: Out-of-pocket costs – Psychologists vs. social workers

Notes: Data from the Medicare Benefits Schedule (MBS). The figure shows the average out-of-pocket cost for psychological and social work services between 2007 and 2014. Out-of-pocket costs are calculated as the difference between the fees charged by healthcare providers and the benefits provided by the government. The values are adjusted for inflation using the 2011 Consumer Price Index (CPI).

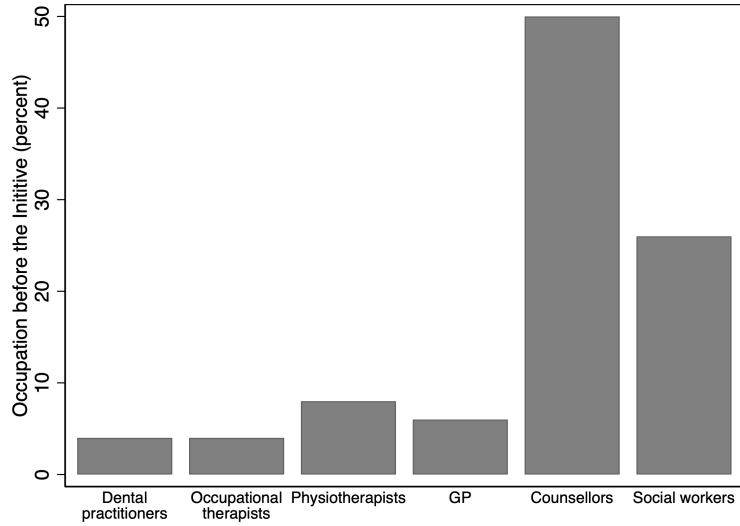


Figure A7: Occupation of ‘new’ psychologist before the initiative

Notes: Data from the ALife. This figure shows the occupational transitions of individuals who became psychologists after the introduction of the BAI, focusing specifically on transitions from certain healthcare-related professions, including social workers and counsellors. The analysis includes only healthcare professionals captured in our dataset, such as those in allied health occupations. Therefore, it does not account for transitions from non-healthcare professions or other fields that are not reflected here.

Table A1: Healthcare worker characteristics – Census 2006

	Psychologists	Other healthcare workers	Diff. (<i>p</i> -value)
	(1)	(2)	(1) - (2)
Age	42.976	38.496	4.481 (0.023)
Female	0.754	0.613	0.141 (0.718)
Australian-born	0.923	0.943	0.019 (0.849)
Postgraduate degree	0.475	0.347	0.128 (0.755)

Notes: Data from the Census 2006. The table shows key characteristics of psychologists and other healthcare workers, including age, gender, country of birth, and education level. Other healthcare workers include optometrists, physiotherapists, chiropractors, and podiatrists. The *p*-values represent the statistical significance of the differences between psychologists and other healthcare workers for each characteristic.