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HEALTH SERVICE USE AFTER LONG PERIODS OF WORKERS' COMPENSATION

THE TRANSITIONS STUDY
REPORT 3

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Healthy Working Lives

AUTHORS

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EXECUTIVE SUMMARY

What happens to the health and welfare of workers with long-duration workers' compensation claims when their workers' compensation benefits stop?

This is the central research question of the Transitions Study. In this report we address part of this question by describing general practitioner, psychological and physical health service use before and after workers' compensation income support payment cessation in two groups of workers with long-duration claims, and a community comparator group.

This is the third report in a series examining use of health services and welfare benefits after workers' compensation among people in New South Wales (NSW) whose workers' compensation benefits ceased due to the implementation of legislative amendments to Section 39 of the Workers' Compensation Act 1987 (NSW). The amendments set a 260-week (5 year) limit on income support payments for injured workers unless they were assessed as having more than 20% permanent impairment or were employed in an exempt occupational category (police officers, paramedics, fire fighters, or coal miners). Those whose income support ceased due to the 260-week rule are referred to as the Section 39 group in this report. We compared this group to two other groups: (1) Injured Control Group – a sample of people who had received workers' compensation income support payments for at least two years, but whose claims stopped independently of the Section 39 amendments; and a (2) Community Control Group – a group of people drawn from the general population matched on age, gender and residential area to the Section 39 group. In both the Section 39 Group and the Injured Control Group, workers' compensation payments for reasonably necessary health services continued for up to 24 months after income support payments ended.

This report examines whether health service use differs between the study groups and whether there are any changes to health service use after workers' compensation benefits stop. To answer these study questions, we linked data from the NSW workers' compensation system and Australia's public healthcare system for items listed in the Medicare Benefits Schedule (MBS). We identified three priority groups of health services: general practitioner services, psychological health services (psychologists, counselling and social work), and physical health services (physiotherapy, chiropractic and osteopathy). We then measured a series of outcomes across the twelve months before and after benefit cessation for each service and each study group. These included the number and percentage of each study group that received at least one service (i.e., service prevalence), the rate of services per 100 persons, the median number of services per person in those that received any services (i.e., the volume of services), and the percentage of services funded by the NSW workers' compensation system.

We observed small changes to the prevalence, rate and volume of general practitioner, psychological and physical health services in the Section 39 group following workers' compensation benefit cessation. In contrast, the Injured Control group had a large drop in the rate and prevalence of psychological and physical health services. The prevalence, rate and volume of all health services was substantially higher in the Section 39 and Injured Control groups than the community group, prior to benefit cessation. Service use remained higher than the community group after benefit cessation, with the exception of general practitioner services in the Injured Control group which decreased to community levels. A summary of changes to the prevalence, rate and percentage of services funded by the workers' compensation scheme is available in the table below.

Table. Summary of health service outcomes for all groups

Service	Section 39 Cohort		Injured Control Group		Community Control Group	
	Pre-index	Post-index	Pre-index	Post-index	Pre-index	Post-index
% of sample who received at least 1 service						
General Practitioner	99.2	98.5	98.8	95.6	95.0	96.1
Psychological health	21.3	19.2	21.6	13.0	8.9	9.4
Physical health	25.4	24.5	27.5	16.7	8.7	10.1
Rate of services per 100 persons						
General Practitioner	1,552	1,366	1,463	1,064	1,009	1,042
Psychological health	162	145	178	75	42	42
Physical health	284	277	374	135	32	37
% services funded by the workers' compensation scheme						
General Practitioner	52.2	32.9	47.8	18.1	-	-
Psychological health	74.1	68.0	78.3	38.2	-	-
Physical health	87.9	87.2	94.1	76.9	-	-

Note: "pre-index" refers to the 12-month period before income support ends, and "post-index" to the 12-month period after income support ends.

The prevalence of general practitioner services was high relative to other services in all groups, reflecting the central role general practitioners play in Australian healthcare and workers' compensation systems. The rate of general practitioner services in the Section 39 group decreased only slightly for the twelve months after benefit cessation (1,552 to 1,366 per 100 persons), compared with the Injured Group, in which the rate decreased to community levels (1,463 to 1,064 per 100 persons). Approximately half of general practitioner services were funded by the workers' compensation scheme in both the Section 39 (52.2%) and Injured Control (47.8%) groups prior to benefit cessation. There was a minor decrease in the prevalence (21.3% to 19.2%), rate (162 to 145 per 100 persons) and proportion of scheme funded psychological health services (74.1% to 68.0%) for the Section 39 group after benefit cessation. There was minimal change in the volume of psychological health services in those who received them in both groups before and after benefit cessation. Despite a similar prevalence, the rate of physical health services in the Section 39 group (284 per 100 persons) was lower than in the Injured Control group prior to benefit cessation (374 per 100 persons). There were substantial reductions in all measures for the Injured Control group (prevalence: 27.5% to 16.7%; rate: 374 to 135 per 100 persons; proportion of workers' compensation scheme funding: 94.1% to 76.9%).

Small changes in health service use in the Section 39 group following benefit cessation may be explained by the reason for benefit cessation itself. Findings from the first report of the Transitions Study identified that a large proportion of those in the Section 39 group received income support payments from Centrelink in the first year after benefit cessation. It is unlikely that people in this group will have returned to work when workers' compensation payments cease, and they are likely to have ongoing healthcare needs. The availability of funding for workers' compensation funding for healthcare for 24 months after income

payment cessation may also influence the use of health services.

In comparison we observed large decreases in health service use in the Injured Control group, whose workers' compensation benefits ended for reasons other than Section 39's 260-week limit rule. It is possible that the health status of some workers in this group improved, thus reducing their need for ongoing health services. However, it is more likely that decreased health service use in this group was influenced by other factors such as no longer requiring monthly certificates of capacity to receive income support payments, or a lack of awareness of ongoing eligibility for workers' compensation scheme funding of health services.

This report presents one of few analyses of health services funded by workers' compensation and the public healthcare system, and the first large-scale study to examine health service use before and after benefit cessation in an Australian workers' compensation scheme. The findings add new evidence to a relatively small body of existing studies and provide new metrics to examine the distribution of service funding (i.e., the proportion of services funded by workers' compensation). To inform policy and practice to improve return to work and return to health, future research should seek to explore the impact of changes to health services frequency, timing and eligibility on work disability outcomes, and the relationship between sociodemographic factors and health service use. Long-term follow-up, beyond twelve months post-benefit cessation, should also be considered.

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BACKGROUND

Funding health services is an important tool available to workers' compensation systems to support injured worker rehabilitation and return to work. Health services are therefore a major component of Australian workers' compensation systems. Expenditure on healthcare, treatment and other services to claimants in Australian workers' compensation systems increased by 26% between the 2015/16 and 2019/20 period from \$1.88 billion to \$2.38 billion [1]. The workers' compensation scheme in the state of New South Wales reported medical costs of approximately \$1.06 billion in the 2020/21 financial year alone [2]. Health services that are funded workers' compensation typically include general medical services (e.g., general practitioners), allied health (e.g., physiotherapy, podiatry or psychology), medicines, diagnostic procedures and medical interventions [3]. Funding for health services can commence soon after claim acceptance, or upon claim application in some circumstances to support urgent healthcare needs [4, 5]. Some workers with more severe or more complex health conditions will experience several years of work disability and require different forms of health services over much longer periods of time.

Previous studies have demonstrated the importance of understanding health service delivery to compensated workers with claims for work-related musculoskeletal and mental health conditions [6]. Notably, the prevalence, timing and volume of services have been associated with disability outcomes for compensated workers [7, 8]. Understanding whether the right amount or the right type of health services are delivered at the right time will support worker recovery and rehabilitation, reducing long-term disability. Ultimately, this will ensure a sustainable insurance model and benefit all stakeholders.

One major limitation of previous studies is that they only report health services information derived from workers' compensation data [7-10]. Workers' compensation schemes are only liable for services that are reasonably necessary for the treatment of the compensable injury [3, 4, 11]. However, workers often have pre-existing or comorbid conditions that also require healthcare, and thus will require funding from other systems such as the Medicare Benefits Schedule (MBS), private health insurance or out-of-pocket expense [12]. Healthcare for injured workers is therefore usually funded through a number of systems, with evidence suggesting workers receive health services funded by both workers' compensation and public healthcare during the course of their claim [12, 13]. However, differences between these systems mean that health services from multiple sources are not readily comparable without methods such as data linkage, which likely explains why there is currently a limited body of available evidence [12-14]. This report utilises data linkage to combine health services funded by a state workers' compensation and the national public healthcare system (i.e., the MBS).

In this report we describe the prevalence, rate, volume and funding of three major groups of health services to workers impacted by the Section 39 legislative reforms in the year before and after the cessation of workers' compensation weekly benefit payments. One of the key advantages of our analysis is that MBS health service data are linked to the injured worker sample. We also compare this to two other groups: workers with long-duration claims that ended for reasons other than the Section 39 reforms, and an age, sex and geographically matched community control group.

This is the third in a series of reports describing the Section 39 group. The first report explored receipt of social welfare benefits, and the second report examined the incidence and nature of hospital admissions and emergency department presentations [15]. While comprehensive details on the study design and reforms to the New South Wales workers' compensation scheme are available in the first report and the study protocol [16], some of the key points are reiterated in this report.

NEW SOUTH WALES WORKERS' COMPENSATION REFORM

The New South Wales Government introduced a major legislative reform in 2012 to correct problems with the workers' compensation system. The Workers' Compensation Legislation Amendment Act 2012 (the Act) made various changes, including restricting eligibility and maximum duration of income support benefits, to improve the financial position of the scheme [17, 18] (see Table 1). Under Section 39 of the Act all income support benefits were capped at 260 weeks duration from 1st October 2012, with exemptions made for those with greater than 20% permanent impairment, and certain occupations. Additional transitional arrangements for existing members of the workers' compensation scheme prior to legislated changes including a delayed start of the 260-week count from 1st Jan 2013. This cohort was eligible for ongoing reasonably necessary medical services and supports after the cessation of income support payments.

Table 1. Summary of relevant amendments to the Workers' Compensation Act (NSW)

Section	Amendments
Section 39 (Weekly Benefits)	<p>(1) Despite any other provision of this Division, a worker has no entitlement to weekly payments of compensation under this Division in respect of an injury after an aggregate period of 260 weeks (whether or not consecutive) in respect of which a weekly payment has been paid or is payable to the worker in respect of the injury.</p> <p>(2) This section does not apply to an injured worker whose injury results in permanent impairment if the degree of permanent impairment resulting from the injury is more than 20%. Note: For workers with more than 20% permanent impairment, entitlement to compensation may continue after 260 weeks but entitlement after 260 weeks is still subject to section 38.</p> <p>(3) For the purposes of this section, the degree of permanent impairment that results from an injury is to be assessed as provided by section 65 (for an assessment for the purposes of Division 4).</p>
Section 59A (Medical and related treatment)	<p>(1) Compensation is not payable to an injured worker under this Division in respect of any treatment, service or assistance given or provided more than 12 months¹ after a claim for compensation in respect of the injury was first made, unless weekly payments of compensation are or have been paid or payable to the worker.</p> <p>(2) If weekly payments of compensation are or have been paid or payable to the worker, compensation is not payable under this Division in respect of any treatment, service or assistance given or provided more than 12 months¹ after the worker ceased to be entitled to weekly payments of compensation.</p> <p>(3) If a worker becomes entitled to weekly payments of compensation after ceasing to be entitled to compensation under this Division, the worker is once again entitled to compensation under this Division but only in respect of any treatment, service or assistance given or provided during a period in respect of which weekly payments are payable to the worker.</p> <p>(4) This section does not apply to a seriously injured worker (as defined in Division 2).</p>

1: Note that additional amendments in August 2015 extended this period of reasonably necessary service provision from 12 to 24 months after the end of weekly benefit payments.

OBJECTIVE AND RESEARCH QUESTIONS

In this third report from the Transitions Study, we seek to describe general practitioner, psychological health and physical health service use by compensated workers in the year before and year after their workers' compensation benefits ceased. Results are presented in three parts, one for each of the aforementioned health service groups. We specifically address the following research questions for all sections:

1. Does the prevalence of health service use in the Section 39 group change in the year before and after workers' compensation cessation, and how does this compare to a group of people with long-duration workers' compensation claims and a community group?
2. Does the rate of the health service use in the Section 39 group change in the year before and after workers' compensation cessation, and how does this compare to a group of people with long-duration workers' compensation claims and a community group?
3. Does the volume of the health services delivered to those in the Section 39 group change in the year before and after workers' compensation cessation, and how does this compare to other people with long-duration workers' compensation claims and those from the community?
4. Does the percentage of health services funded by the workers' compensation scheme relative to those funded by the MBS change in the year before and after workers' compensation cessation, and how does this compare to other people with long-duration workers' compensation claims?

APPROACH

The Transitions Study is a retrospective controlled cohort study that utilises data linked across multiple state and Commonwealth datasets. We have previously published a study protocol [16], with further methods and modifications to the protocol detailed in the first report of this series [19]. Here we reiterate some of the key methodological steps that are relevant to this report.

DATA LINKAGE

Data linkage involved five organisations including the State Insurance Regulatory Authority of NSW, the Australian Institute of Health and Welfare (AIHW), the Centre for Health Record Linkage (CHeReL) and the Sax Institute as hosts of the Secure Unified Research Environment (SURE). These organisations executed a detailed protocol to extract and link workers' compensation, Centrelink, Medicare, Pharmaceutical Benefits, Hospital and Emergency Department datasets, while maintaining confidentiality, privacy and security of information. Health services data was present across workers' compensation records and Medicare records, reflecting the funder of the service. Data were linked probabilistically using unique person identifiers available in the study data sources. The Monash University research team executed the final linkage step of combining datasets and performing data analysis and reporting. For more detail of the linkage process please refer to the published study protocol [16].

STUDY GROUPS

Three groups were defined in the study protocol and in earlier reports and are summarised in Table 2. As described in previous reports from the Transitions Study [15, 19], each person was assigned an index date. This is the date of the final workers' compensation income support payment period for those people in

the Section 39 and Injured Control group. The index date for the Community Control group was set at 25 December 2017 – the median index date for the Section 39 group. An additional eligibility criterion was applied for this analysis in particular. Part of the legislative reform in 2012 included amendments to Section 59A of the Act (see Table 1). This included a number of changes to benefit and health service provision. In this report we sought to analyse health services 12 months before and 12 months after the index date. We therefore isolated any services from the impact of the legislative change, by excluding any person with an index date less than 12 months from 27 June 2012 (the date the legislative amendments were assented). It should be noted that additional amendments were implemented in August 2015 (see Table 1). Therefore, a portion of the Injured Control group were eligible for health services for 12 months after weekly benefit payments ended (i.e., those claims up to August 2015), and some eligible for 24 months after weekly benefit payments ended (i.e., claims after August 2015). Sample characteristics of these study groups are described in the results section.

Table 2. Description of study groups

	Section 39 Group	Injured Control Group	Community Control Group
Summary	A group of injured workers with very long duration workers' compensation claims whose income support payments ceased under Section 39 of the Act.	A group of injured workers with long duration workers' compensation claims, but whose income support payments did not cease under Section 39 of the Act.	A group of people matched to the Section 39 group on age and gender and residential location, drawn from the general population of NSW.
Inclusion Criteria	Age 18-67 years at cessation of income support payments Accepted workers' compensation claim lodged after July 1989 and closed between 26 Sept 2017 and 30 Jun 2018 260+ weeks of income support payment	Age 18-67 years at cessation of income support payments Accepted workers' compensation claim lodged after July 1989 and closed by June 2018 104+ weeks of income support payments	Age 18-67 years at 25 Dec 2017 Residents of New South Wales
Exclusion Criteria	Date of final workers' compensation payment within 12 months of 27 June 2012	Membership of the Section 39 group Date of final workers' compensation payment within 12 months of 27 June 2012	Membership of either the Section 39 or Injured Control groups
Exposures	<ul style="list-style-type: none"> Injured at work Accepted WC claim Long duration WC income support WC income support ceased under Section 39 of the Act 	<ul style="list-style-type: none"> Injured at work Accepted WC claim Long duration WC income support 	<ul style="list-style-type: none"> None
Index Date	Date of final workers' compensation income support payment period	Date of final workers' compensation income support payment period	25 December 2017 (i.e. median index date of the Section 39 group)

HEALTH SERVICES

We created a harmonised health services dataset for analysis. We first selected a prioritised group of services to include in the analysis: general practitioner, psychological health services (psychologists, counselling and social work) and physical health services (physiotherapy, chiropractic and osteopathy) (see Table 3). These groups were selected for two critical reasons. Firstly, we wanted to be able to compare services funded by the workers' compensation scheme and the MBS and therefore required service item equivalence. This was limited by the scope of the MBS – while the workers' compensation scheme would theoretically fund anything listed on the MBS, the MBS would not necessarily cover health services that the workers' compensation scheme funds. However, the selected service groups all have potential funding from either workers' compensation scheme or the MBS, at least in part. For example, physiotherapy services are funded by the MBS, but only for up to five sessions for those with a chronic disease management plan [20]. Secondly, we know from both policy design and previous studies that these are relatively common groups of services. Seeing a general practitioner, for example, is often required by workers' compensation schemes to provide an initial or repeat sickness certification to continue receiving benefits [21, 22]. In NSW, seeing a general practitioner is required at regular intervals to complete a certificate of capacity to continue to receive benefits, in addition to addressing medical needs.

Table 3. A summary of how eligible services were categorised

Category	Group	Subgroup
Consultations	Doctors	General Practitioners
	Psychological Health Services	Psychologist Social Work Counselling Rehabilitation Counselling
	Physical Health	Physiotherapy Chiropractic Osteopathy

We adopted a services coding schema previously implemented on another project [7, 8, 23, 24]. This coding schema was developed to harmonise services between workers' compensation systems, some of which included MBS items, so it was appropriate to use it in this instance. We manually assigned workers' compensation and MBS services to the harmonised coding schema. We chose a conservative strategy, in that the service had to explicitly describe the service provider (i.e., the general practitioner) involvement. We also only included services where a patient interaction had occurred. We therefore excluded service items such as "report writing", and in some cases workers' compensation services that were "case conferences / report writing"; while these include patient interaction in a case conference, they could not be definitively separated from report writing.

A final coding schema of eligible service items was applied to both the workers' compensation and MBS service datasets (detailed schema available on request). Only items with a match to the eligible services were retained. With the new harmonised coding schema, the workers' compensation and MBS datasets were appended into a single services dataset. The services dataset includes a number of necessary variables for analysis, including the unique person identifier, service category, service group, service subgroup and service item, as well as service date, funding source (i.e., workers' compensation scheme or MBS), and the original service item description from either workers' compensation or MBS datasets. We included all eligible services within 12 months before and 12 months after the index date in the final dataset. This was calculated as the number of days from the service date to the index date, with a filter applied for services occurring within -365 to +365 days of the index date. Services outside this period were

excluded. On the basis of the types of services included in this analysis, it was unlikely that a single service occurred over multiple days.

We took a conservative approach to duplicate records and decided a priori that we would include only one type of a service per person per day. Several duplicate records were detected on first inspection, typically occurring where multiple duplicate services for a person funded by the workers' compensation scheme took place on the same day. This may have been due to how an invoice was entered, but without additional information it was not possible to determine. We also detected several duplicate services funded by both the workers' compensation scheme and the MBS on the same day. The majority of these were general practitioner services. Given the focus of this study was to assess the impact of a workers' compensation legislative change, we chose to retain the SIRA service record in scenarios with duplicate records. The duplicate exclusion process is described in the appendix.

COVARIATES

A range of person-level covariates were available in the SIRA (i.e., Workers' Compensation) and DOMINO (i.e., Centrelink/Department of Social Services) datasets and have been described in the study protocol and previous reports from the Transitions Study [16]. For this analysis we used a select group of covariates. Each person's sex was determined from DOMINO data from binary options. Age groups were created using continuous age at cessation and separated into five groups (18-34, 35-44, 45-54, 55-64, and 65+ years). Claimed condition type was created using the Type of Occurrence Classification Systems (TOOCS) nature of injury recorded by SIRA for a given workers' compensation claim [25]. The TOOCS major codes were classified into binary terms: physical condition or psychological condition. Where the claimed condition was not known, or there was no claimed condition as in the community control group, this variable was marked as unknown. Finally, two binary variables were created to identify whether the person had received any Government income support payment (i.e., a Centrelink payment) in the 12 months before and / or 12 months after the index date. The primary comparisons of interest were between the study groups. Differences in outcomes by covariates are described in the appendices.

DATA ANALYSIS

This report used descriptive statistics to describe differences in counts of health services between groups in the 12 months before and after the index date. These included several outcomes described here and summarised in Table 4. Each outcome was calculated for each group in each of the two time periods: the 12 months before the index date, and the 12 months after the index date. This process was repeated for each service group separately: General Practitioners, psychological health services and physical health services. Regarding the first research question, service prevalence was calculated as the number and percentage of a given study group who recorded at least one service. Service volume was calculated as the total number of services across the pre-index and the post-index study period. The percentage of service volume across each study period was calculated.

For the second research question, the rate of services was reported as the number of services per 100 persons in a given group over a 12-month period. Additionally, cohort rates of service use were calculated at 30-day intervals (herein referred to as monthly) during the pre-index and post-index periods. Results are presented as a time-series for each of the study groups across a 24-month period, centred on the index date.

A more detailed analysis was performed on individuals that received a given type of health service, to investigate the volume of health services in those persons who received them and address the third research question. In this analysis, the number of services per person was calculated as the median and inter-quartile range (IQR) of services per person in those persons who had a service in both the pre-index and post-index periods. This statistic did not include those who did not have any of a service, isolating the measure from the rate or prevalence of a service.

To address the fourth research question, the proportion of services funded by the workers' compensation scheme was calculated as the number of services originating from the SIRA dataset, divided by the total number of services in both SIRA and MBS datasets.

Table 4. Report outcomes

Outcome	Measure	Description
Service Prevalence	N (%)	The proportion of persons who received at least 1 of a given service in a 12-month period either side of the index date.
Service Volume	N	The total number of a given service for each group.
Service Rate	N per 100 persons	The number of a given service per 100 persons in a given group.
Services per Person	Median (IQR)	The median and interquartile range (IQR) of services per person in those who received the given service. This does not include those without a record for the health service of interest.
Service Funding	% Workers' Compensation-funded	The proportion of all of a given service in a 12-month period either side of the index date funded by the workers' compensation scheme (Workers' Compensation-funded), where all services are those funded by the workers' compensation scheme and the MBS.

RESULTS

Following the application of eligibility criteria, a total of N=15,689 persons were included: N=2,761 in the Section 39 Cohort, N=2,814 in the Injured Control Group and N=10,114 in the Community Control Group. The majority of claims in the Section 39 and Injured Control groups (90%) were for physical conditions. As observed in previous reports, a greater proportion of individuals in the Section 39 Cohort received a Centrelink payment in the 12 months post-index relative to the Injured Control and Community Control groups, and the age and gender profile of the Injured Control Groups differed from the other groups. The full detail of sample characteristics is available in Table 5.

Table 5. Sample characteristics

Study Group	Section 39 N (%)	Injured control N (%)	Community control N (%)
Total	2,761 (100.0)	2,814 (100.0)	10,114 (100.0)
Sex			
Female	1,269 (46.0)	1,056 (37.5)	4,578 (45.3)
Male	1,492 (54.0)	1,758 (62.5)	5,536 (54.7)
Age			
18 - 34	45 (1.6)	185 (6.6)	330 (3.3)
35 - 44	218 (7.9)	433 (15.4)	1,109 (11.0)
45 - 54	750 (27.2)	859 (30.5)	2,950 (29.2)
55 - 64	1,508 (54.6)	872 (31.0)	5,289 (52.3)
65+	240 (8.7)	465 (16.5)	436 (4.3)
Compensable Injury Table¹			
Physical	2,531 (91.7)	2,492 (88.6)	-
Psychological	187 (6.8)	299 (10.6)	-
Unknown	43 (1.6)	23 (0.8)	-
Centrelink Payment Pre-index²			
No payment	2,570 (93.1)	2,427 (86.2)	7,425 (73.4)
Received payment	191 (6.9)	387 (13.8)	2,689 (26.6)
Centrelink Payment Post-index²			
No payment	1,092 (39.6)	1,653 (58.7)	7,090 (70.1)
Received payment	1,669 (60.4)	1,161 (41.3)	3,024 (29.9)

1: Primary compensable injury type for workers' compensation by those in the Section 39 and Injured Control groups.

2: Centrelink Payment is an income support payment

A total of 461,559 health services were identified for the eligible sample across a two-year period; N=21,430 were removed as duplicates based on a single service from a single funder per person per service date, and a further N=20,008 removed as duplicates based on multiple funders for a service on a given date, where services funded by the workers' compensation scheme were retained. A description of the duplication removal process and the records with both workers' compensation scheme and MBS funding on the same day is available in the appendix.

A total of 420,121 services were left after duplicate removal (see Table 6). The majority (85.5%) were general practitioner services, followed by physical health services (8.8%) and psychological health services (5.7%).

Table 6. Total N (%) of services 12 months before and after the index date, and total

Service	Pre-index N (%)	Post-index N (%)	Total N (%)
General practitioner	186,088 (84.0)	173,084 (87.1)	359,172 (85.5)
Psychological health	13,764 (6.2)	10,373 (5.2)	24,137 (5.7)
Physical health	21,637 (9.8)	15,175 (7.6)	36,812 (8.8)
Total	221,489 (100.0)	198,632 (100.0)	420,121 (100.0)

A summary of the main findings of the report is presented in Table 7. More detailed comparisons of study outcomes are presented in the following sections for general practitioner, psychological health and physical health services. Additional data describing the rate per 100 persons, volume per person, and proportion of services funded by the workers' compensation scheme for each study group and selected covariates (sex, age group, claimed condition and receipt of Centrelink benefits) is available in the appendix.

Table 7. Summary of the prevalence, rate per 100 persons and percentage of services funded by the workers' compensation scheme for all groups and services

Service	Section 39 Cohort		Injured Control Group		Community Control Group	
	Pre-index	Post-index	Pre-index	Post-index	Pre-index	Post-index
% of sample who received at least 1 service						
General Practitioner	99.2	98.5	98.8	95.6	95.0	96.1
Psychological health	21.3	19.2	21.6	13.0	8.9	9.4
Physical health	25.4	24.5	27.5	16.7	8.7	10.1
Rate of services per 100 persons						
General Practitioner	1,552	1,366	1,463	1,064	1,009	1,042
Psychological health	162	145	178	75	42	42
Physical health	284	277	374	135	32	37
% services funded by the workers' compensation scheme						
General Practitioner	52.2	32.9	47.8	18.1	-	-
Psychological health	74.1	68.0	78.3	38.2	-	-
Physical health	87.9	87.2	94.1	76.9	-	-

1: No services in the Community Control group were funded by the workers' compensation scheme.

GENERAL PRACTITIONERS

General practitioner services constituted the majority of services delivered to persons in all study groups and were highly prevalent in both the pre- and post-index periods. Almost 100% of those in the Section 39 and Injured Control groups consulted a general practitioner at least once in the pre-index period, with the Injured Control group dropping to a similar level to the Community Control group (95.6%) in the post-index period (see Table 8).

Table 8. N (%) of persons who received 1 or more general practitioner service in each group before and after the index date

Study Group	Pre-index		Post-index	
	Received service N (%)	Did not receive service N (%)	Received service N (%)	Did not receive service N (%)
Section 39 Cohort	2,740 (99.2)	21 (0.8)	2,719 (98.5)	42 (1.5)
Injured Control	2,780 (98.8)	34 (1.2)	2,691 (95.6)	123 (4.4)
Community Control	9,609 (95.0)	505 (5.0)	9,718 (96.1)	396 (3.9)

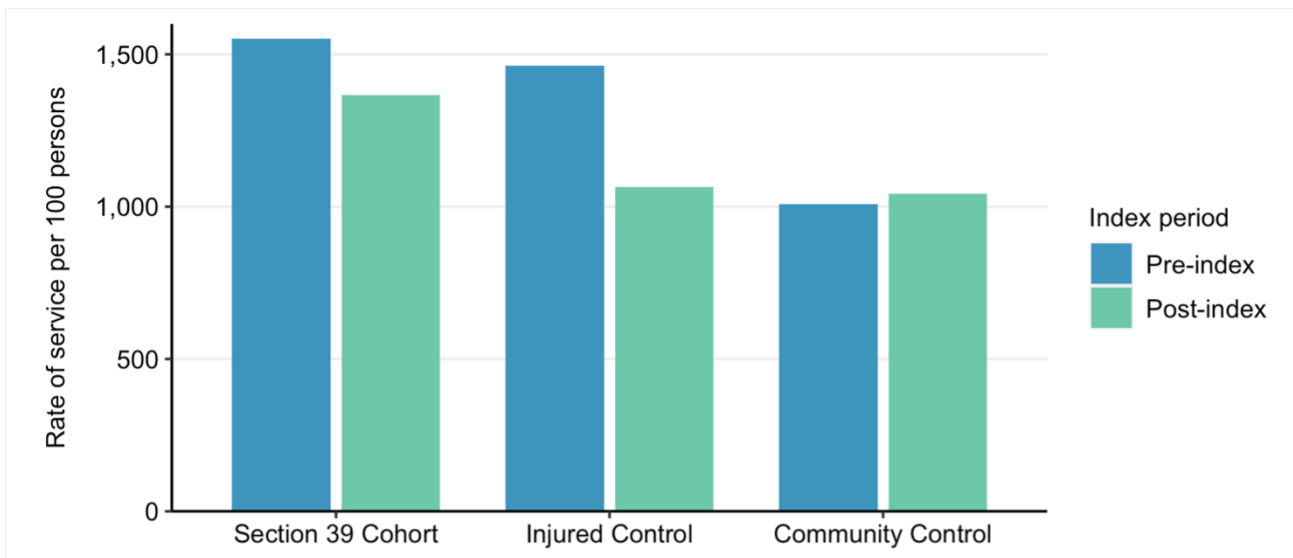
The number of general practitioner services after the index date in the Section 39 cohort dropped to 88.0% of pre-index volume (see Table 9). There was a more substantial drop in the Injured Control group, with the post-index volume of general practitioner services at 72.7% of pre-index volume.

Table 9. Total N of general practitioner services before and after the index date and proportion of pre-index services after the index date

Study Group	Study group size N people	Pre-index N Services	Post-index N Services	% of Pre-index
Section 39 Cohort	2,761	42,852	37,710	88.0
Injured Control	2,814	41,181	29,942	72.7
Community Control	10,114	102,055	105,432	103.3

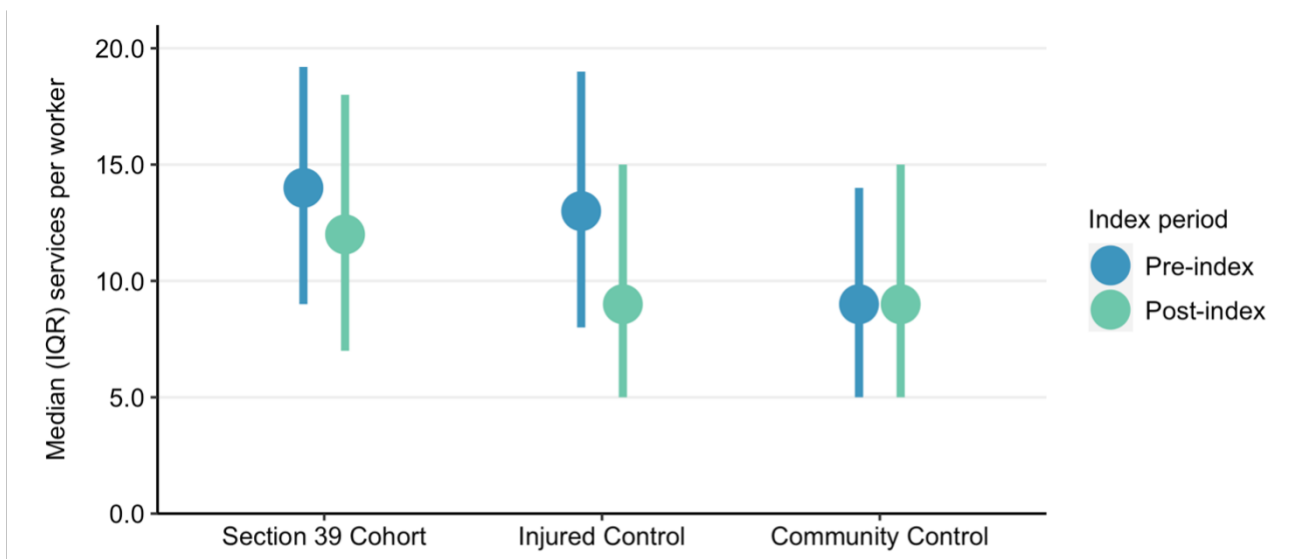
During the pre-index period, the Section 39 group (1,552 per 100 persons) and Injured Control group (1,463 per 100 persons) had higher rates of general practitioner services than the Community group (1,009 per 100 persons). Post-index, the rate of general practitioner services in the Injured Control group (1,064 per 100 persons) decreased to levels observed in the Community Control (1,042 per 100 persons), whereas a smaller decrease in Section 39 group meant the rate of general practitioner services remained comparatively high (1,366 per 100 persons). The rate of general practitioner services per 100 persons dropped from before to after the index date in both the Section 39 and Injured Control groups by 12% and 27%, respectively (see Figure 1). There were notable sex and age effects in the rate of services, with females and older persons receiving general practitioner services at a higher rate (see appendix).

Figure 1. Rate of general practitioner services per 100 workers 12 months before and 12 months after the index date



The median total number of general practitioner services per worker was comparable between the Section 39 (median 14.0; IQR 9.0, 19.2) and Injured Control groups (median 13.0; IQR 8.0, 19.0) in the pre-index period (see Figure 2). Both groups experienced a decrease, with the Injured Control group (median 9.0; IQR 5.0, 15.0) decreasing to the same number of services per person as the Community Control group (median 9.0; IQR 5.0, 15.0).

Figure 2. Total median (IQR) general practitioner services per person in those that received the service



Approximately half of general practitioner services were funded by the workers' compensation scheme for the Section 39 (52.2%) and Injured Control groups (51.2%) in the 12 months prior to benefit cessation (see Figure 3). Both groups experienced a shift to MBS service funding in the 12 months post-index, with the Section 39 group decreasing to 32.9% and Injured Control group to 18.1% workers' compensation scheme funding. Note that 100% of health services analysed in the Community Control group are MBS-funded by the study design.

Figure 3. Proportion of general practitioner services funded by the workers' compensation scheme before and after the index date

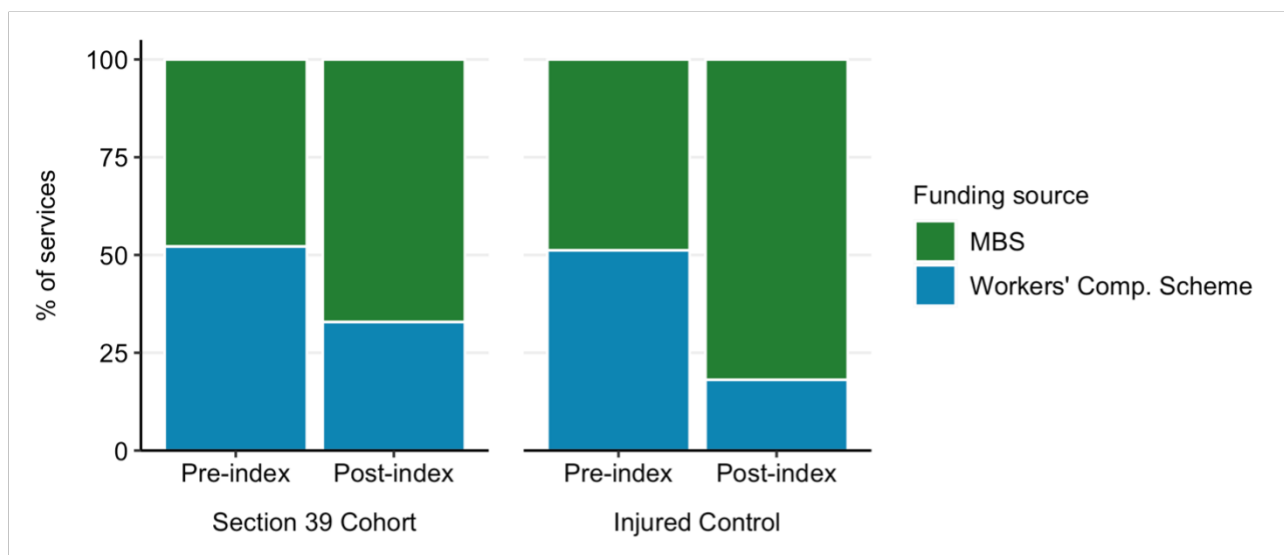
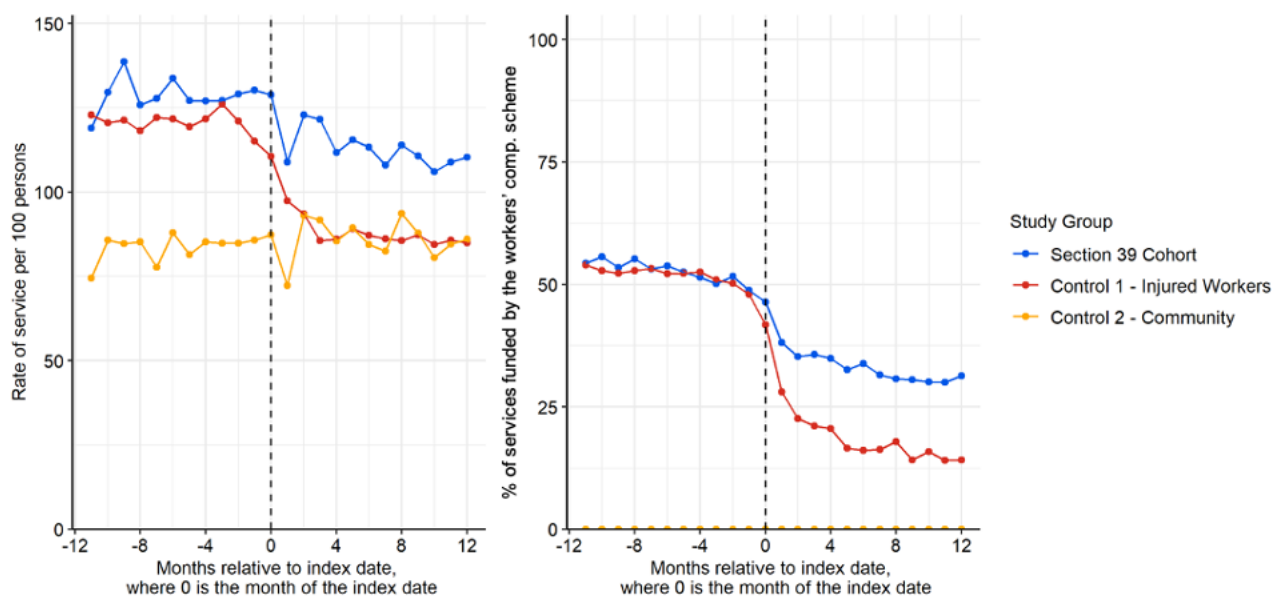


Figure 4 describes the monthly rate of general practitioner services, providing further detail on the pre- and post-index patterns. Decreases in the rate of services can be observed around the time of benefit cessation (i.e., the index date), though it is important to note that the rate of general practitioner services for the Injured Control group was decreasing in the months before benefit cessation, and within four months post-benefit cessation the rates of this group had reached that of the Community Control group. In contrast, the changes in rate of service observed in the Section 39 group were not as sharp and remained well above the Community Control group.

Observing the proportion of workers' compensation funding per month in Figure 4 reveals the decrease observed for both groups in the entire twelve-month post-index period. Both the Section 39 and Injured Control group follow similar monthly percentages of workers' compensation funding for general practitioner services in the pre-index period. Changes occur around the time of benefit cessation (i.e., the index date), with the percentage of services funded by the workers' compensation scheme for the Injured Control group decreasing to a lower level in the twelve months post-index than the Section 39 group.

Figure 4. Monthly rate of general practitioner services per 100 persons and percentage of services funded by the workers' compensation scheme per month by study group



PSYCHOLOGICAL HEALTH SERVICES

The prevalence of psychological health services was comparable between the Section 39 and Injured Control groups, with 21.3 and 21.6% of group members receiving these services in the pre-index period, respectively (see Table 10). The prevalence of psychological health services was substantially higher in the two injured worker groups than in the Community Control group in both pre-index (8.9%) and post-index periods (9.4%). A decrease in the prevalence of psychological services was observed in both the Section 39 and Injured Control groups post-index. This was a relatively minor change in the Section 39 group (21.3 to 19.2%) and a more substantial change in the Injured Control group (21.6 to 13.0%).

Table 10. N (%) of persons who received 1 or more psychological health service in each group before and after the index date

Study Group	Pre-index		Post-index	
	Received service N (%)	Did not receive service N (%)	Received service N (%)	Did not receive service N (%)
Section 39 Group	588 (21.3)	2,173 (78.7)	529 (19.2)	2,232 (80.8)
Injured Control	608 (21.6)	2,206 (78.4)	365 (13.0)	2,449 (87.0)
Community Control	899 (8.9)	9,215 (91.1)	952 (9.4)	9,162 (90.6)

The total number of services remained relatively stable in the Section 39 Cohort whereas a more pronounced reduction was observed in the Injured Control group, with post-index services as a proportion of pre-index services dropping to 89.2 and 42.4%, respectively (see Table 11).

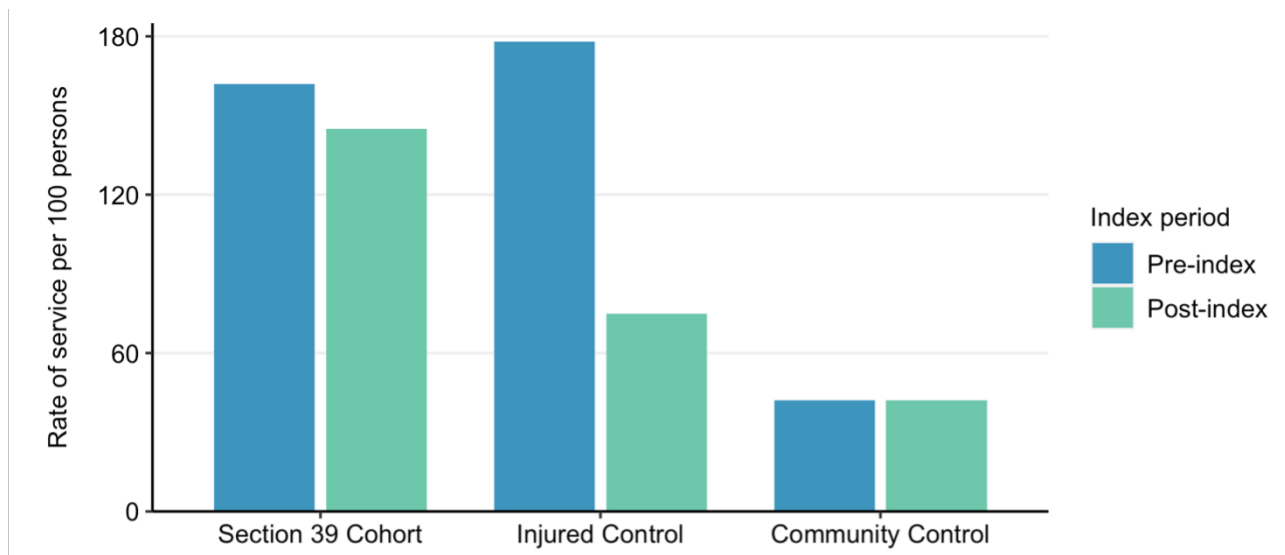
Table 11. Total N of psychological health services before and after index and proportion of pre-index services after the index date

Study Group	Study group size N people	Pre-index N Services	Post-index N Services	% of Pre-index
Section 39 Group	2,176	4,483	4,000	89.2
Injured Control	2,814	4,995	2,119	42.4
Community Control	10,114	4,286	4,254	99.3

During the pre-index period the Injured Control group had the highest rate of psychological health services (178 per 100 persons), and the rate of psychological health services in the Section 39 group (162 per 100 persons) was higher than the Community group (42 per 100 persons). Post-index, the rate of psychological health services decreased by 58% in the Injured Control group (75 per 100 persons) and decreased by 13% in the Section 39 group (145 per 100 persons), though rates remained elevated compared to the Community Control group (42 per 100 persons).

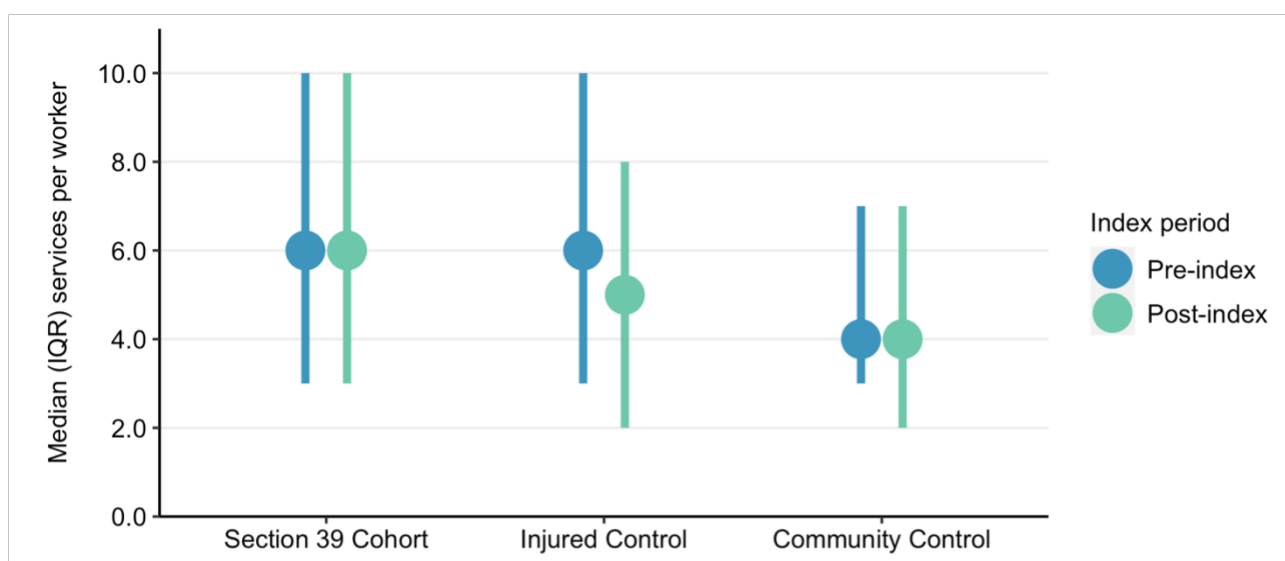
The decrease in total number of psychological health services for the Injured Control group was further reflected in the rate of services per 100 persons, with the post-index rate of psychological health services less than half that of the pre-index rate (see Figure 5). The Section 39 group demonstrated a 10% decrease from 162 to 145 services per 100 persons.

Figure 5. Rate of psychological health services per 100 workers before and after the index date



Despite large decreases in the prevalence and rate of services, the median total number of psychological health services per worker in those that did receive them remained relatively stable between the 12 months before and after benefit cessation (see Figure 6). The Section 39 group received a median of six (IQR 3, 10) psychological health services in both the 12 months before and after, with the Injured control decreasing from a median of six (IQR 3, 10) to five (IQR 2, 8). The Community Control group remained stable across the pre- and post-index periods at a median of four services (IQR 3, 7) in the pre-index period and four services (IQR 2, 7) in the post-index period.

Figure 6. Total median (IQR) psychological health services per person in those that received the service



A small shift from workers' compensation scheme to MBS funding of psychological health services was observed in the Section 39 group between the pre- and post-index periods (74.1% pre-index to 68.0% post-index) (see Figure 7). However, along with the decreased number of services that were delivered in the 12 months post-index, the Injured Control group experienced a large shift to MBS funding (78.3% pre-index to 38.2% post-index).

Figure 5. Rate of psychological health services per 100 workers before and after the index date

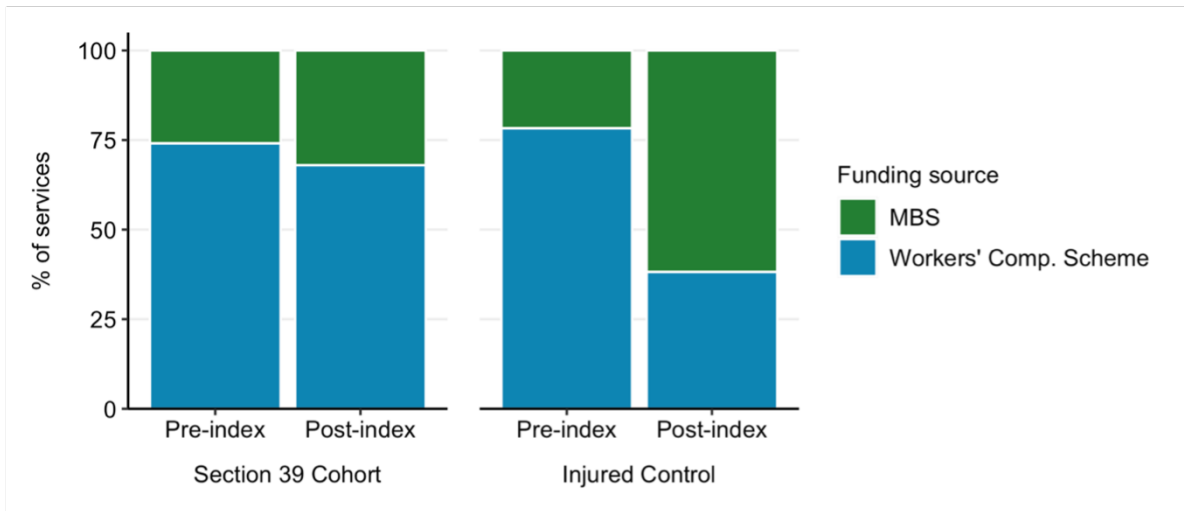
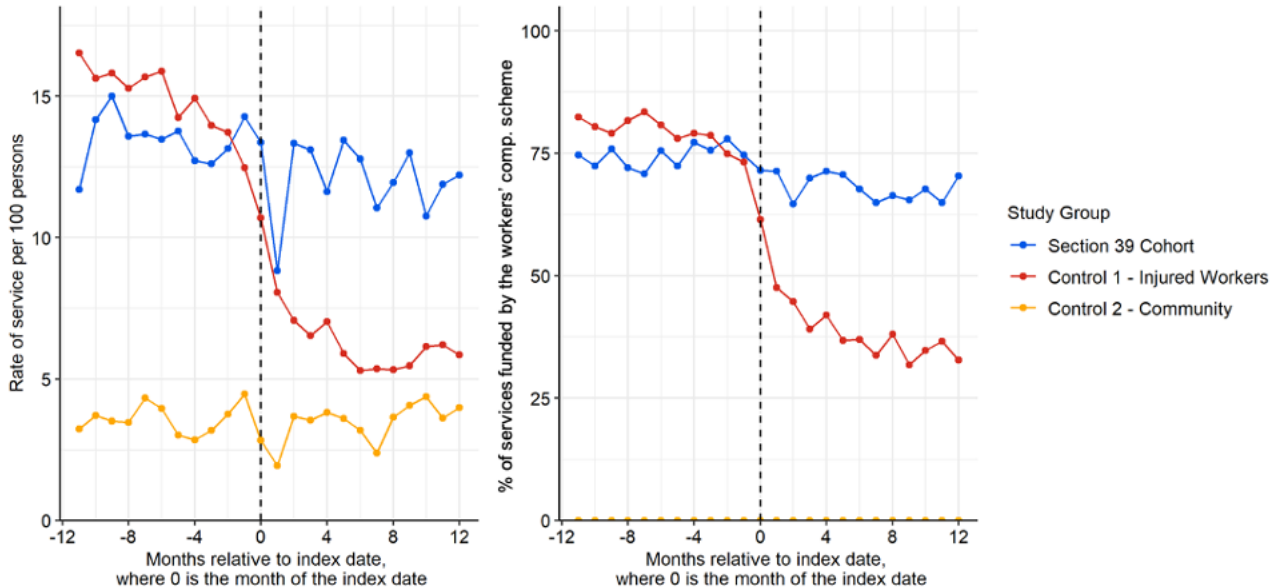


Figure 8 describes the monthly rates and percentage of psychological health services funded by the workers' compensation scheme, providing detail on the pre- and post-index patterns. Major changes in outcomes for the Injured Control group occur around the index date, although the rate of psychological services was already decreasing in the months pre-index date.

There were minimal changes to the Section 39 group, with both the rate of psychological services and percentage of workers' compensation scheme funding remaining relatively stable throughout the pre- and post-index periods.

Figure 8. Monthly rate of psychological health services per 100 persons and proportion of services funded by the workers' compensation scheme per month by study group



PHYSICAL HEALTH SERVICES

The prevalence of physical health services was similar between the Section 39 (25.4%) and Injured Control (27.5%) groups in the pre-index period see (see Table 12). The Section 39 group prevalence of physical health services experienced only a minimal decrease in the post-index period (25.4 to 24.5%) compared to the Injured Control group (27.5 to 16.7%). The prevalence in the Section 39 and Injured Control groups was higher than the Community Control group in both the pre-index (8.9%) and post-index (10.1%) periods.

Table 12. N (%) of persons who received 1 or more physical health service in each group before and after the index date

Study Group	Pre-index		Post-index	
	Received service N (%)	Did not receive service N (%)	Received service N (%)	Did not receive service N (%)
Section 39 Group	700 (25.4)	2,061 (74.6)	676 (24.5)	2,085 (75.5)
Injured Control	775 (27.5)	2,039 (72.5)	469 (16.7)	2,345 (83.3)
Community Control	884 (8.7)	9,230 (91.3)	1,026 (10.1)	9,088 (89.9)

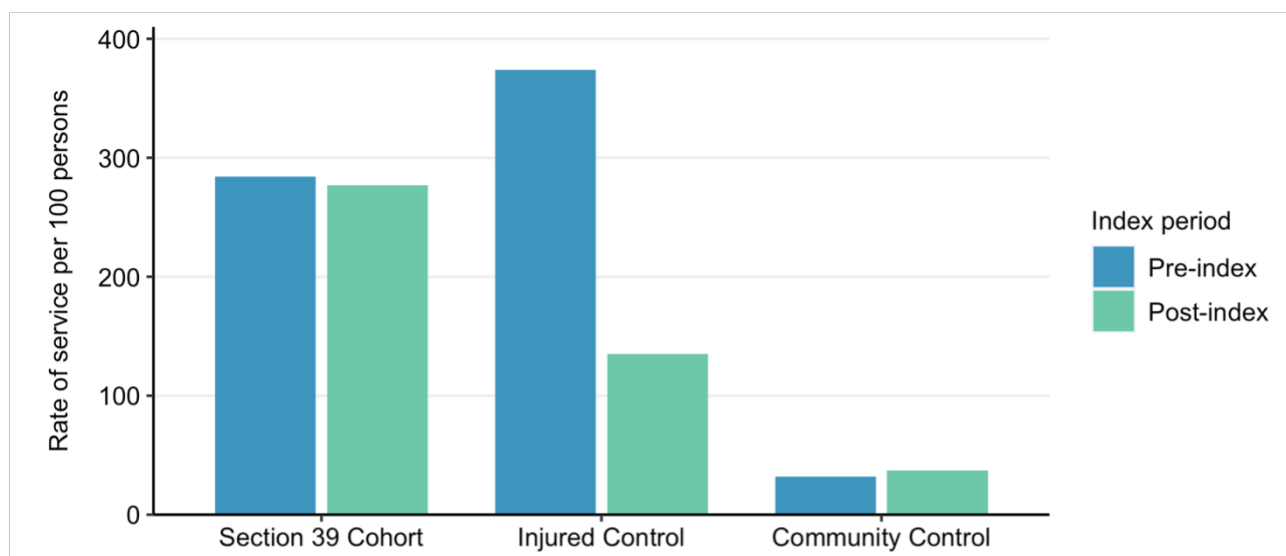
The total volume of physical health services for the Section 39 group remained stable between the pre- and post-index periods at 97.4% of pre-index amount (see Table 13). The Injured Control experienced a large decrease, with the volume of post-index services almost a third of the pre-index services (36.0%). Notably, the Community Control group demonstrated an increase in physical health services in the post-index period of 15%.

Table 13. Total N of physical health services before and after index and proportion of pre-index services after the index date

Study Group	Study group size N people	Pre-index N Services	Post-index N Services	% of Pre-index
Section 39 Group	2,176	7,851	7,643	97.4
Injured Control	2,814	10,536	3,793	36.0
Community Control	10,114	3,250	3,739	115.0

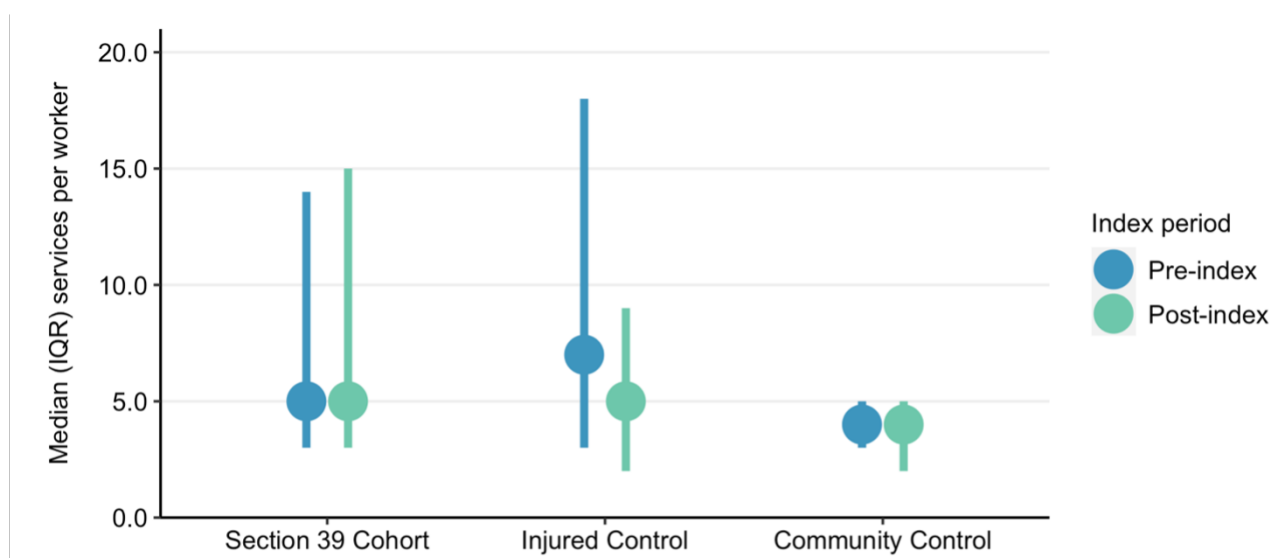
The relative stability in prevalence and total volume of physical health services for the Section 39 group is reflected in the rate of services per 100 workers (284 per 100 persons pre-index, to 277 per 100 persons post-index) (see Figure 9). The substantial decrease in the number of physical health services for the Injured Control group can also be observed in the rate of services, dropping from 374 services per 100 persons pre-index to 135 services per 100 persons post-index. The rate of services in both the Section 39 and Injured Control groups were substantially higher than in the Community Control, at a rate of 32 and 37 per 100 persons pre- and post-index, respectively.

Figure 9. Rate of physical health services per 100 workers before and after the index date



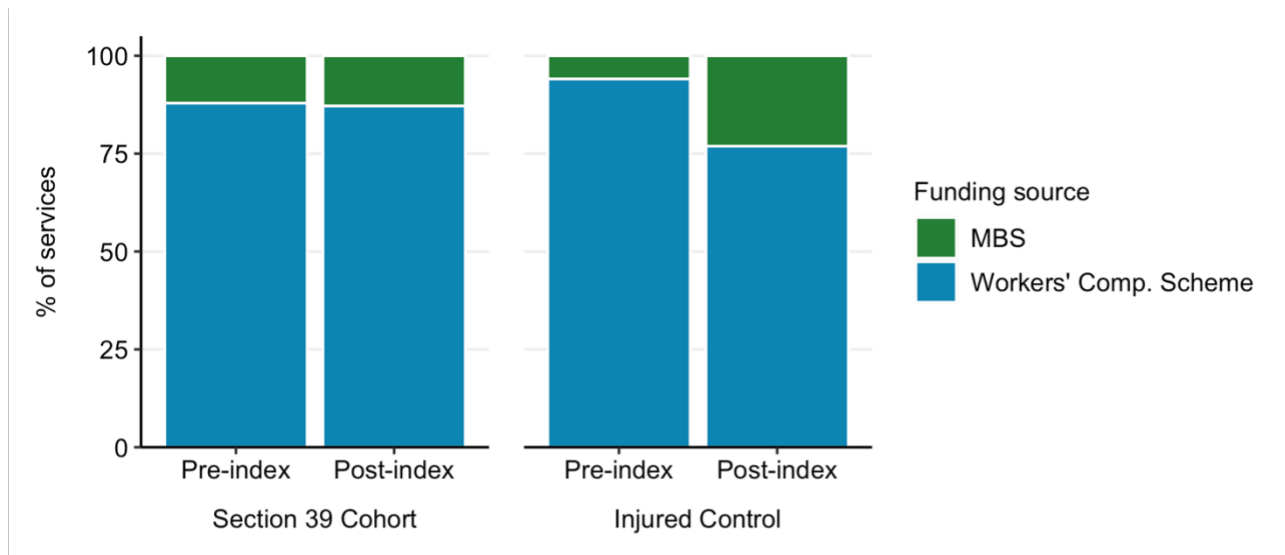
Compared with the substantial reductions in prevalence, overall volume and rate of physical health services to the Injured Control group, the median number of services per person in those who received them remained relatively stable before (median 7; IQR 3, 18) and after (median 5; IQR 2, 9) the index date (see Figure 10). The median number of physical health services in those in the Section 39 group who received them did not change between the pre- (median 5; IQR 3, 14) and post-index (median 5; IQR 3, 15) periods.

Figure 10. Total median (IQR) physical health services per person in those that received the service



The majority of physical health services were funded by the workers' compensation scheme in both the pre- and post-index periods for both groups (see Figure 11). However, there was a decrease in the Injured Control group in the post-index period from 94.1% to 76.9%. The decrease in workers' compensation scheme funding in the post-index period for the Section 39 group was 0.7%.

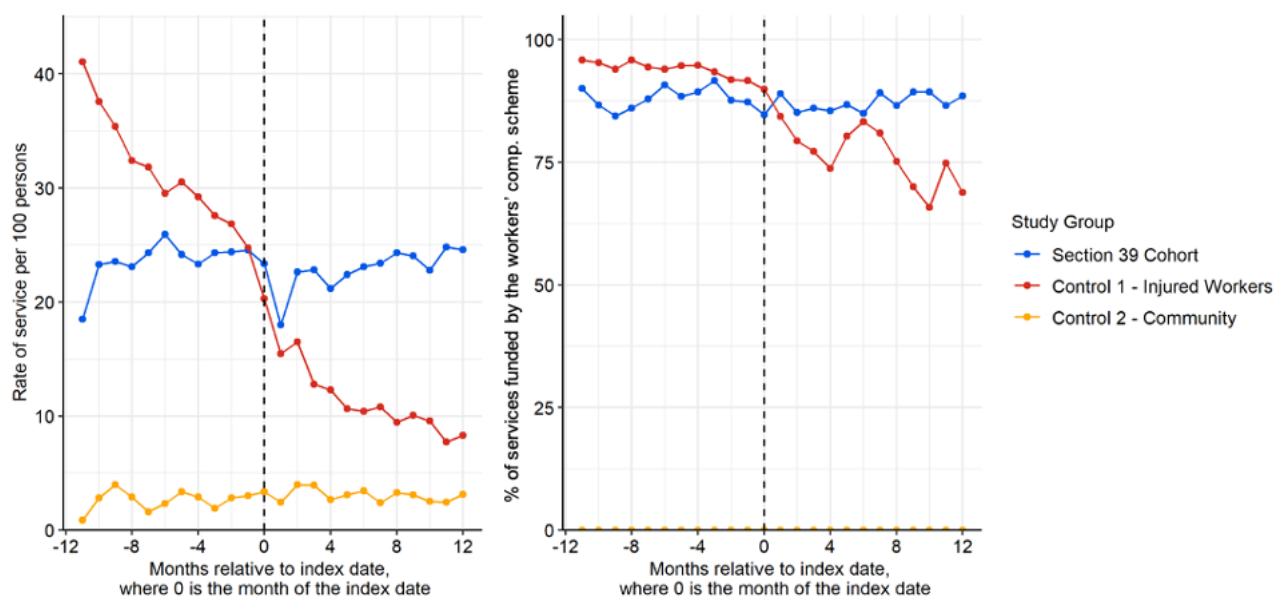
Figure 11. Proportion of physical health services funded by the workers' compensation scheme before and after the index date



The rate of physical health services in the Injured Control group decreased substantially in the twelve months pre-index and continued to decrease after benefit cessation in the twelve months post-index (see Figure 12). However, the percentage of services funded by the workers' compensation scheme remained relatively stable pre-index, only decreasing in the 12 months post-index.

Both the rate and percentage of workers' compensation scheme funded physical health services remained relatively unchanged over the twelve months pre- and post-index in the Section 39 group. A small incidental decrease in rate of physical health services in the first month post-index coincides with the end of December 2017 for the majority of those in the Section 39 group.

Figure 12. Monthly rate of physical health services per 100 persons and proportion of services funded by the workers' compensation scheme per month by study group



DISCUSSION

MAIN FINDINGS

This study revealed that the use of general practitioner and psychological health services were slightly less common following the end of weekly compensation payments under Section 39 than before, whereas the use of physical health services did not noticeably change.

In contrast, we observed large decreases in health service use by workers with long duration claims who were not subject to the Section 39 reforms, in the year after their compensation benefits stopped (the Injured Control Group). While the rate of general practitioner services in the Injured Control group fell to match that of the Community Control group, the rates of psychological and physical health services remained higher than community controls before and after benefit cessation, as did the number of people that engaged with psychological health services.

The continued use of health services by the Section 39 group after benefits stopped could be reflective of the ongoing health needs of people in this group. Benefit cessation was independent of individual health state, recovery, or work capacity in this group. Previous Transitions Study reports found a large proportion of the Section 39 group commenced Commonwealth income support payments and did not return to work [19]. Therefore, after benefits stopped the Section 39 group could have continued to access health services because (1) they had not recovered or returned to work and were still in poor health; and (2) they were able to access health services under the rules of the workers' compensation scheme for a period of time. In the Injured Control group, the rate of service use decreased in the twelve months after benefit cessation, after already trending downwards in the twelve months prior. The decreases in services are likely due to (1) at least some of the workers having recovered and returned to work, thus requiring fewer health services; (2) a reduction in administrative requirements provided by some health services, such as no longer requiring 28-day certificates of capacity to receive income support payments; (3) a misunderstanding of ongoing medical benefit eligibility from the workers' compensation scheme by either the worker or healthcare provider; and (4) administrative challenges in gaining approval for ongoing medical services.

Our findings demonstrated a decrease in the percentage of health service funding by the workers' compensation scheme in the twelve months after benefits ceased for the Section 39 group. This was most notable for the general practitioner services, that also had the lowest percentage of workers' compensation scheme funding in the twelve months prior to benefits ending. Larger decreases in percentage of workers' compensation scheme funding were observed in the Injured Control group. The workers' compensation scheme may fund health services for the Section 39 group and Injured Control group (only for those claims ending after August 2015) for up to 24 months [17]. The decrease in percentage of workers' compensation scheme funding for health services could reflect those in the Injured Control group being eligible for only 12 months of health services (i.e., those pre-August 2015), a lack of awareness of benefit rules by injured workers or health service providers (i.e., billers), restriction of benefits by the workers' compensation scheme, or a matter of convenience for the injured worker or health service provider.

Reductions in the percentage of workers' compensation scheme funding for health services may be due to multiple factors. The administrative complexity of seeking reimbursement from the workers' compensation scheme is greater than from the MBS, meaning health service providers may be more likely to bill the MBS for workers who are no longer receiving income support payments. Furthermore, some factors seem to increase service demand, such as the requirement for workers who are receiving income support benefits to produce certificates of capacity, which are completed by general practitioners. Benefit cessation would mean the absence of this requirement, potentially leading to decreased service demand.

The simultaneous reduction in the rate of services and percentage of services funded by the workers' compensation scheme, particularly in the Injured Control group, are likely linked. Eligibility for health service funding is different in the MBS compared to the workers' compensation scheme. For example, where workers' compensation would fund any reasonably necessary physiotherapy, the MBS will only fund five physiotherapy sessions per annum for those who already have a chronic disease management plan. Furthermore, where workers' compensation would fund the whole cost of a service, the MBS may often fund some of a service, leaving an individual out-of-pocket for the remaining cost. These factors may mean that individuals seek other funding sources for healthcare that are not included in this study, for example private health insurance.

STRENGTHS AND LIMITATIONS

This report is one of a few studies in Australia or internationally to assess health service use from multiple funding sources in compensated workers and adds substantial new findings to a previously limited evidence base [13, 14]. Services funded by systems outside of workers' compensation, notably public healthcare systems, have typically been a blind spot in previous analyses of this type. The linkage of workers' compensation data to the MBS also enabled us to use a new metric to measure the proportion of these services funded by the workers' compensation scheme. Like other reports in the Transitions Study, we also benefited from a large sample size and a community control for comparisons.

There were also several notable limitations. While this is one of few studies in Australia to describe health services funded by workers' compensation and the MBS, we did not have information about services funded by either private health insurance or out-of-pocket expenses. Although private health insurance and out-of-pocket expenses only account for approximately 26% of health care costs in the general population [26], it is still important to note that we did not have 100% coverage of health services in this study. Analyses in this study are conducted in the 12 months before and after the cessation of workers' compensation. This Transitions Study includes a sample of workers with a minimum of two years of workers' compensation benefits, meaning that in these analyses we are describing health services a minimum of 12 months from the claimed injury or illness. In most cases claims are much longer than this, with the Section 39 group receiving benefits for at least five years. Results of this study, notably changes in health service use before and after benefit cessation, should be interpreted carefully; even though service utilisation is higher than the Community Control, it is likely only a small fraction of health service use closer to the date of injury. Finally, this analysis only included a 12-month follow-up of health services, during which time injured workers were still eligible for workers compensation funded medical benefits. Therefore, the true impact of removal of a funding source for health services may not be apparent until at least 24 months after workers' compensation income support payments end.

NEXT STEPS

There are several ways in which this research can be extended. Firstly, in the context of previous research our findings raise questions about whether access to healthcare affects worker outcomes, such as long-term disability or access to social security (Centrelink) benefits. Future research should also examine what factors are associated with receiving health services before and after benefit cessation. For example, demographic factors such as socioeconomic status, remoteness and the geographic access to health services have previously been associated with health service use [7-9, 23, 27] and should be examined as a next step. This research could also be extended using additional data. The three services reported so far (general practitioners, psychological and physical health services) could be measured for a longer

time-series after benefit cessation. Furthermore, these services could also be measured around the date of injury. Finally, more services could be analysed, including other allied health services, doctors, and diagnostic and surgical procedures.

CONCLUSIONS

This report sought to understand health service use following the end of workers' compensation benefits due to the Section 39 legislative amendments. We identified that the rate of General Practitioner, psychological and physical health services for workers with long-duration claims was substantially higher than the community prior to benefit cessation. Health service use continued after benefit cessation in the Section 39 group, with only a small reduction in the prevalence and rate of services, and proportion of services funded by workers' compensation. By comparison, workers whose benefits ceased due to reasons other than Section 39 experienced substantial decreases in health service use after benefits ceased. The proportion of services funded by workers' compensation for both groups was lowest for General Practitioner services, followed by psychological health services, and then physical health services. This report demonstrates the value of data linkage when examining health service use in compensated workers. Analysing services funded by both workers' compensation and Medicare (the public healthcare scheme) provides unique insight into health service and the role of health service funding.

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APPENDIX 1 - DUPLICATE REMOVAL

Table 14. Total N of services dataset at each stage of duplicate removal

Criterion	N	Difference
Original services dataset	461,559	-
Remove duplicate records based on principal of single service from single funder (workers' compensation scheme or MBS) per person per date	440,129	21,430
Remove duplicate records based on multiple funders for a service on a given date, retaining services funded by the workers' compensation scheme	420,121	20,008

Table 15. Characteristics of records with both workers' compensation scheme and MBS funding on the same date

Parameter	N (%)
Study Group	
Section 39	12,313 (61.5)
Injured Control	7,965 (38.5)
Service	
General practitioner	19,867 (99.3)
Psychological health	62 (0.3)
Physical health	79 (0.4)
Index	
Pre-index	13,584 (67.9)
Post-index	6,424 (32.1)

APPENDIX 2 - ADDITIONAL RESULTS OF GENERAL PRACTITIONER SERVICES

Table 16. Rate of general practitioner services per 100 persons by study group and selected sample characteristics before and after the index date

	Pre-index			Post-index		
	Section 39 Rate	Injured Control Rate	Community Control Rate	Section 39 Rate	Injured Control Rate	Community Control Rate
Study Group						
Section 39	1,552	-	-	1,366	-	-
Injured Control	-	1,463	-	-	1,064	-
Community Control	-	-	1,009	-	-	1,042
Sex						
F	1,644	1,557	1,136	1,416	1,195	1,170
M	1,474	1,407	904	1,323	985	937
Age Group						
18-34	1,649	1,504	834	1,249	923	839
35-44	1,546	1,471	897	1,277	962	911
45-54	1,558	1,439	964	1,336	1,010	987
55-64	1,570	1,495	1,062	1,415	1,106	1,104
65+	1,411	1,427	1,098	1,253	1,236	1,158
Compensable Injury Type¹						
Physical	1,570	1,499	-	1,388	1,091	-
Psychological	1,309	1,190	-	1,037	847	-
Unknown	1,549	1,170	1,009	1,479	957	1,042
Centrelink payment pre-index						
No payment	1,536	1,443	1,018	1,348	1,028	1,042
Received payment	1,764	1,592	985	1,610	1,290	1,042
Centrelink payment post-index						
No payment	1,404	1,382	1,014	1,134	911	1,037
Received payment	1,649	1,579	998	1,518	1,282	1,055

1: Compensable injury type is blank for the Community Control group as these persons did not have a workers' compensation claim.

Table 17. Median and inter-quartile range (IQR) of general practitioner services per person by study group and selected sample characteristics before and after the index date

	Pre-index			Post-index		
	Section 39 Median (IQR)	Injured Control Median (IQR)	Community Control Median (IQR)	Section 39 Median (IQR)	Injured Control Median (IQR)	Community Control Median (IQR)
Study Group						
Section 39	14.0 (9.0, 19.2)	-	-	12.0 (7.0, 18.0)	-	-
Injured Control	-	13.0 (8.0, 19.0)	-	-	9.0 (5.0, 15.0)	-
Community Control	-	-	9.0 (5.0, 14.0)	-	-	9.0 (5.0, 15.0)
Sex						
F	15.0 (10.0, 21.0)	14.0 (10.0, 20.0)	9.0 (6.0, 15.0)	12.0 (7.0, 19.0)	10.0 (6.0, 16.0)	10.0 (6.0, 16.0)
M	13.0 (8.0, 19.0)	13.0 (8.0, 18.0)	8.0 (4.0, 12.0)	11.0 (7.0, 17.2)	8.0 (4.0, 14.0)	8.0 (4.0, 13.0)
Age Group						
18-34	14.0 (10.0, 19.0)	14.0 (9.0, 18.5)	8.0 (3.0, 13.0)	10.0 (6.0, 17.5)	7.0 (4.0, 11.0)	8.0 (4.0, 13.0)
35-44	14.0 (8.0, 18.5)	13.0 (8.0, 19.0)	7.0 (3.0, 12.0)	11.0 (6.0, 18.8)	8.0 (4.0, 14.0)	7.0 (4.0, 13.0)
45-54	14.0 (9.0, 19.0)	13.0 (8.0, 18.0)	8.0 (4.0, 12.0)	11.0 (7.0, 18.0)	8.0 (4.0, 14.0)	8.0 (5.0, 14.0)
55-64	14.0 (9.0, 20.0)	14.0 (9.0, 19.0)	9.0 (5.0, 15.0)	12.0 (8.0, 19.0)	10.0 (5.0, 15.0)	9.0 (5.0, 15.0)
65+	13.0 (8.0, 18.0)	13.0 (8.0, 19.0)	9.0 (5.0, 15.0)	10.0 (6.0, 16.0)	11.0 (7.0, 16.0)	10.0 (6.0, 15.0)
Compensable Injury Type¹						
Physical	14.0 (9.0, 20.0)	14.0 (9.0, 19.0)	-	12.0 (7.0, 19.0)	9.0 (5.0, 15.0)	-
Psychological	12.0 (8.0, 17.0)	10.0 (6.0, 15.0)	-	9.0 (5.0, 14.0)	7.0 (4.0, 12.0)	-
Unknown	12.0 (9.0, 20.0)	12.0 (8.0, 15.0)	9.0 (5.0, 14.0)	12.0 (8.0, 18.8)	8.0 (4.0, 11.8)	9.0 (5.0, 15.0)
Centrelink payment pre-index						
No payment	14.0 (9.0, 19.0)	13.0 (8.0, 19.0)	9.0 (5.0, 14.0)	12.0 (7.0, 18.0)	9.0 (5.0, 15.0)	9.0 (5.0, 15.0)
Received payment	15.0 (10.0, 23.0)	14.0 (9.0, 20.0)	8.0 (5.0, 14.0)	14.0 (7.0, 22.5)	11.0 (6.0, 18.0)	9.0 (5.0, 15.0)
Centrelink payment post-index						
No payment	13.0 (8.0, 18.0)	13.0 (8.0, 18.0)	9.0 (5.0, 14.0)	10.0 (6.0, 15.0)	8.0 (4.0, 13.0)	9.0 (5.0, 14.0)
Received payment	14.0 (10.0, 20.0)	14.0 (9.0, 20.0)	9.0 (5.0, 14.0)	13.0 (8.0, 20.0)	11.0 (6.0, 17.0)	9.0 (5.0, 15.0)

Table 18. Number and percentage of services by funding source (workers' compensation scheme or MBS) by study group and selected sample characteristics before and after the index date

	Pre-index				Post-index			
	Section 39		Injured Control		Section 39		Injured Control	
	WC Scheme ¹ N (%)	MBS ² N (%)	WC Scheme N (%)	MBS N (%)	WC Scheme ¹ N (%)	MBS ² N (%)	WC Scheme N (%)	MBS N (%)
Study Group total³	22,365 (52.2)	20,487 (47.8)	21,073 (51.2)	20,108 (48.8)	12,398 (32.9)	25,312 (67.1)	5,413 (18.1)	24,529 (81.9)
Sex								
F	10,235 (49.1)	10,623 (50.9)	8,036 (48.9)	8,406 (51.1)	5,463 (30.4)	12,505 (69.6)	2,210 (17.5)	10,412 (82.5)
M	12,130 (55.2)	9,864 (44.8)	13,037 (52.7)	11,702 (47.3)	6,935 (35.1)	12,807 (64.9)	3,203 (18.5)	14,117 (81.5)
Age Group								
18-34	466 (62.8)	276 (37.2)	1,721 (61.9)	1,061 (38.1)	218 (38.8)	344 (61.2)	306 (17.9)	1,402 (82.1)
35-44	1,980 (58.7)	1,391 (41.3)	3,591 (56.4)	2,777 (43.6)	1,154 (41.5)	1,630 (58.5)	794 (19.1)	3,371 (80.9)
45-54	6,538 (56.0)	5,147 (44.0)	6,633 (53.7)	5,728 (46.3)	3,750 (37.4)	6,271 (62.6)	1,681 (19.4)	6,996 (80.6)
55-64	11,905 (50.3)	11,763 (49.7)	6,741 (51.7)	6,296 (48.3)	6,645 (31.1)	14,690 (68.9)	1,801 (18.7)	7,843 (81.3)
65+	1,476 (43.6)	1,910 (56.4)	2,387 (36.0)	4,246 (64.0)	631 (21.0)	2,377 (79.0)	831 (14.5)	4,917 (85.5)
Compensable Injury Type¹								
Physical	20,866 (52.5)	18,872 (47.5)	19,328 (51.7)	18,026 (48.3)	11,712 (33.3)	23,423 (66.7)	5,113 (18.8)	22,077 (81.2)
Psychological	1,087 (44.4)	1,361 (55.6)	1,624 (45.6)	1,934 (54.4)	468 (24.1)	1,471 (75.9)	260 (10.3)	2,272 (89.7)
Unknown	412 (61.9)	254 (38.1)	121 (45.0)	148 (55.0)	218 (34.3)	418 (65.7)	40 (18.2)	180 (81.8)
Centrelink payment pre-index								
No payment	20,913 (53.0)	18,569 (47.0)	18,987 (54.2)	16,033 (45.8)	11,496 (33.2)	23,138 (66.8)	4,797 (19.2)	20,152 (80.8)
Received payment	1,452 (43.1)	1,918 (56.9)	2,086 (33.9)	4,075 (66.1)	902 (29.3)	2,174 (70.7)	616 (12.3)	4,377 (87.7)
Centrelink payment post-index								
No payment	7,982 (52.0)	7,354 (48.0)	12,628 (55.3)	10,223 (44.7)	4,255 (34.4)	8,123 (65.6)	2,670 (17.7)	12,385 (82.3)
Received payment	14,383 (52.3)	13,133 (47.7)	8,445 (46.1)	9,885 (53.9)	8,143 (32.1)	17,189 (67.9)	2,743 (18.4)	12,144 (81.6)

1: Workers' compensation scheme; 2: Medicare benefits schedule; 3: The community control group is not included in this table as none of the services for those persons were funded by workers' compensation

APPENDIX 3 - ADDITIONAL RESULTS OF PSYCHOLOGICAL HEALTH SERVICES

Table 19. Rate of psychological services per 100 persons by study group and selected sample characteristics before and after the index date

	Pre-index			Post-index		
	Section 39 Rate	Injured Control Rate	Community Control Rate	Section 39 Rate	Injured Control Rate	Community Control Rate
Study Group						
Section 39	162	-	-	145	-	-
Injured Control	-	178	-	-	75	-
Community Control	-	-	42	-	-	42
Sex						
F	182	187	54	160	90	52
M	145	172	33	132	67	34
Age Group						
18-34	218	212	26	229	52	33
35-44	195	252	45	154	78	35
45-54	202	206	49	152	89	40
55-64	151	158	39	152	86	46
65+	70	78	38	56	37	33
Compensable Injury Type¹						
Physical	148	129	-	132	63	-
Psychological	374	563	-	325	180	-
Unknown	60	430	42	98	96	42
Centrelink payment pre-index						
No payment	163	186	45	146	76	42
Received payment	151	122	36	130	72	42
Centrelink payment post-index						
No payment	150	198	45	113	72	42
Received payment	171	148	37	166	80	42

1: Compensable injury type is blank for the Community Control group as these persons did not have a workers' compensation claim.

Table 20. Median and inter-quartile range (IQR) of psychological services per person by study group and selected sample characteristics before and after the index date

	Pre-index			Post-index		
	Section 39 Median (IQR)	Injured Control Median (IQR)	Community Control Median (IQR)	Section 39 Median (IQR)	Injured Control Median (IQR)	Community Control Median (IQR)
Study Group						
Section 39	6.0 (3.0, 10.0)	-	-	6.0 (3.0, 10.0)	-	-
Injured Control	-	6.0 (3.0, 10.0)	-	-	5.0 (2.0, 8.0)	-
Community Control	-	-	4.0 (3.0, 7.0)	-		4.0 (2.0, 7.0)
Sex						
F	6.0 (3.0, 10.0)	6.0 (3.0, 10.0)	5.0 (3.0, 7.0)	7.0 (3.0, 10.0)	5.0 (2.0, 8.0)	5.0 (2.0, 7.0)
M	6.0 (3.0, 9.0)	6.5 (3.0, 11.0)	4.0 (2.0, 6.0)	5.0 (3.0, 10.0)	4.0 (2.0, 8.0)	3.0 (2.0, 5.0)
Age Group						
18-34	2.5 (1.0, 10.2)	5.0 (3.0, 8.0)	2.0 (1.0, 7.0)	7.0 (2.5, 10.0)	3.0 (2.0, 4.0)	2.0 (1.0, 3.0)
35-44	5.5 (3.0, 10.0)	7.0 (4.0, 12.0)	4.0 (2.0, 6.0)	4.0 (1.2, 9.8)	4.0 (2.0, 6.0)	2.0 (1.0, 6.0)
45-54	6.0 (3.0, 10.0)	6.0 (3.0, 10.0)	4.0 (3.0, 6.0)	5.5 (2.0, 10.0)	5.0 (2.0, 8.0)	3.0 (2.0, 5.0)
55-64	6.0 (3.0, 9.0)	6.5 (4.0, 10.0)	4.0 (3.0, 7.0)	6.0 (4.0, 10.0)	6.0 (3.0, 8.2)	5.0 (3.0, 8.0)
65+	6.0 (4.0, 8.2)	6.0 (3.8, 11.0)	5.0 (2.5, 7.0)	4.5 (3.0, 7.5)	4.0 (3.0, 6.5)	5.0 (2.0, 10.0)
Compensable Injury Type						
Physical	6.0 (3.0, 9.0)	6.0 (3.0, 10.0)	-	6.0 (3.0, 10.0)	4.0 (2.0, 8.0)	-
Psychological	7.0 (4.0, 10.0)	8.0 (4.0, 12.0)	-	8.0 (4.0, 12.0)	6.0 (3.0, 8.0)	-
Unknown	3.0 (1.0, 5.0)	13.0 (6.8, 19.2)	4.0 (3.0, 7.0)	7.5 (4.5, 9.8)	7.0 (6.5, 8.0)	4.0 (2.0, 7.0)
Centrelink payment pre-index						
No payment	6.0 (3.0, 10.0)	6.0 (3.0, 10.0)	4.0 (3.0, 6.0)	6.0 (3.0, 10.0)	5.0 (2.0, 8.0)	3.0 (2.0, 7.0)
Received payment	5.0 (3.0, 10.0)	6.0 (3.0, 10.0)	4.0 (2.0, 7.0)	6.0 (4.0, 9.0)	4.0 (2.5, 7.5)	4.0 (2.0, 7.0)
Centrelink payment post-index						
No payment	6.0 (3.0, 10.0)	6.5 (3.0, 11.0)	4.0 (3.0, 6.5)	6.0 (3.0, 10.0)	5.0 (2.0, 8.0)	4.0 (2.0, 7.0)
Received payment	6.0 (3.0, 10.0)	6.0 (3.0, 10.0)	4.0 (2.0, 7.0)	6.0 (3.0, 10.0)	4.0 (2.0, 8.0)	4.0 (2.0, 7.0)

Table 21. Number and percentage of psychological services by funding source (workers' compensation scheme or MBS) by study group and selected sample characteristics before and after the index date

	Pre-index				Post-index			
	Section 39		Injured Control		Section 39		Injured Control	
	WC Scheme ¹ N (%)	MBS ² N (%)	WC Scheme N (%)	MBS N (%)	WC Scheme ¹ N (%)	MBS ² N (%)	WC Scheme N (%)	MBS N (%)
Study Group total³	3,324 (74.1)	1,159 (25.9)	3,913 (78.3)	1,082 (21.7)	2,719 (68.0)	1,281 (32.0)	809 (38.2)	1,310 (61.8)
Sex								
F	1,636 (70.7)	679 (29.3)	1,478 (74.9)	495 (25.1)	1,270 (62.6)	760 (37.4)	333 (35.1)	615 (64.9)
M	1,688 (77.9)	480 (22.1)	2,435 (80.6)	587 (19.4)	1,449 (73.6)	521 (26.4)	476 (40.6)	695 (59.4)
Age Group								
18-34	85.0 (86.7)	13 (13.3)	365 (93.1)	27 (6.9)	75 (72.8)	28.0 (27.2)	51 (52.6)	46 (47.4)
35-44	358.0 (84.2)	67 (15.8)	905 (82.9)	187 (17.1)	240 (71.6)	95.0 (28.4)	93 (27.5)	245 (72.5)
45-54	1,143.0 (75.5)	371 (24.5)	1,411 (79.6)	362 (20.4)	862 (75.5)	280.0 (24.5)	257 (33.6)	509 (66.4)
55-64	1,658.0 (72.8)	619 (27.2)	974 (70.8)	401 (29.2)	1,495 (65.4)	790.0 (34.6)	292 (39.1)	454 (60.9)
65+	80.0 (47.3)	89 (52.7)	258 (71.1)	105 (28.9)	47 (34.8)	88.0 (65.2)	116 (67.4)	56 (32.6)
Compensable Injury Type¹								
Physical	2,726 (72.6)	1,031 (27.4)	2,336 (72.7)	877 (27.3)	2,166 (64.7)	1,184 (35.3)	591 (37.9)	967 (62.1)
Psychological	582 (83.1)	118 (16.9)	1,487 (88.4)	196 (11.6)	526 (86.5)	82 (13.5)	209 (38.8)	330 (61.2)
Unknown	16 (61.5)	10 (38.5)	90 (90.9)	9 (9.1)	27 (64.3)	15 (35.7)	9 (40.9)	13 (59.1)
Centrelink payment pre-index								
No payment	3,104 (74.0)	1,091 (26.0)	3,658 (80.9)	865 (19.1)	2,570 (68.5)	1,182 (31.5)	719 (39.1)	1,120 (60.9)
Received payment	220 (76.4)	68 (23.6)	255 (54.0)	217 (46.0)	149 (60.1)	99 (39.9)	90 (32.1)	190 (67.9)
Centrelink payment post-index								
No payment	1,227 (75.1)	407 (24.9)	2,750 (83.9)	528 (16.1)	924 (75.0)	308 (25.0)	458 (38.5)	733 (61.5)
Received payment	2,097 (73.6)	752 (26.4)	1,163 (67.7)	554 (32.3)	1,795 (64.8)	973 (35.2)	351 (37.8)	577 (62.2)

1: Workers' compensation scheme; 2: Medicare benefits schedule; 3: The community control group is not included in this table as none of the services for those persons were funded by workers' compensation

APPENDIX 4 - ADDITIONAL RESULTS OF PHYSICAL HEALTH SERVICES

Table 22. Rate of physical health service per 100 persons by study group and selected sample characteristics before and after the index date

	Pre-index			Post-index		
	Section 39 Rate	Injured Control Rate	Community Control Rate	Section 39 Rate	Injured Control Rate	Community Control Rate
Study Group						
Section 39	284	-	-	277	-	-
Injured Control	-	374	-	-	135	-
Community Control	-	-	32	-	-	37
Sex						
F	308	394	39	314	154	47
M	264	363	27	245	123	28
Age Group						
18-34	360	602	7	318	102	13
35-44	360	375	17	275	126	20
45-54	282	365	28	282	110	32
55-64	271	383	39	279	120	43
65+	290	283	36	242	229	61
Compensable Injury Type¹						
Physical	302	418	-	295	150	-
Psychological	50	35	-	72	13	-
Unknown	270	30	32	77	44	37
Centrelink payment pre-index						
No payment	289	386	32	277	134	37
Received payment	219	302	33	270	139	38
Centrelink payment post-index						
No payment	293	431	31	254	122	35
Received payment	279	294	34	292	153	41

1: Compensable injury type is blank for the Community Control group as these persons did not have a workers' compensation claim.

Table 23. Median and inter-quartile range (IQR) of physical health services per worker by study group and selected sample characteristics before and after the index date

	Pre-index			Post-index		
	Section 39 Median (IQR)	Injured Control Median (IQR)	Community Control Median (IQR)	Section 39 Median (IQR)	Injured Control Median (IQR)	Community Control Median (IQR)
Study Group						
Section 39	5.0 (3.0, 14.0)	-	-	5.0 (3.0, 15.0)	-	-
Injured Control	-	7.0 (3.0, 18.0)	-	-	5.0 (2.0, 9.0)	-
Community Control	-	-	4.0 (3.0, 5.0)	-	-	4.0 (2.0, 5.0)
Sex						
F	5.0 (3.0, 14.0)	8.0 (3.0, 18.0)	4.0 (3.0, 5.0)	5.0 (3.0, 15.0)	5.0 (3.0, 8.2)	5.0 (3.0, 5.0)
M	5.0 (3.0, 14.0)	7.0 (3.0, 18.0)	4.0 (2.0, 5.0)	5.0 (3.0, 15.0)	4.0 (2.0, 9.0)	3.0 (2.0, 5.0)
Age Group						
18-34	5.0 (2.0, 23.0)	12.0 (4.0, 18.0)	1.0 (1.0, 1.0)	10.0 (2.5, 17.5)	4.0 (2.0, 5.8)	3.5 (2.2, 4.0)
35-44	10.0 (4.0, 16.0)	8.5 (3.0, 18.8)	4.0 (4.0, 5.0)	5.0 (2.0, 13.0)	5.0 (2.0, 8.0)	2.0 (2.0, 4.0)
45-54	5.0 (3.0, 18.8)	7.0 (3.0, 18.0)	4.0 (3.0, 5.0)	8.0 (3.0, 16.0)	5.0 (2.0, 8.0)	4.0 (3.0, 5.0)
55-64	5.0 (3.0, 12.0)	7.5 (3.0, 18.0)	4.0 (3.0, 5.0)	5.0 (3.0, 14.0)	4.0 (2.0, 8.0)	5.0 (2.0, 5.0)
65+	5.0 (2.0, 14.0)	7.0 (3.0, 14.0)	4.0 (2.0, 5.0)	5.0 (3.2, 13.8)	5.0 (3.0, 10.8)	4.0 (2.0, 5.0)
Compensable Injury Type						
Physical	5.0 (3.0, 14.0)	8.0 (3.0, 18.0)	-	6.0 (3.0, 16.0)	5.0 (2.0, 9.0)	-
Psychological	4.0 (3.0, 5.0)	3.0 (1.5, 4.5)	-	4.0 (2.0, 5.0)	3.0 (1.0, 4.0)	-
Unknown	19.0 (12.0, 55.5)	7.0 (7.0, 7.0)	4.0 (3.0, 5.0)	5.0 (4.5, 5.0)	1.0 (1.0, 4.5)	4.0 (2.0, 5.0)
Centrelink payment pre-index						
No payment	5.0 (3.0, 14.0)	8.0 (3.0, 18.0)	4.0 (3.0, 5.0)	5.0 (3.0, 15.0)	4.5 (2.0, 9.0)	4.0 (2.0, 5.0)
Received payment	4.0 (2.0, 8.5)	7.0 (3.8, 14.0)	4.0 (3.0, 5.0)	5.0 (2.8, 8.2)	5.0 (3.0, 8.0)	4.0 (2.0, 5.0)
Centrelink payment post-index						
No payment	5.0 (3.0, 16.0)	8.0 (3.0, 20.0)	4.0 (3.0, 5.0)	5.0 (3.0, 15.0)	4.0 (2.0, 8.0)	4.0 (2.0, 5.0)
Received payment	5.0 (3.0, 12.0)	7.0 (3.0, 14.0)	4.0 (3.0, 5.0)	5.0 (3.0, 15.0)	5.0 (3.0, 9.0)	4.0 (2.0, 5.0)

Table 24. N (%) of physical health services by funding source (workers' compensation scheme or MBS) by study group and selected sample characteristics before and after the index date

	Pre-index				Post-index			
	Section 39		Injured Control		Section 39		Injured Control	
	WC Scheme ¹ N (%)	MBS ² N (%)	WC Scheme N (%)	MBS N (%)	WC Scheme ¹ N (%)	MBS ² N (%)	WC Scheme N (%)	MBS N (%)
Study Group total³	6,902 (87.9)	949 (12.1)	9,910 (94.1)	626 (5.9)	6,665 (87.2)	978 (12.8)	2,915 (76.9)	878 (23.1)
Sex								
F	3,365 (86.1)	545 (13.9)	3,858 (92.7)	304 (7.3)	3,407 (85.6)	574 (14.4)	1,205 (74.2)	419 (25.8)
M	3,537 (89.7)	404 (10.3)	6,052 (94.9)	322 (5.1)	3,258 (89.0)	404 (11.0)	1,710 (78.8)	459 (21.2)
Age Group								
18-34	156 (96.3)	6 (3.7)	1,094 (98.5)	17 (1.5)	133 (93.0)	10 (7.0)	159 (84.1)	30 (15.9)
35-44	747 (95.3)	37 (4.7)	1,581 (97.3)	44 (2.7)	552 (92.0)	48 (8.0)	432 (79.4)	112 (20.6)
45-54	1,909 (90.2)	207 (9.8)	2,936 (93.5)	203 (6.5)	1,931 (91.3)	183 (8.7)	691 (73.0)	255 (27.0)
55-64	3,486 (85.2)	606 (14.8)	3,105 (92.9)	239 (7.1)	3,588 (85.3)	618 (14.7)	748 (71.3)	301 (28.7)
65+	604 (86.7)	93 (13.3)	1,194 (90.7)	123 (9.3)	461 (79.5)	119 (20.5)	885 (83.1)	180 (16.9)
Compensable Injury Type¹								
Physical	6,762 (88.5)	880 (11.5)	9,858 (94.6)	566 (5.4)	6,597 (88.3)	878 (11.7)	2,902.0 (77.5)	843 (22.5)
Psychological	-	-	-	-	-	-	-	-
Unknown	-	-	-	-	-	-	-	-
Centrelink payment pre-index								
No payment	6,536 (87.9)	897 (12.1)	8,903 (95.1)	463 (4.9)	6,223 (87.3)	904 (12.7)	2,588 (79.5)	669 (20.5)
Received payment	366 (87.6)	52 (12.4)	1,007 (86.1)	163 (13.9)	442 (85.7)	74 (14.3)	327 (61.0)	209 (39.0)
Centrelink payment post-index								
No payment	2,847 (89.1)	348 (10.9)	6,813 (95.7)	306 (4.3)	2,433 (87.6)	343 (12.4)	1,646 (81.8)	366 (18.2)
Received payment	4,055 (87.1)	601 (12.9)	3,097 (90.6)	320 (9.4)	4,232 (87.0)	635 (13.0)	1,269 (71.3)	512 (28.7)

1: Workers' compensation scheme; 2: Medicare benefits schedule; 3: The community control group is not included in this table as none of the services for those persons were funded by workers' compensation; 4: Cells censored due to small numbers