FINAL REPORT

Cost-benefit analysis of the Cashless Debit Card

Evaluation of the program from 2015/16 to 2019/20

Prepared for
Department of Social Services

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THE CENTRE FOR INTERNATIONAL ECONOMICS
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Contents

Summary

The Cashless Debit Card (CDC) sets aside 80 per cent of participant's welfare payments to a restricted access bank account that blocks transactions that contain alcohol, gambling products, and some gift cards, and prevents cash from being withdrawn. Participants have access to the remaining 20 per cent of their welfare payments to use at their discretion.[1]

The primary objective of the program is to reduce social harms caused by excessive consumption of alcohol, illicit drugs, and gambling.

Since 2016, the Department of Social Services (DSS) has rolled out the program to six regions, Ceduna and Surrounds, East Kimberley, Goldfields, Bundaberg and Hervey Bay, the Northern Territory, and Cape York. These locations were selected based on a range of factors, including community interest, support, readiness and willingness, high levels of disadvantage and welfare dependence, and high levels of social harm caused by drug and alcohol misuse and problem gambling.

The Centre for International Economics (CIE) has been commissioned by DSS to undertake a cost-benefit analysis (CBA) of the first four CDC program regions: Ceduna, East Kimberley, Goldfields, and Bundaberg and Hervey Bay.

Our approach to conducting the CBA

CBA is a tool to enable systematic and evidence-driven evaluation of the benefits and costs of a program.

In collaboration with DSS, and a review of the literature, the full range of potential impacts were identified for inclusion in the CBA. These impacts were categorised across domains of economic, health, housing, safety, family and child wellbeing, and social and community benefits, as summarised in chart 1 below. Both positive and negative impacts were considered in the analysis.

Although a wide range of potential impacts were identified, not all could be assessed given the evidence base. Chart 1 indicates those that were able to be valued and included within the CBA (those with a ✓).

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[1] We note that this is not always the case, such as participants in the Northern Territory. For more information on the operation of the CDC program, see
https://www.dss.gov.au/families-and-children/programmes-services/welfare-conditionality/cashless-debit-card-overview

1 Summary of the CDC impacts that were investigated

Economic and financial

Benefits
- ✓ Improved productivity from less alcohol misuse
- ■ Improved job outcomes

Costs
- ✓ Service provider costs
- ✓ Departmental costs
- ✓ Inconvenience from less cash

Health

Benefits
- ✓ Improved health outcomes from reduced alcohol misuse
- ✓ Reduced alcohol-related traffic accidents
- ■ Reduction in harms from illicit drug use
- ■ Improved healthy eating

Costs
- ■ Mental distress and stigma

Housing and related services

Benefits
- ■ Increased housing security

Safety

Benefits
- ✓ Reduce justice system costs associated with alcohol misuse
- ■ Improved neighbourhood safety
- ■ Reduction in crime
- ■ Reduction in family and domestic violence

Family and child wellbeing

Benefits
- ✓ Increase in school attendance
- ✓ Increase in healthy food for children
- ✓ Improved child safety
- ✓ Improved health outcomes
- ✓ Reduced family related harms from gambling

Social and community

Benefits
- ■ Improved community outcomes
- ✓ Reduced harms from gambling

Key: ✓ Impact has been valued ■ Insufficient evidence to support valuation

Data source: CIE in collaboration with DSS

The primary source of evidence informing the impacts of the program is the second impact evaluation.[2] We have quantified the value of impacts identified in this evaluation, and used the Data Over Multiple Individual Occurrences (DOMINO) dataset, CDC transaction data, and Support Services data to extend this analysis where appropriate.

To confirm the impacts and specific modelling assumptions, a consultation process was undertaken with a selected group of jobactive, community advisory groups, and community services across each of the four regions in scope. This was an important process to test these inputs with the lived experiences of stakeholders who interact at a personal level with the program and participants.

A reduction in alcohol misuse is the biggest benefit

Based on self-reported changes in alcohol consumption measured in the second impact evaluation, we estimate that **the costs of alcohol misuse reduced by 15-20 per cent across the program locations**. This reduction is largest in East Kimberley, where the per

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[2] Mavromaras K., Moskos M., Mahuteau S., Isherwood L. 2021 '*Evaluation of the cashless debit card in Ceduna, East Kimberley and the Goldfields region: Consolidated report*', Future of employment and skill research centre, The University of Adelaide

person costs of alcohol misuse are estimated to be almost three times higher than the Australian average.

Between 2015/16 to 2019/20, **the value of the reduced alcohol misuse associated with the CDC program is estimated to be \$8.5 million in present value terms**.[3] These benefits are seen through improved productivity, reduced traffic accidents, and reduced interactions with the criminal justice system and the health system.

Key assumptions relating to alcohol misuse costs (chart 2) have been informed by the academic literature and then tested in sensitivity analysis.

2 Approaches to deal with uncertainty in alcohol-related harms

Source of uncertainty	Assumption applied in this study
Whether self-reported reductions in alcohol consumption among CDC participants are an accurate reflection of the magnitude of actual impacts	Self-reported reductions in consumption are equal to actual reductions
The extent to which reduced consumption leads to reduced alcohol misuse costs, such as reduced drink driving incidents	For CDC participants with moderate-or-higher drinking risk, if their consumption reduces it partially reduces but doesn't completely avoid their cost of alcohol-related harms
Whether the pattern of alcohol misuse costs among welfare recipients is similar to those of the broader population in the program sites	CDC participants have the same alcohol misuse costs as the broader population within the program sites

Source: CIE.

One important uncertainty related to estimated benefit of reduced alcohol misuse is the extent to which it is attributable to the CDC. The second impact evaluation stated that 'it is not possible to attribute these changes to the CDC alone', but rather 'to the full complement of relevant policies in the trial areas'.

For instance, DSS also funds a range of Support Services alongside CDC, such drug and alcohol counselling, which provide additional support to participants. Although these additional services are not directly in scope for this analysis, they are likely to drive some of the reduction in alcohol consumption, such as in the case of alcohol treatment services. CDC participants had an average of 160 per cent more attendances at Support Services per person per year, compared to non-participants, and community members saw these services as a significant benefit.

CDC transaction data suggests that **participants continue to attempt to buy alcohol** even after the initial period of having received the CDC. Even after attempted alcohol transactions have been blocked a few times and the participant becomes familiar with the features of the Card, there is no change in the frequency of transactions that are blocked because they relate to restricted items/merchants.

This suggests there is little evidence of a 'learning by doing' effect, whereby participants might attempt less alcohol-related or similarly restricted transactions after they have been

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[3] The present value of past and future cash flows are calculated using a discount rate. By discounting future cash flows to today's value, the CBA accounts for the opportunity cost of the cash flows and is able to report on the 'present value' of the benefits and costs.

on the Card for a while. This would be expected for example, if such transactions are associated with attempts to purchase alcohol while intoxicated, and if alcohol consumption is falling among participants. with CDC, there is no evidence to support a learning by doing effect.

Gambling and child welfare benefits are relatively small

Between 2015/16 to 2019/20, the other quantified benefits of the CDC program were:

- **$2.3 million in benefits from a reduction in gambling in present value terms**. The second impact evaluation found that CDC has helped to reduce gambling related harms, especially for family related harms. The benefits we have measured include improvements to family relationships, improved mental health, and a reduction in crime.
- **There was a small net benefit from improved child welfare.** Although the second impact evaluation found there were improvements in children's access to healthy food and health outcomes, there was a worsening of safety and school attendance outcomes. However, the total benefit value of improvements outweighed the cost of negative changes.

There is insufficient evidence to substantiate other benefits

A wide range of other potential impacts were investigated, but there was insufficient evidence to conclude there was a measurable net improvement or deterioration as a result of the CDC. These impacts include:

- **The impact on safety appears to be modest, and perhaps negative**. Two prior evaluations found no reliable evidence that crime/safety outcomes improved. Although there is some evidence that safety might be improving in some regions, there is also evidence that some safety outcomes worsened, such as the frequency of domestic violence and drug offences in the Goldfields and stealing in East Kimberley.
- **The evidence on illicit drug use is mixed**. Because of the clandestine nature of the illicit drug market and the likelihood that individuals will under report their drug consumption, identifying impacts from the program is difficult. The evidence on the use of illicit drugs is mixed, and the harms associated with drug use vary considerably by the incidence of use, the frequency of use, and the drug type. The evidence is not strong enough to validate there was a positive or negative impact on illicit drug use.
- **There was no noticeable impact on employment outcomes**. Statistical modelling found no improvement in employment prospects for the CDC participants compared to surrounding areas, after controlling for a range of factors.
- **Negative mental health outcomes were evident, but the additional impact from CDC is unclear**. Although there is evidence of stigmatisation of participants, it is difficult to isolate this from the negative mental health impacts from being unemployed and on welfare payments in general. However, the CDC program does

The cost per participant was $3 379 (chart 4), mainly consisting of costs associated with the card provider and Departmental costs. This is significantly higher than the benefit per person of $540.

4   Comparison of cost and benefit per participant (2015/16 to 2019/20)
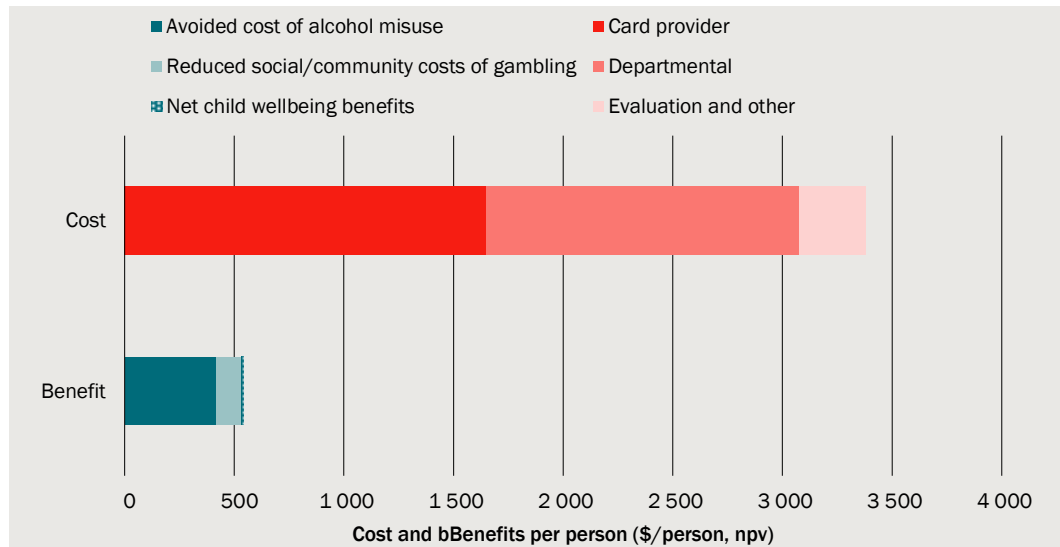
Data source: Cost and CDC transaction data supplied by DSS to CIE, calculations by CIE.

When considering the total financial costs in 2019/20 only, such as the Departmental costs, Card provider costs, evaluation costs and other operational costs, the cost per non-zero transaction (i.e. excluding balance enquiries) was $6.64.

Benefit estimates are uncertain due to attribution and survey bias issues

Many of the benefits calculations rely on self-reported changes in outcomes and consumption behaviours. This creates a potential bias in the benefit estimates, as participants may in inclined to not report or under report certain harms and consumption behaviours, especially for socially unacceptable outcomes or illicit substance use.

These limitations, and the impact on this analysis, are summarised in table 5 below. Because of these limitations, interpreting the CBA results should be undertaken with care.

Cost estimates are based on historical data and not subject to uncertainty.

5   Summary of limitations

Limitation	Impact on analysis
Possible survey bias. We heard through community stakeholders that CDC participants are far more likely to report negative news, rather than positive news.	The survey results from previous evaluations might have a bias towards negative impacts. This would underestimate the total benefits generated.

Limitation	Impact on analysis
Survey data available is not necessarily reflective of the actual impact or outcome. Although survey responses may indicate a change in an outcome, such as perceived improvements in health, actual outcomes, such as emergency department presentations may differ. For example, respondents to the Household Expenditure Survey run by the Australian Bureau of Statistics to tend underestimate their alcohol spending.	The analysis needed to combine evidence sources, such as survey data and literature sources to estimate the impact. Self-reported reductions in alcohol consumption may overstate actual reductions, which would result in total benefits being overestimated. These assumptions are subject to scenario testing.
There appears to be social pressure for people to not support the Card. Community stakeholders suggested that when a participant benefited from the program, they are unlikely to say so.	Although the extent to which this is occurring cannot be determined, this may create a bias in the second impact evaluation survey and qualitative results. This would underestimate the total benefits generated.
Many of the results from previous evaluations are inconclusive. Previous evaluations suggest that some participants benefit from the Card, some receive no change in outcomes, and some experience negative impacts. The second impact evaluation is the primary source of evidence for impacts of the CDC that we have valued in this study.	To accommodate for these mixed impacts, in places, this evaluation has taken the net impact, i.e. the difference between the proportion of respondents who experienced a positive impact and those that experienced a negative impact. By doing so, we have assumed that the benefit received is of equal magnitude or value to the negative impact. This limitation in part reflects an attribution issue, in that the CDC has been implemented in a context of many other policy changes and the COVID-19 pandemic in 2020/21. As a result, it is sometimes difficult to disentangle the effects of the CDC, yielding inconclusive findings.
There are many concurrent polices and initiative operating in the CDC sites.	The extensive list of other program and policies in place creates an issue of attributing outcomes to the CDC program. The analysis has taken a conservative approach and only included impacts where is evidence base is strong. Nonetheless, benefit estimates may be overstated to the extent we cannot distinguish the effects of the CDC from the effects of concurrent policies.

Source: CIE.

Despite uncertainty around benefit estimates, the core conclusion that the benefits of the CDC are outweighed by the costs appears to be robust.

The final benefit-cost ratio of 0.16 indicates that benefits would have to be more than six times higher than estimated to result in a positive net benefit (i.e. a benefit-cost ratio above 1). Similarly, for the program to have broken even between 2015/16 and 2019/20, the cost per participant would need to have been 84 per cent lower at $540 per person.

Sensitivity testing showed that under a range of plausible alternative assumptions relating to benefit estimation and the discount rate, the benefit-cost ratio remained between 0.11 and 0.21. This highlights that the high program costs consistently outweigh the benefits under a range of difference scenarios and assumptions.

1 Overview and evolution of the CDC

The Cashless Debit Card (CDC) sets aside an individual's welfare payments to a restricted access account for meeting priority needs. It ensures the responsible use of welfare payments by reducing expenditure on (and consumption of) alcohol, illicit drugs and gambling.

Additional Support Services were also funded alongside the CDC's implementation, including financial management counselling, drug and alcohol counselling, and other services.

As the program expands into new regions, the number of participants increases. In June 2020, around 13 000 people used the Card to make payments across the East Kimberley, Ceduna, Goldfields and Bundaberg and Hervey Bay regions.

A program logic has been developed in collaboration with DSS, and identifies diverse benefit streams for the CDC across health, safety, housing, and economic outcomes.

Principles of the Cashless Debit Card program

The CDC reduces access to welfare support payments in cash to restrict spending on drugs, alcohol and gambling (table 1.1). It is predicated on the principle that welfare should provide a social safety net, and not facilitate alcohol and drug misuse that contributes to high rates of violence and abuse, and entrenches individuals and communities in a cycle of poverty.

Under the CDC, 80 per cent of welfare payments are placed onto a debit card for purchasing necessary goods and making housing and related services' payments, and directs 20 per cent to a nominated bank account where it can be withdrawn as cash.[4] CDC can be used at most merchants that accept EFTPOS that have not been blocked by the Card provider, Indue Ltd.[5]

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[4] We note that this is not always the case, such as participants in the Northern Territory. For more information on the operation of the CDC program, see https://www.dss.gov.au/families-and-children/programmes-services/welfare-conditionality/cashless-debit-card-overview

[5] Although the Cape York and the Northern Territory regions are out of scope for this analysis, we note that the restriction rate can vary in these newer sites.

1.1   How the CDC operates

Feature	CDC conditions
Card accepting merchants	Any merchant that is able to accept Visa or eftpos unless their primary business is the sale or provision of restricted items, where CDC payments are automatically blocked based on Merchant Category Codes (MCC) and/or specifically blocked by the merchant's Card Acceptor Identification Code (CAID).
Merchant Responsibilities	No direct conditions. Most merchants who accept the CDC have no agreement with the card provider
Welfare payments allocated to the Card	80% of the welfare payment
Unrestricted welfare	20% of the welfare payment, placed in the participant's nominated bank account
Implementation	Automated identification of restricted items and blocking of CDC purchases, known as Product Level Blocking, has been enabled at over 7 000 merchant stores. Mixed Merchants (merchants that sell both restricted and unrestricted items) may implement Product Level Blocking or enter into an agreement to not allow the purchase of restricted items with a CDC.
Restricted goods and services	Alcohol, Drugs, gambling, and some gift cards.

*Source: Parliament of Australia, 2019 https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/
Parliamentary_Library/FlagPost/2019/April/Replacing-the-BasicsCard*, and the Department of Social Services, Cashless Debit Card,
https://www.dss.gov.au/families-and-children/programmes-services/welfare-conditionality/cashless-debit-card-overview

Program locations and uptake

The CDC program began in 2016 and currently operates in six distinct regions.

The regions were selected based on a range of factors, including community interest, support, readiness and willingness, high levels of disadvantage and welfare dependence, and high levels of social harm caused by drug and alcohol misuse and problem gambling.

The first four regions are in scope for this evaluation, and summarised in table 1.2 below.

Since March 2021, the program has expanded into the Cape York region of Queensland and across the Northern Territory. Program participants in these regions are out of scope for this evaluation.

1.2   Rollout of the CDC program by 2019/20

Regions	Year started	Program site characteristic
Ceduna Region, SA	2016	Approximately 1 000 people in 2020 who are recipients of working age payments (such as Newstart Allowance/JobSeeker [a] and Youth Allowance) are using the Card. Age Pension and Veterans' Pension recipients are not included, however, they can volunteer to be part of the program.
East Kimberly, WA	2016	Approximately 1 700 people who are recipients of working age payments are using the Card. As above, Age Pension and Veterans' Pension recipients are not included but volunteering for the program is available.
Goldfields Region, WA	2018	Approximately 3 700 people who are recipients of working age payments (such as Newstart and Youth Allowance) are using the Card. Pension recipients are excluded but can volunteer to participate.

Regions	Year started	Program site characteristic
Bundaberg and Hervey Bay, QLD	2019	Approximately 6 500 people, aged 35 years and under who receive Newstart Allowance, Youth Allowance (Job seeker), Parenting Payment (Single) or Parenting Payment (Partnered) are using the Card. This age group was chosen to address high youth unemployment and intergenerational welfare dependence. A person can volunteer to remain on the program once they turn 36 years of age. All people within the region can volunteer to join the program if they receive an eligible income support payment.

[a] Newstart Allowance has been replaced by JobSeeker as of 20 March 2020.

Note: The number of people 'using the Card' refers to the number of people making a transaction using a CDC in June 2020 (the last month of 2019/20, which is the end of the evaluation period under the central case for this analysis).

Source: Indue transaction data supplied by DSS to CIE was used to calculate the number of people making transactions in each month of 2019/20, with the remainder of information sourced from the DSS website, see https://www.dss.gov.au/families-and-children/programmes-services/welfare-conditionality/cashless-debit-card-overview

The Ceduna region was the first implementation site, and the smallest of the four (chart 1.3). It includes the relatively remote town of Ceduna and surrounding areas.

The East Kimberley region is within Western Australia and borders with the Northern Territory. The largest town in the region is Kununurra.

The CDC sites within the Goldfields region cover a large area of Western Australia. The land area of the Goldfields region is considerable, with a number of regional towns throughout the region.

The Bundaberg and Hervey Bay Region is geographically defined as covering the same area as the Federal Electoral Division of Hinkler.[6] This region covers around half of the area of the Bundaberg Local Government Area (LGA). This area includes the city of Bundaberg, which is the main population centre containing more than 70 000 residents. The Hinkler electorate also covers part of the Fraser Coast LGA.

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[6] Department of Social Services, 2019, *Cashless Debit Card: Bundaberg and Hervey Bay region Queensland*, Australian Government, see https://www.dss.gov.au/sites/default/files/documents/09_2019/cdc-factsheet-bundaberg-and-hervey-baycsb-edits-15jul19-1_0.pdf

1.3   Locations of the first four program sites
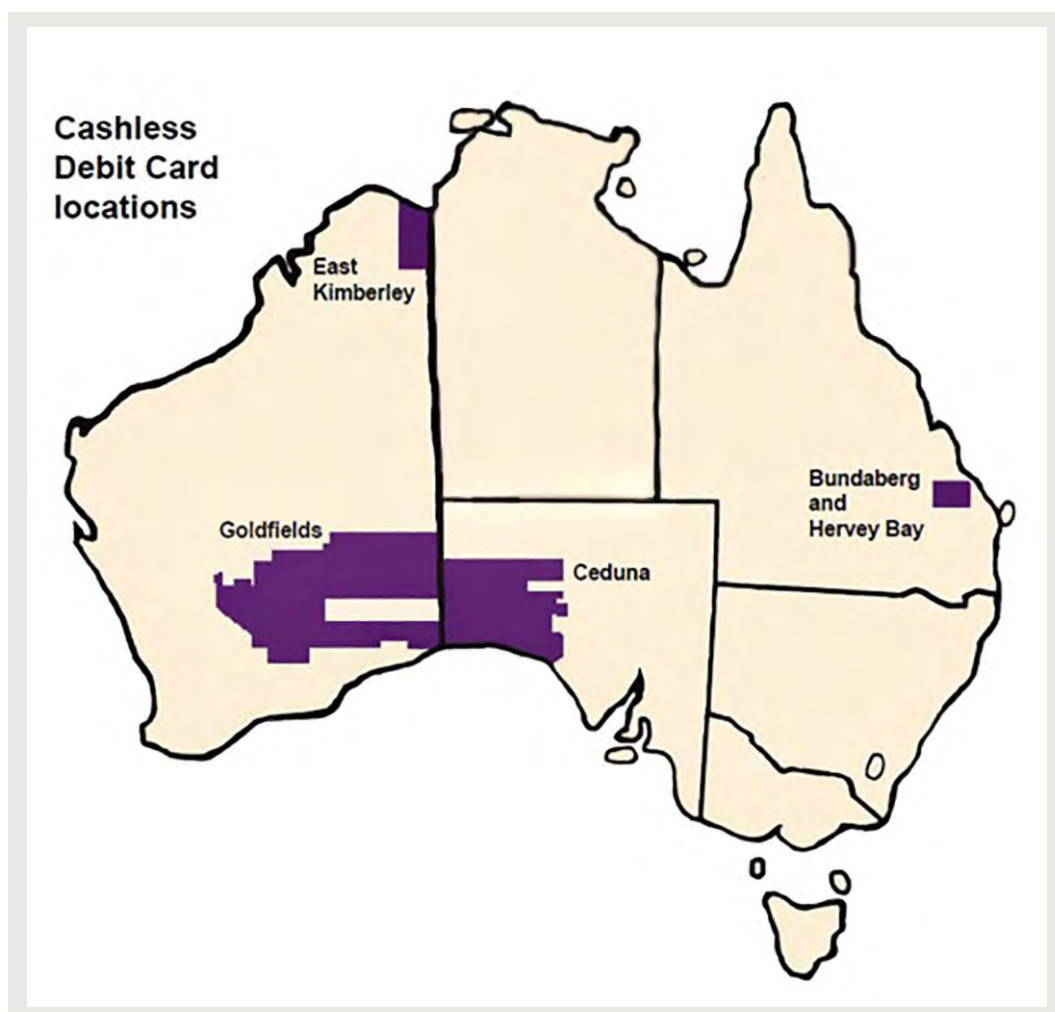
Data source: Chart supplied by DSS and labels modified by the CIE.

Program locations are designated regional and remote sites in Australia that typically have significant economic and social challenges.

The degree of social harms and challenges within each location is determined by factors such as the number of people on income support in the area, alcohol related morbidity, domestic violence reports, prevalence of substance abuse, unemployment rates, crime rates, and the like. For example, in 2016 when the CDC Program was introduced to the region, the Shire of Wyndham-East Kimberly had an unemployment rate of 10.8 per cent, compared to 5.7 per cent for regional Western Australia.[7]

Through discussions with DSS, it was outlined that community support was also a key factor in determining program site locations. Community members were consulted about the implementation of the program, and provided input into critical issues and support needs in each community.

[7] .id, 2021, *Economic profile: Shire of Wyndham-East Kimberley*, available at: https://economy.id.com.au/rda-kimberley/unemployment?WebID=140

The CDC applies to anyone that meets the relevant trigger payment criteria in a location specified in legislation. While Indigenous community leaders have been keen to be early adopters of the program, later locations have involved significant numbers of non-Indigenous Australians becoming participants of the program, such that most people currently on the program do not identify as being an Aboriginal or Torres Strait Islander person.

Around 30 per cent of the population in the program sites identify as Aboriginal or Torres Strait Islander (compared to fewer than three per cent of the total Australian population). However, Indigenous participants make up more than three-quarters of all CDC participants in Ceduna and East Kimberley.[8]

The subsequent program location set up in Goldfields, Western Australian is unique and had a vastly different demographic to the earlier two locations. It has a relatively small Indigenous Australian population, with Aboriginal and Torres Strait Islanders making up 12.3 per cent of the 12 995 people that live there.[9] The working age group made up 56.2 per cent of the population, with a median age of 50 in 2016.[10] However, like Ceduna and East Kimberly, the composition of CDC participants includes a higher proportion of Indigenous Australians given the proportion of Aboriginal and Torres Strait Islanders living in Goldfields (57 per cent non-Indigenous and 43 per cent Indigenous).[11]

It is important to note that the CDC program is not purely an income management program, with the more recent locations having a stronger focus on employment outcomes. For instance, when the CDC legislation for Hinkler and Goldfields was introduced to Parliament in 2018, the scheme was broadened to include moving people off welfare and into the workforce. The Explanatory Memorandum stated, 'The community has significant issues regarding youth unemployment, intergenerational welfare dependency and families who require assistance in meeting the needs of their children'[12], and it was suggested that the program be modified to address these issues.

[8] ANAO, 2018, *The implementation and performance of the cashless debit card trial*, Auditor-General Report No.1 2018-1, p16.

[9] Australian Bureau of Statistics, 2016, *Census*, extracted via Census TableBuilder, available at: https://www.abs.gov.au/websitedbs/censushome.nsf/home/tablebuilder

[10] Australian Bureau of Statistics, 2016, *Census*, extracted via Census TableBuilder.

[11] Mavromaras, K., Moskos, M., Isherwood, L., and Mahuteau, S., 2019, *Cashless Debit Card Baseline Data Collation in the Goldfields Region: Qualitative Findings*, prepared by the Future of Employment and Skills Research Centre, University of Adelaide for the Department of Social Services, p18, available at: https://www.dss.gov.au/sites/default/files/documents/04_2019/cdc-baseline-data-collection-qualitative-findings-29-march-2019.pdf

[12] Hunt, J., 2020, 'Evaluating the Cashless Debit Card: How will it solve poverty and unemployment?, *CAEPR Topical Issue*, 2/2020, available at: https://caepr.cass.anu.edu.au/sites/default/files/docs/2020/6/Hunt_TI_2_2020_Final.pdf

Program logic of the CDC

The program logic for the CDC steps through how activities and outputs of the program are clearly attributed to the program's impacts. This also helps provide the evidence-based link between changes in behaviours and measured benefits (chart 1.4).

1.4   Summary of the program logic for CDC

INPUTS AND ACTIVITIES	Australian Government investment into the CDC Change in legislation Establishment of local community partnership and collaboration Investment in additional Support Services Contracting of the Card service provider

OUTPUTS	Practical changes to how a proportion of participants income support payment can be expensed

CHANGE IN CONSUMPTION	Amount of cash available in the community reduced	Reduced consumption of alcohol, illegal drugs, and gambling

SHORT TERM OUTCOMES	Social Security safety net supports vulnerable Australians	Improved financial management	Reduced substance misuse and gambling

MEDIUM TERM OUTCOMES	Improved housing security	Increased economic and community participation	Reduced addiction and dependency

LONG TERM OUTCOMES	Improved health outcomes	Improved economic outcomes for the community	Improved neighbourhood safety

Note: This program logic was developed by the CIE in collaboration with DSS as part of the development of the CDC CBA Economic Framework.

Source: Developed by CIE in collaboration with DSS.

Inputs

As at June 2020, the total cost of the program in Ceduna, East Kimberley, Goldfields, and the Bundaberg and Hervey Bay regions was $79.8 million, with $39.0 million paid to the private company card provider, Indue Ltd, to cover all operational aspects of the Card. DSS is responsible for coordinating governance arrangements for the CDC and for CDC policy, administration and delivery of the CDC.

A card provider procurement processes was conducted for the Ceduna, East Kimberley, Goldfields, and Bundaberg and Hervey Bay regions in which Indue was selected as the most suitable provider for the CDC. Major banks in Australia were not interested in delivering the initial CDC trial, and thus Indue Limited was selected on grounds of its experience delivering the BasicsCard.[13] DSS has advised that Indue demonstrated its ability and experience in dealing with Government payments, its value for money, and it is an Authorised Deposit-Taking Institution that is regulated under the *Banking Act* 1959.

Indue was consigned to deliver the CDC (with DSS), as well as the IT build for the program, banking services, and local customer support for CDC participants through contracting Local Partners. Local Partners continue to provide general support, including facilitating initial Card set up, account balance checking, bill payments, temporary and replacement cards and assisting participants to address issues as they arise. Local Partners are tasked with providing information to participants on the Community Panels, and the application process to decrease the proportion of their restricted funds below 80 per cent.

In addition to 20 per cent of participants' income support payment being unrestricted, participants in the first four program sites can transfer up to $200 from their Indue account into a personal unrestricted account every 28 days.[14] There is no requirement for these external transfers for other expenses to be approved by DSS. If rent or other large denomination payments cannot be made with the cash available, the participant can apply for an exception. However, stakeholders from the consultation process described this exception process as a complex procedure, especially regarding ad-hoc accommodation payments.

The CDC also uses an EMV chip, whereas the earlier BasicsCard uses a magnetic strip (making the CDC inherently more secure and harder to counterfeit).

Activities

The Australian Government has made additional investment into Support Services in each region where the CDC program is in place. Feedback received through the consultation process highlighted these Support Services as a core component of the CDC.

Before commencing each new program site, DSS worked collaboratively with local leaders and existing service providers to identify critical issues and support needs in the community. The Support Services provided are reviewed every year to evaluate their effectiveness, and to adapt the services to the community's immediate needs.

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[13] ANAO, 2018, *The implementation and performance of the cashless debit card trial*, Auditor-General Report No.1 2018/19.

[14] Department of Social Services, *Cashless Debit Card – Frequently Asked Questions*, Australian Government, see https://www.dss.gov.au/families-and-children-programs-services-welfare-reform-cashless-debit-card/cashless-debit-card-frequently-asked-questions

The Australian Government has invested more than $2.1 million in Ceduna and $4.6 million in East Kimberly[15] to build a system to deliver services including drug and alcohol rehabilitation, mental health services, additional family Support Services, targeted youth activities, and financial counselling services.[16]

Outputs

Outputs are the direct result of investments and activities, which in this case is practical changes in how a portion of a participant's income support payment can be spent as a result of changes in the design of the income support payment delivery:

- 20 per cent of the welfare payment is transferred to their bank account for cash dependent expenditure such as school excursions, tuck shop, garage sale, etc.
- 80 per cent welfare payment is allocated to the Card, and it cannot be used to buy alcohol, illicit drugs, gambling products or withdrawn as cash.

In addition to this, outputs also include:

- financial Support Services to provide general support like Card set-up, account balance checking, bill payments, temporary and replacement cards and assistance with other issues related to the CDC program, and
- additional Support Services such as drug and alcohol counselling, improved access to rehabilitation services, family Support Services, etc.

Outcomes

The outcomes are the direct effects of the outputs that occur because of the program, which in this case include a reduction in the amount of cash, lower expenditure of alcohol and illicit drugs and gambling related products, and increased use of Support Services.

According to a survey undertaken by the Reserve Bank of Australia (RBA), cash use in Australia is relatively more intensive in regional areas due to an older age demographic, or insufficient presence of businesses accepting cards due to poor internet access. The survey also reported that 27 per cent of all consumer payments were made with cash in 2019, and that participants with lower household incomes were more likely to be higher cash users than others.[17] The Centre for Aboriginal Economic Policy Research interviewed 51 participants of CDC in the East Kimberley Region, who reported key items purchased using cash before the CDC Card. Although those interviewed were not a

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[15] We understand that Goldfields and Bundaberg and Hervey Bay had investments in Support Services, but data about the value of these investments has not been provided by DSS or otherwise identified.

[16] DSS, 2021, *Cashless Debit Card Overview*, available at: https://www.dss.gov.au/families-and-children/programmes-services/welfare-conditionality/cashless-debit-card-overview

[17] Delaney, L., McClure, N. and Finlay, R., 2020, 'Cash use in Australia: Results from the 2019 Consumer Payments Survey, *RBA Bulletin – June 2020*, available at: https://www.rba.gov.au/publications/bulletin/2020/jun/cash-use-in-australia-results-from-the-2019-consumer-payments-survey.html

representative sample by community, gender or age, the data does confirm the prior use of cash for transactions in the program region (chart 1.5).

1.5 Key items purchased using cash before the CDC program

Item purchased using cash	Percentage of respondents	Number of respondents (n=51)
Present to give someone	29.4	15
Social events (e.g. Kimberley moon)	13.7	7
Eating out	25.5	13
Big item for the home (e.g. fridge)	49	25
Medicine from the chemist	21.6	11
Transport costs (e.g. for taxis and buses)	64.7	33
Lunch money for children	21.6	11
Bills	23.5	12
Rent	29.4	15
Fuel	51	26
Small grocery shopping	62.7	32
Big grocery shopping	58.8	30

Source: Klein, E. and Razi, S. (2017) The Cashless Debit Card Trial in the East Kimberley. CAEPR Working Paper no. 121/2017

A reduction in the cash economy is an expected outcome of the CDC program.

Lower expenditure on (and consumption of) alcohol and illicit drugs and gambling related products results from restricted access to cash and vendors selling such products.

Increased use of Support Services results from concurrent access to financial management counselling, drug and alcohol counselling, and other Support Services provided alongside the CDC program.

Impacts

The objective of the CDC program is to reduce the social harm caused by income support fuelled alcohol and drug misuse, and problem gambling. The reduction in social harm or benefit streams can be categorised in the following domains:

- **Education and child welfare impacts:** include those pertaining to educational opportunities and outcomes such as enrolment, participation rate, and consequentially, performance in educational programmes of participants and others in the family or the community.
- **Safety impacts:** include changes in perception of safety in the community and losses associated with crimes such as property theft and damage, loss of life, domestic violence and child abuse, and crimes within the illegal drug market. This domain also includes the cost of tackling crime such as policing, criminal courts, prisons, cost related to insurances against property theft and damage, family and counselling services, etc. It is to be noted that the impact on crime is not only associated with lower consumption of alcohol and drugs but also with reduced level of cash in the community. Besides crime related events and costs, the safety domain also

encompasses protection against financial harassment such as unreasonable requests from family for money, etc.

- **Social and community impacts:** include increased community cohesion, engagement and belonging as a result of improved physical and mental wellbeing, increased economic participation, and use of public facilities for social activities due to reduced crime level in the community.

- **Housing impacts:** focuses on potential alternative use of income being saved from reduced expenditure on drug, alcohol, and gambling consumptions on housing costs such as private rental markets.

- **Health impacts:** include reduction in costs associated with morbidity and mortality due to diseases and mental illness, and workplace and traffic accidents linked to excessive alcohol and illicit drug use and gambling addiction. This includes tangible costs such as hospital, medical, ambulance, nursing home, pharmaceutical, and other support service costs and intangible costs such as value of human life, and pain and suffering.

- **Economic impacts:** include changes in paid and unpaid production costs associated with workforce participation, productivity at work, and loss of labour due to mortality. This domain also includes impacts on businesses as a result of redirection of income support payment to non- alcohol, drug, and gambling related purchases.

The pathways of these benefits are presented in chart 1.6.

1.6   CDC Impact pathways

SAFETY

Reduced child neglect or abuse

Reduced family and domestic violence

Improved neighbourhood safety

Reduced crime level

Improved educational outcomes

Less absenteeism

EDUCATION AND CHILD WELLBEING

HOUSING AND RELATED SERVICES

Increased housing security

Improved wellbeing of children

Income support payments directed to housing costs such as private rental market, etc. And timely payment of utility bills

Increased parental responsibility and engagement with children

Increased enrolment or reduced dropouts due to improved wellbeing of young participants

Increased participation in adult learning through RTOs, etc.

Reduced incidence of drug and alcohol related diseases and premature mortality

Reduced workplace and traffic accidents

Reduced incidence of stress and mental health issues

Income available for healthy lifestyle

Income available for health-related needs such as pharmaceuticals and medical/dental care

Increased consumption of essential services and groceries

Improved health outcomes

More income available to pay for debt

Reduction in private indebtedness

Increased payment of court fines leads to reduced incarcerations (WA only)

INDIVIDUAL STABILITY

Cashless Debit Card
(Responsible Use of Welfare Payments)

Improved wellbeing enables increased workforce participation as well as productivity for existing workforce participants

Increased engagement with Job Seekers' mutual obligation

Increased revenue for local businesses through increased non-drug/gambling related purchases by participants

Reduced costs of mainstream systems e.g. health, justice, child protection, etc and reduced pressure on the public healthcare system.

Increased use of public spaces for community engagement due to reduced crime and violence level

Improved wellbeing in mental and physical health enables participation in social activities

Improved family relationships

HEALTH

SOCIAL & COMMUNITY

ECONOMIC

Feedback loops

- Safety
- Economic
- Education
- Health
- Social & Community
- Housing
- Individual

Source: CIE in collaboration with DSS.

This report

The CIE has been commissioned by the DSS to conduct a CBA of the CDC program. The analysis is limited to the first four regions, including Ceduna, the East Kimberley, the Goldfields, and Bundaberg and Hervey Bay regions.

Cost-benefit analysis is a tool to assess government policy decisions, with a focus on estimating the monetary value of costs and benefits relative to the state of the world without the program or policy.[18] Not all costs and benefits may be amendable to monetary valuation, and qualitative impacts can often provide useful context in interpreting CBA results.

Key objectives of this study are to provide quantitative evidence on overall performance, key drivers of costs and benefits, and what is required to achieve objectives for communities participating in the program. This cost-benefit analysis is an *ex post* (i.e. backward-looking) analysis, meaning it will focus on the costs and benefits of the CDC program to-date rather than the impact of continued or future use of the CDC.

The remainder of this report is structured as follows:

- Chapter 2 summarises key findings of the previous evaluations of the CDC,
- Chapter 3 provides an overview of the methodology for this study,
- Chapter 4 examines data about spending using the CDC to understand patterns in consumption,
- Chapter 5 measures the value of improved outcomes including social and community outcomes and child wellbeing outcomes,
- Chapter 6 measures the avoided costs of alcohol misuse associated with reduced consumption of alcohol by CDC participants,
- Chapter 7 reports costs to government of the CDC, together with estimation and discussion of costs not borne by government such as mental health costs or inconvenience from not being able to pay with cash,
- Chapter 8 combines the cost and benefit estimates from the preceding chapters, and assesses the net benefit of the CDC program under a range of alternative assumptions,
- Appendices provide greater detail about the assumptions, methodology and detailed results.

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[18] For more general information about Cost-Benefit Analysis to support government decision-making, see: Department of the Prime Minister and Cabinet, 2020, *Cost-benefit analysis — guidance note*, March 2020, available at:
https://pmc.gov.au/sites/default/files/publications/cost-benefit-analysis_0.pdf

2   Previous evaluations of the CDC

Since the CDC commenced in 2015/16, there have been various data collection activities and evaluations undertaken.

The most recent and substantive is the CDC's second evaluation, which provided quantitative and qualitative analysis and data that can be used to inform this CBA.

The previous CDC evaluations identified some consistent outcomes and impacts. However, not all findings were consistent across the studies, and some outcomes had inconclusive results.

Estimated impacts of the CDC to date

The CDC program has undertaken two large-scale evaluations, the first published in 2017, and the second in 2021.

Both evaluations considered the extent to which the program supported participants, families, and communities. In particular, they have observed how the Card has reduced the harms caused by welfare funded alcohol, gambling, and drug misuse.

The initial evaluation (2017) focused on the first two program sites — Ceduna and East Kimberley regions. The evaluation undertook primary data collection within these sites, including face-to-face surveys with CDC participants and their family members, face-to-face surveys of community members that were not CDC participants or family members, and qualitative research interviews and focus groups with community leaders, stakeholders and merchants.

The evaluation also drew from administrative data source from Indue, State and Australian Governments. The evaluation found that the Card had a 'considerable positive impact', with a large degree of support from stakeholders and community leaders based on observed positive changes.

The second CDC evaluation (2021) considered the first three program trial sites: Ceduna, East Kimberly and the Goldfields. The evaluation methodology combined qualitative and quantitative approaches to examine the anticipated, and actual, outcomes from the program. It included a quantitative survey of CDC participants with nearly 2 000 valid responses and over 340 in-depth interviews of stakeholders and CDC participants.

The second evaluation also included a range of statistical analysis of community-level and administrative datasets, such as crime data, using robust methods such as multivariate analysis to understand the determinants of which CDC program participants experienced benefits.

This evaluation had mixed results, and often concluded that outcomes achieved in the program regions could not be directly attributed to the CDC. This was because of the wide range of other programs and policies that were operating within the regions. The evaluation did not state which programs and policies were making the biggest impact.

For the purposes of the current study, the second CDC evaluation provided useful insight into the proportion of participants that experienced a positive or negative change, and some of the drivers of outcomes, both positive and negative. Modelling adjustments have been made in the CBA where necessary to account for any uncertainty.

Key findings from these two evaluations are summarised in table 2.1.

2.1 Summary of CDC evaluation findings

Impact category	First evaluation	Second evaluation	Summary of evidence
Alcohol	**Reduced consumption** ■ Of participants who reported that they do drink alcohol, 41 per cent reported drinking alcohol less frequently ■ 37 per cent of participants reported binge drinking less frequently (6 of more drinks)	**Reduced consumption** ■ Although alcohol consumption reduced, it was not possible to attribute these changes to CDC alone	**Clear evidence of reduced consumption** The second evaluation provides an estimate for the reduction in alcohol consumption by level of consumption risk for each program site. The First evaluation supports the overall findings that alcohol consumption has decreased.
Illicit drug use	**Reduced consumption** ■ Of participants who reported using illegal drugs before the program commenced, 48 per cent reported using illegal drugs less often ■ The qualitative research identified some anecdotal evidence of possible reduced illicit drug use ■ Caution is recommended when using these results, due to the small sample size	**Inconclusive results** ■ No conclusions could be made about whether CDC influenced personal or social harms caused by illicit drug consumption ■ Attempts to find evidence from other community-level data sources were not successful ■ However, it appears that the CDC is supporting a decline in illicit drug use, while noting that the evidence cannot definite attribute this change to the program	**Inconclusive evidence indicating a change in harms** Both evaluations reported a decrease in illicit drugs use for a small population. However, the change in harms across the CDC population as a whole from illicit drug use cannot be determined. The harms associated with drug use vary considerably by the incidence of use, the frequency of use, and the drug type. The incidence of personal drug use increased from 6 per cent in the 12 months before being on CDC to 11 per cent since being on CDC. Of the participants who reported using illicit drugs since being on the CDC, about 80 per cent were not using before the CDC. However, this is considered circumstantial as drug consumption behaviour is driven by a range of other factors, such as the illicit drug market supply and population factors. There is no comparator that examines illicit drug uptake for those not on the CDC. The second evaluation noted that 22 per cent of participants that use illicit drugs reported daily or almost daily use. This indicates that harms may still be occurring, However, it does not measure changes in drug use intensity (only frequency) or the type of drug consumed. It is possible that the amount of use per occasion may be influenced by the CDC. The consultation process undertaken through this evaluation was not able to confirm if illicit drug use had been impacted by the program. One stakeholder noted that people will "find a way" to source illicit drugs regardless of the CDC program, indicating that findings in relation to drug use are not necessarily a failure of the program.

Impact category	First evaluation	Second evaluation	Summary of evidence
Gambling	**Reduced consumption** ▪ Of participants that gamble, 48 per cent reported gambling less	**Reduced consumption** ▪ There was short-term evidence that CDC helps to reduce consumption	**Evidence indicates a reduction in gambling** Both evaluations were consistent in that the CDC has helped to reduce gambling. The second evaluation limited their findings to the "short-term". Through the consultation process undertaken, this finding was supported.
Safety	**Limited evidence of an improvement** ▪ Administrative data related to levels of crime generally did not show evidence of reduction since the implementation of the CDC. Except for decreased drug driving in Ceduna, and an increase in criminal incidents in East Kimberley ▪ There was no change in perceptions of safety ▪ Community leaders, stakeholders and merchants reported that violence and crime fell	**Inconclusive results tending towards a worsening of safety** ▪ Most CDC participants did not feel safer since the introduction of the CDC. But this finding differed substantially across sites, between men and women, and between indigenous and non-indigenous people. ▪ Although inconclusive, crime data suggests that domestic violence increased in East Kimberley and the Goldfields, drug offences increased in the Goldfields and stealing increased in East Kimberley. These results are subject to strong caveats and limitations.	**Insufficient evidence of a change in outcome** Both evaluations found no reliable evidence that crime/safety outcomes improved. There was some positive evidence from the second evaluation, but the weakness of the statistical evidence suggests this is unreliable for the purpose of estimating benefits in a cost-benefit analysis. The first evaluation reported mixed results, with some positive outcomes in Ceduna, but other worsening outcomes in East Kimberley. Given the mixed and often statistically insignificant results, the evidence of safety impacts is insufficient to enable quantification.
Healthy eating and purchasing behaviours	**Improved** ▪ Merchant reports of increased purchases of baby items, food, clothing, shoes, toys and other goods for children	**Was not a primary focus** ▪ The evaluation focused on the "wellbeing" of participants, rather than directly on health food choices ▪ The wellbeing assessment included a survey of self-assessed wellbeing, and a question if the CDC had impacted life quality, rather than consumption behaviours ▪ Anecdotal evidence from stakeholders indicated that a reduction in alcohol consumption led to participants spending more on food	**Insufficient evidence of a change in outcome** Although there is some anecdotal evidence of people buying more food, there is no evidence indicating this impact was experienced across the CDC participant population as a whole, or in a statistically significant way. An increase in food expenditure does not necessary indicate an increase in healthy consumption behaviours. The second evaluation outlined that further long-term evidence on nutrition will emerge as the program continues and additional data is collected, which will be important to develop this line of inquiry.

Impact category	First evaluation	Second evaluation	Summary of evidence

Relationship and family	**Mixed impact**
	
	■ The participants with children reported that:
	  – 40 per cent were better able to look after their children post implementation, and 39 per cent were more involved with their children's homework
	  – 24 per cent reported that they were worse off, as they could not buy goods for their children with cash, and
	  – 17 per cent felt better off, as there were better able to meet basic needs
		Mixed impact
		
		■ Most participants reported no major change regarding aspects of children's welfare. However;
		  – a minority reported an overall positive view
		  – another larger minority reported an overall negative view, and
		  – qualitative interviews were more positive compared to quantitative surveys
			Both positive and negative outcomes recorded
			
			Both evaluations considered multiple measures, spanning from general wellbeing, school attendance, access to food, etc.
			
			The results were mixed across these measures. Some participants reported improvements, while others reported outcomes worsening. This is not unexpected given the myriad of factors that influence these outcomes, and is not considered to be a failure of the program.
			
			Individual analysis against these measures is needed to determine the net impact to relationships and families.

Employment		**Nil impact** ■ The evaluation found no change in employment outcomes. It presented information about employment outcomes among the CDC cohort and barriers to unemployment. However, there was little evidence of changes in job seeker activity.	**No evidence of positive or negative impacts**
Financial situation and literacy	**Improved savings and limited evidence of other outcomes worsening** ■ Community leaders, stakeholders and merchants felt that the CDC had positive financial impacts ■ 45 per cent of participants reported being better able to save money ■ Across a range of financial indicators there was little difference between Wave 1 (a few months post-CDC implementation) and Wave 2 (9 months later), but there were statistically significant increases in the share of participants that had run out of money to pay for school supplies or non-food essentials for children	**Mixed impact** ■ Most participants (75 per cent) reported no change in their financial situation. Among those that experienced a change, more participant experienced outcomes worsening, compared to those that experienced outcomes improving ■ The most vulnerable participants benefited from financial planning and money management. That is, finances were made easier for those most affected by harmful behaviour of others and those in the severest forms of financial hardship	**No evidence of overall positive or negative impact** Across the broad range of financial metrics there was little consistency in terms of outcomes improving or worsening. There were some participants that experience benefits, and others experience additional financial barriers. Again, this is not unexpected given the myriad of factors that influence these outcomes, and is not considered to be a failure of the program.

Impact category	First evaluation	Second evaluation	Summary of evidence
Wellbeing	**Mixed impact** - 32 per cent of participants reported that the program had made their lives worse - 23 per cent felt that the program made their lives better - 4 per cent raised stigma or shame as a negative impact from the Card	**Negative impact** - A large proportion of participants reported a negative impact on quality of life - Non-indigenous participants were more likely to report that the CDC made their life worse (69.2 per cent, compared to 48.5 per cent for indigenous participants) - 14.5 per cent of participants reported an overall positive impact - Most participants highlighted feelings of discrimination, embarrassment, shame, and unfairness because of being on the Card. Only a small minority of CDC participants did not report any of these negative feelings about the CDC.	**Participants reported a negative impact on their wellbeing** Across both evaluations, participants reported that the CDC program "made their lives worse". Although some participants stated that their lives improved, these responses were outnumbered by those experiencing negative impacts. This is not unexpected given the purpose of the CDC is to restrict welfare recipient's access to cash, and the response to this question is not sufficient to determine impacts on participant wellbeing.

Data source: Mavromaras K., Moskos M., Mahuteau S., Isherwood L. 2021 '*Evaluation of the cashless debit card in Ceduna, East Kimberley and the Goldfields region: Consolidated report*', Future of employment and skill research centre, The University of Adelaide, and ORIMA research 2017, Cashless Debit Card Trial Evaluation: Final Evaluation Report.

Other studies have been more qualitative in nature, with key findings summarised in table 2.2.

2.2 Other evaluations and reviews of the CDC

Report	Positive impacts	Negative impacts
Mavromaras, K., Moskos, M., Isherwood, L., and Mahuteau, S., 2019, *Cashless Debit Card Baseline Data Collation in the Goldfields Region: Qualitative Findings*	▪ Technology advances such as ability to use as a normal bankcard, reducing stigma ▪ Key groups of people with known drug and alcohol problems who commonly reported increasing their spending on food, clothes, and essentials ▪ Small cash component of the CDC was perceived to provide incentive for participants to seek work ▪ Those participants that had positive impacts were people with previous experience on income management and those who were already technologically literate and already good with finances ▪ Positive responses were ideally about financial management ▪ Having a positive effect on the prevalence and severity of crime, family violence and anti-social behaviour ▪ Reduced "humbugging" as everyone on CDC have restricted access to cash ▪ Impact on alcohol consumption reduction more pronounced than substance abuse	▪ Not possible to distinguish between impacts of concurrent policing and alcohol interventions, as well as seasonal influences in the region and the CDC roll out ▪ Not suitable for people with disability and their carers ▪ Exemption process is available but complicated ▪ Loopholes and evasive tactics were inevitable (most commonly gift card purchase)
Marston, G. et al., 2020, Hidden Costs: An Independent Study into Income Management in Australia		▪ Difficulty providing for children in family due to reduced Cash ▪ Inability to partake in second-hand market and cash economy reduced consumer choices, and various examples were provided by participants ▪ Difficulty paying rent and bills as exemption process complicated ▪ Stigma and Shame around welfare cards ▪ A lower level of self-control among IM participants can make transitions from welfare to work more difficult ▪ Resisting IM legally through exemptions or finding loopholes

Report	Positive impacts	Negative impacts
ANAO, 2018, The implementation and performance of the cashless debit card trial. Auditor-General Report No.1 2018-1		▪ The ANAO noted that the CDC was rolled out more widely based on learnings from the program despite the program not being designed to test scalability ▪ The monitoring and evaluation were inadequate and as such it was not possible to conclude whether there has been a reduction in social harm, and whether the Card was a lower cost welfare quarantining approach
Hunt, J., 2017, *The cashless debit card trial evaluation: Does it really prove success?* CAEPR Topical Issue No. 2/2017		▪ Kununurra data around reported assaults rising sharply in line with the CDC program, with no explanation of the impact of the CDC or other contributing factors
Hunt, J., 2020, *Evaluating the Cashless Debit Card: How will it solve poverty and unemployment*	▪ Need for Support Services to complement CDC reiterated	▪ Structural poverty appears to be a feature of the region, focus should be on promoting job opportunities not punishing the poor ▪ Would not prevent people looking for loopholes especially for the severely addicted ▪ CDC was poorly targeted as many on income support are not gambling or using drugs ▪ Some people responding well to the Card in Bundaberg and Hervey Bay while others struggling

Source: CIE and other studies as noted.

The Methodology chapter below outlines how these previous evaluations have been used to inform the CBA.

3   Methodology

This study is the first Cost Benefit Analysis (CBA) of the CDC.

To guide the CBA, an economic framework was developed by the CIE in 2020 in close collaboration with DSS.[19] This framework has been an important document in directing the key areas for analysis and investigation (base case, benefit selection, impact measurement, etc).

While the framework identified the full range of potential benefits, the CBA has been partially informed by the second CDC impact evaluation. This evaluation provided some of the evidence base on the impact from the program up to June 2020.

Additional analysis was also undertaken on the change in consumption and expenditure behaviours and employment outcomes.

All impacts identified in the economic framework were analysed, although not all had a sufficient evidence base and conclusive results to enable quantification in the CBA.

Where benefits cannot be quantified, they are discussed qualitatively.

Building from the second impact evaluation's findings

With the release of the CDC program's second impact evaluation in 2021, there was an opportunity to apply the reported findings and impacts as inputs into this CBA.

The second evaluation is the most recent evidence base, and considered a wider range of sites and participants, analysed a wide range of community-level and administrative datasets, and provided findings from consultations with a substantial number of participants and other stakeholders. It has therefore been the key source of evidence used to support this CBA.

Not all potential impacts identified within the Economic Framework were considered in the second impact evaluation, such as employment outcomes and impacts from a change in consumption. To fill this evidence gap, this analysis draws on DSS Data Over Multiple Individual Occurrences (DOMINO) dataset and CDC program data to evaluate if the CDC has led to these additional benefits.

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19 The CIE, 2020, *Economic framework for cost-benefit analysis of the Cashless Debit Card Trial*, Final Report, November 2020.

Second impact evaluation approach

To determine the impact of the CDC program in the first three program sites (Ceduna, East Kimberley, and the Goldfields), the second impact evaluation analysed both qualitative and quantitative data.

Qualitative data was gathered from in-depth interviews with stakeholders (178) and CDC participants (231).

- Interviews with stakeholders were used to gather perceptions about the perceived impacts of the CDC and the perceptions regarding the future of the CDC.

- Interviews with participants gained information about people's views about the CDC program and perceptions of its impact on their lives and their community. People interested in participating in an interview either contacted the research team directly or consented to have their contact information provided to the research team by their stakeholder organisation. 20 per cent of these interviews were with family members of another CDC participant.

Quantitative data was sourced through a large-scale survey of CDC participants in the three trial sites (1 963 valid responses). The evaluation also sourced Australian Government and state government administrative data.

- Survey data was the main quantitative source of information on outcomes gathered by the evaluation. The survey collected data on the participant's demographic information, employment status, financial position, behaviour and attitudes towards alcohol and drugs, health, feelings about being on the Card and about the community.

- The administrative data provided by the Australian Government included CDC program data provided by the DSS, and administrative data from the Card provider.

- Although the evaluation considered state government data, this was found to be mostly unsuitable for the purposes of the evaluation, with the exception of Police data provided by Western Australia and South Australia.

Limitations from evidence base within this CBA

The data collected through the second impact evaluation is a robust source of data on the impact of the CDC. However, its methodology was designed with a different purpose to this CBA. Because of this, there are some specific limitations that need to be noted:

- Through the consultation process undertaken as part of this CBA, some stakeholders mentioned that their customers/CDC participants are far more likely to report negative news, rather than positive news. This is expected to be true when talking about their experience on CDC, with participants more likely to report issues, rather than any positive benefits they have experienced while on the Card. This may have also been the case with the stakeholder consultations undertaken through the second impact evaluation, potentially creating a bias in the results, and potentially understating the benefits created.

- The evaluation relied on the survey results to drive much of the quantitative analysis on outcomes. Some of these outcomes are not necessarily reflective of the actual impact. For example, the survey asked participants if they felt there had been changes to safety and general health. Although they may have reported a change in these

outcomes, measures for safety (such as instances of domestic and family violence, thefts, etc.) or actual health outcomes may differ from the self-reported responses.

- The participant survey provided data about the change in outcomes, such as if an outcome got worse, the same or better. However, it did not provide a measure or a value of the change. For example, if a participant stated that school attendance for their children had improved, the survey did not indicate how many days school attendance changed (i.e. a one day improvement or a 10 day improvement). To inform the CBA, other evidence sources were combined to the second impact evaluation, such as other survey data and literature sources to estimate the impact.

- Through the consultation process undertaken as part of this CBA, some stakeholders mentioned that there is significant social pressure for people to not support the Card. If a CDC participant were to publicly state that they benefited from the Card or supported it, then there may be social, community, or family backlash. These stakeholders suggested that even through a participant may have benefited from the Card, they are unlikely to say so. However, the extent to which this is occurring cannot be determined. If prevalent, this may create a bias in the second impact evaluation results, which may have understated the benefits created or over stated negative impacts.

- Many of the results are inconclusive. The second impact evaluation suggests that some participants benefit from the Card, some receive no change, and some experience negative impacts. To accommodate for these mixed impacts, in places, this CBA has taken the net impact, i.e. the difference between the proportion of respondents who experienced a positive impact and those that experienced a negative impact. By doing so, we have assumed that the benefit received is of equal magnitude or value to the negative impact. However, this may not be true if the benefit generated are more significant than the negative impacts felt by others.

- The second impact evaluation noted that there are many concurrent polices and initiative operating in the CDC sites. This creates an issue of attributing the impacts to the CDC program.

- The second impact evaluation only covers the first three CDC program sites, which are Ceduna, East Kimberley, and the Goldfields. Accordingly, neither the survey nor the analysis of community-level and administrative data covers Bundaberg and Hervey Bay. Because of this, we have assumed that the impacts to Bundaberg and Hervey Bay as consistent with the average impact across the other three regions.

Cost-Benefit Analysis approach

The key steps in a cost benefit analysis are:

- establishing the base case
- quantifying the changes from the base case
- placing values on the changes
- generating the Net Present Value (NPV) of the future net benefits stream, and
- undertaking sensitivity analysis to test key assumptions and inputs.

This type of analysis measures the costs and benefits to a range of stakeholders, including Government, community, participants, and families.

A range of overarching assumptions are relevant for conducting cost-benefit analysis, which are specified in the Cost-Benefit Analysis Guidance Note published by PMC.[20] Choices relating to these overarching assumptions are summarised below:

- **Definition of the base case:** This cost-benefit analysis of the CDC program is an *ex-post* analysis, meaning that it is backward-looking. In general, the base case for cost-benefit analysis should be a 'do nothing' or 'business as usual' option. For the purpose of this analysis, the base-case is a scenario where the CDC Program was not conducted in the Goldfields, East Kimberley, Ceduna, and Bundaberg and Hervey Bay.
  - The CDC program was implemented at a time during which other policy interventions were taking place. Further, the CDC program is accompanied by an expansion of Support Services provided to welfare recipients. Because the scope of this cost-benefit analysis is the CDC program, and not the concurrent policy interventions, these other policies and the expansion of Support Services are considered to occur under the base case. However, it is difficult to disentangle some of the impacts of the CDC from potential impacts of these concurrent interventions, which is discussed throughout this report. Nonetheless, the objective is to measure the incremental costs and benefits of the CDC program only.

- **Defining the range of options**: Only one option is considered, which is the option that was taken to have the CDC program in each location. While generally cost-benefit should consider multiple options, for this purpose of this *ex post* analysis to assess the merits of the chosen policy, we will only consider the CDC program as-implemented.

- **Over what period do we measure impacts**: We only consider the use of the CDC program in the initial four regions until the end of 2019/20, because this is the period for which CDC program cost data has been provided by DSS. However, the CDC program is expected to have impacts for participants and others over a longer period. Many of the benefits included within the CBA estimate the lifetime impact from the

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[20] Department of the Prime Minister and Cabinet, 2020, *Cost-benefit analysis — guidance note*, March 2020, available at: https://pmc.gov.au/sites/default/files/publications/cost-benefit-analysis_0.pdf

program.[21] For example, we measure the avoided loss of productivity over the lifetime of people that die due to alcohol misuse, and the life-long impacts for children from improved health outcomes, healthier food consumption, and increased school attendance. These life-long impacts are discounted to present values.

- **Whose costs and benefits count:** For the purpose of this analysis, measuring national costs and benefits is appropriate, and there are unlikely to be any relevant international impacts. Costs and benefits to all people residing in Australia will be included if they can be estimated.

- **How do we discount costs and benefits:** To compare costs and benefits occurring at different points in time, it is necessary to convert the value of future costs and benefits to an equivalent value received immediately. This is referred to as 'discounting', and a discounted value is referred to as the present value of a future cash flow. To estimate the present value, future values are multiplied by a factor reflecting a specified rate of return over time, in this case, the social discount rate.[22] The higher the social discount rate, the more the future cash flows will be discounted, resulting in a lower present value.

  - The value of costs and benefits in each past and future year are discounted to a base year of 2015/16, which is the year that the first trials in Ceduna and East Kimberley commenced.

  - A real discount rate of 7 per cent is used for the analysis, with sensitivity testing of 3 and 10 per cent. These rates are consistent with guidance from the Department of Prime Minister and Cabinet about discounting in cost-benefit analysis.[23]

  - The nominal value of costs and benefits has been converted to real values using a price year of 2020 (the most recent year for which GDP deflators are available from the ABS).

Benefits from improved outcomes and from changed consumption

We split potential benefits of the CDC into two categories:

- **benefits where there is evidence of an improvement in outcomes**, such as an improvement in school attendance or reduction in social problems associated with gambling, and

- **benefits where there is evidence of a change in consumption patterns**, such as a fall in consumption of alcohol, drugs or gambling.

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[21] We have not excluded any quantifiable benefit categories on the basis of them accruing after the end of 2019/20.

[22] The discount rate is the rate used to determine the present value of future cash flows. By discounting future cash flows to today's value, the CBA accounts for the opportunity cost of the cash flows. I.e. the consumer preference, consumption benefit, and financial benefit from receiving a dollar today rather than a dollar in the future. Discounting future cash flows also allows a true comparison of current and future cash flows.

[23] Department of the Prime Minister and Cabinet, 2020, *Cost-benefit analysis — guidance note*, March 2020, available at: https://pmc.gov.au/sites/default/files/publications/cost-benefit-analysis_0.pdf

The reason to segment these benefit types is that, where there is evidence of an improvement in outcomes, we can value the change in outcomes directly. However, where there is only evidence of changed consumption patterns, we must rely on evidence from the literature about the relationship between consumption patterns and outcomes, and, in turn, benefits.

The key example of this is that the second impact evaluation provides evidence of a change in alcohol consumption, however it does not provide evidence on the magnitude of the change, nor does it indicate if the participant has experienced a change in alcohol related harms. In this example, we have relied on other literature sources to estimate the change in harms and expected benefits achieved.

Measuring impacts of the CDC on outcomes

To assess the outcomes of program participants relative to the base case, we must compare their realised outcomes with the CDC to a comparator. The following comparator groups are variously available, broadly ordered in terms of the robustness of the comparison for inferring the impacts of the CDC:

- welfare recipients not participating in the program but in a comparable location
- CDC participants during the period prior to their participation in the program
- welfare recipients not participating in the program across any location, or
- other Australians.

Data about outcomes for program participants and other welfare recipients are more readily available than data about spending. The relevant data sources are:

- the DSS Data Over Multiple Individual Occurrences (DOMINO) dataset[24]
- Mavromaras K., Moskos M., Mahuteau S., Isherwood L., (2021) *Evaluation of the Cashless Debit Card in Ceduna, East Kimberley and the Goldfields Region*, prepared by University of Adelaide, and
- other evaluations of the CDC program, such as the ORIMA evaluation.

The differences in outcomes, such as the incidence of alcohol or drug-related illness between participants and non-participants, will reflect the impact of changed spending patterns and other concurrent policies, such as increased provision of counselling and financial literacy classes.

A key issue for understanding the benefits of the CDC is identifying correlation versus causation. Participation in the CDC program may be correlated with better outcomes, such as lower crime rates, but this may be due to selection of program locations or other factors unrelated to the activities of the CDC program.[25] The Australian Government

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24 Key aspects of this dataset are described at: https://www.aihw.gov.au/about-our-data/our-data-collections/department-of-social-services-data-over-multiple-i

25 For example, the CDC program may result in a higher degree of outcomes monitoring, engagement by the local community and other outcomes that are not related to the CDC itself but can lead to benefits. It is difficult to disentangle such benefits from the benefits of the CDC itself as a compulsory income management tool.

selected locations for the CDC on the basis of them having high levels of antisocial behaviour. Further, the community at the program sites had to request the program after a consultation period, so a site could only be in response to a recommendation by an inquiry or inquest.[26]

Statistical modelling approaches such as multiple regression modelling[27] are useful to disentangle the impacts of the CDC from impacts due to demographic or other differences between participants and non-participants. These statistical modelling approaches are used in the second impact evaluation to support causal identification. However, in a range of cases, statistical modelling approaches produce inconclusive results. In these cases, survey statistics relating to perceptions of various CDC impacts are sometimes the best available evidence. To inform the benefit calculations, we have drawn from the second impact evaluation's statistical modelling and survey statistics.

Flow-on impacts

As shown in the program logic for this analysis, the benefits of the CDC are often interrelated. For example, health benefits would lead to economic benefits, since healthier people may be more likely to participate in the labour force. Similarly, reduced welfare dependency may result in long-term improvements in educational participation of children, reduced crime and improved housing security.

Many of these impacts may be very long term, and thus not observable in the data for the CDC program to-date. For example, improved education of the children of participants would take many years to result in greater productivity within the community. Children may also move out of the community at a later stage, making it difficult to measure changes in their outcomes.

Where relevant, we have specified the 'flow-on' benefits that accrue for each benefit stream and where flow-on benefits are likely but have not been quantified. For example, the avoided costs of alcohol misuse are often 'flow-on' costs, such as traffic accidents as a result of drink driving.

Estimating changes in spending on restricted items

The key difficulty with estimating changes in spending patterns for program communities in that we do not observe spending patterns under the base case. This is because CDC spending data is only available for participants.

We can compare the CDC spending patterns to spending from other data sources for similar groups, but because this will rely on different datasets the comparison will not

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[26] Department of Social Services, 2015, *Cashless Debit Card Final Assessment Regulation Impact Statement*, p2.

[27] Multiple regression modelling is a type of statistical modelling that aims to predict the value of a variable based on the value of two or more other variables. For example, it may try and predict the level of crime in local areas based on the number of CDC program participants in the region, the number of non-participants, and demographic characteristics of the population in each area.

involve formal statistical testing, which would give a false sense of accuracy to such a comparison.

Appendix A summarises the data available about spending of non-participants, and limitations in comparing this to spending data from the CDC. Given the limitations to identifying changes in spending on alcohol and other restricted items, the ability to draw conclusions from this data about spending patterns is limited.

Hence, we have placed greater reliance on evidence from the second impact evaluation about changes in spending patterns, which relied on a survey of participants. The survey instrument called for respondents to report current spending patterns (i.e. after the implementation of the CDC) and what changes they believe occurred since the implementation of the CDC, such as a decrease in frequency or amount of alcohol consumption.

Estimates of the benefits from changes in consumption patterns are based on evidence from the academic literature, since it has not been possible to estimate the relationship between individual spending patterns (based on Card data) and outcomes. An example of such a relationship would be a link between the amount an individual spends at supermarkets and their employment outcomes. Even if such a relationship was confirmed by the data, it would likely reflect correlation rather than causation, and would be very weak evidence of such a benefit.

The academic literature includes studies that estimate the societal cost of alcohol misuse, gambling, and illicit drugs for Australia. Applying benefit estimates from other studies/contexts/areas to a different situation is referred to as 'benefit transfer'. The accuracy of results estimated using benefit transfer will depend on the closeness of the context, time period, demographic characteristics, and a range of other factors between the source study and the current study. We discuss the appropriateness of applying benefit estimates from the literature in this report, including the uncertainty associated with application of these estimates.

Consultations

Consultations with a range of stakeholders were necessary to capture evidence of what happens 'on the ground'. These consultations helped align the CBA modelling inputs gathered through data analysis and literature review to the lived experiences of those who interact at a personal level with CDC program participants.

Organisations were identified to participate in the consultation process by:

- an initial review of the list of CDC stakeholders, provided to CIE from DSS
- a comparison of each stakeholder to the number of CDC participants and the volume of activity for each organisation. Organisations were only considered for consultation if they have sufficient CDC activity
- the distribution of these organisations across each program region was then considered to ensure that there was a wide geographical spread, and

- when there were multiple potential organisations, only five star providers were shortlisted.[28]

The shortlisted organisations were then invited to a discussion with CIE. The discussions were intentionally flexible and focused on key topics of interest.

These discussion helped to:

- to gather further evidence on the qualitative benefits of CDC, building from the analysis already undertaken through the impact assessments
- to validate our CBA framework and the finding in the data analysis against the experiences 'on the ground', and
- to refine and test our CBA modelling assumptions.

Some high level comments and examples from these case studies have been highlighted throughout the report. Although not statistically significant, and cannot be relied upon to make population level findings, these examples help to build on the narrative and provide some specific examples of the impact of the CDC program. **They are not representative and cannot be used for making general statements about the impact to the CDC participant population.**

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[28] The Department of Education, Skills and Employment calculates the relative performance of jobactive providers and rates each service out of five stars. Five star providers are 30 per cent or more above the national average performance (after accounting for differences in participants and labour market characteristics).

4   Changes in expenditure patterns

The CDC directly influences expenditure patterns of participants, in particular expenditure is directed way from alcohol and gambling. This is supported by the Card's transaction data, and through the reported impacts from program participants in the second impact evaluation.

Our analysis of spending using the CDC transaction data suggests that attempted purchases of restricted items such as alcohol using the CDC are found to occur in a volatile fashion. Declined transactions remain frequent even among those who have used the CDC for an extended period. In CDC program locations, there is an upward trend in the share of transactions that are declined due to attempted alcohol purchases.

This partly reflects the design of the CDC, which does not prevent participants from purchasing alcohol, but it does suggest there has not been a 'learning by doing effect'. In other words, participants still attempt to buy alcohol products after their attempted alcohol transactions have been blocked a few times, and after the participant is more familiar with the features of the Card. This was supported by one stakeholder who stated that participants are likely to continue to 'test' the Card at multiple vendors to see if a transaction is approved.

Overview of aggregate CDC transaction data

DSS have supplied monthly aggregate CDC Program data. The data supplied to the CIE consists of the following for each CDC program site:

- outgoing transactions
    - counts of ongoing transactions and the number of unique payers, and
    - total value of transactions by Merchant Category Group (defined by DSS)
- incoming transactions
    - counts of outgoing transactions and the number of unique recipients, and
    - total value of incoming transactions
- declined transactions
    - number of declined transactions by reason, and
    - total value of declined transactions by reason.

This section provides an overview of trends in outgoing and declined transactions, and compares spending shares by type of good/service to data from the ABS.

Number of payers and recipients

The number of cards for which there was an application to make a payment in each month is referred to as the number of applicants (chart 4.1). The number of applicants tends to rise gradually from the point that the CDC program is introduced in each region, with a higher rate of take-up during the early months of 2020. This is likely associated with the COVID-19 pandemic and associated lockdowns, which is likely to have increased the reliance on income support of people within the program regions.

In response to the COVID-19 pandemic, a 'paywave' functionality was included on the CDC at the end of July 2020. This meant that a number of new cards were issued to CDC participants, resulting in the number of 'applicants' (i.e. number of unique cards with an attempted transaction) spiking in July 2020. The spike therefore shows an increase in the number of cards, rather than the number of people.

4.1   Number of applicants for payments
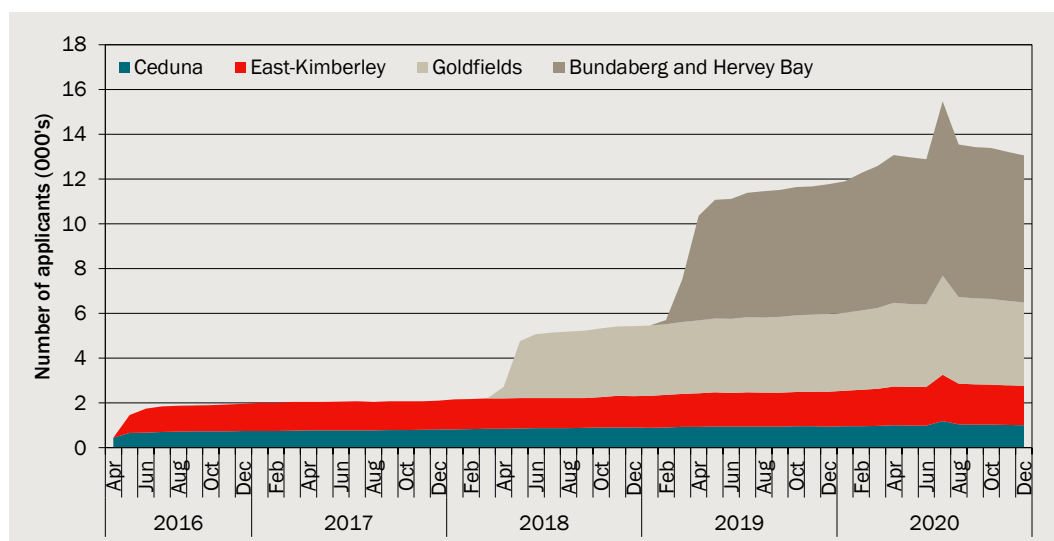
Data source: CDC Program Data, CIE.

We consider applicants rather than recipients because recipients that do not issue payments would not be considered to be 'using' the Card and driving the benefits from its use. However, the number of applicants and recipients in each month is very similar (e.g. in Ceduna since April 2016, there has been an average of 843 payers and 844 recipients in each month).

Outgoing transactions using the CDC

The number of outgoing transactions per unique payer is somewhat seasonal, and gradually increasing (table 4.2). There was also a step change in use in 2020, likely associated with COVID-19 and potentially some substitution from cash to card transactions during lockdowns.

There may have also been impacts on transactions because of additional income support related to COVID-19, translating into higher spending. For instance, during COVID-19,

JobSeeker payments received a supplement amount of $550 per fortnight, before being scaled back to an increase of $250 in September 2020.

The number of outgoing transactions per unique payer is higher for sites that initiated the CDC program later, with Ceduna being the lowest and Bundaberg and Hervey Bay being the highest.

4.2 Number of outgoing transactions per CDC payer
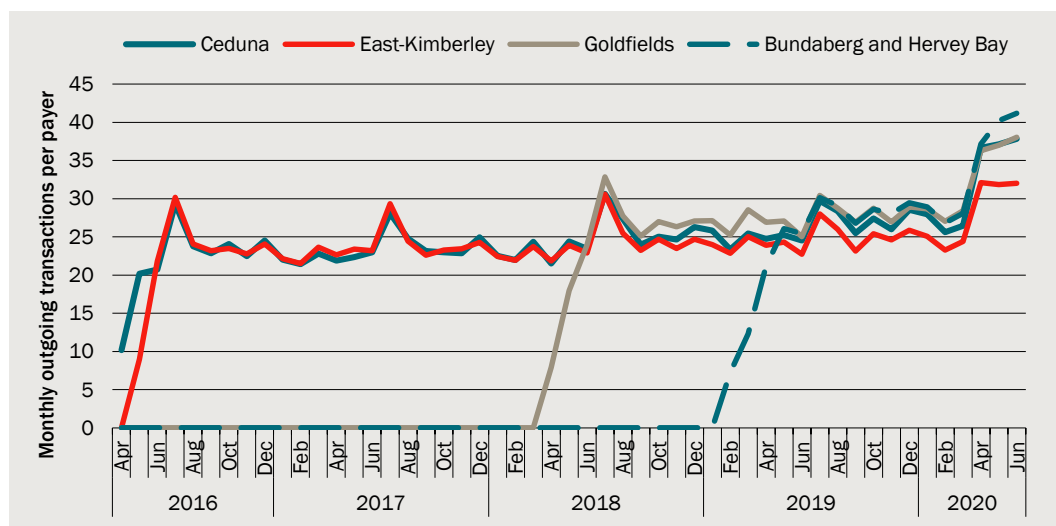
Data source: CDC Program Data, CIE.

Spending shares compared to ABS data

A key impact of the CDC is that it is expected to change spending patterns. Most obviously, spending by participants on restricted types of goods and services is expected to reduce relative to spending by these participants if they were not participating in the CDC program. Spending on other goods and services would experience a corresponding increase, and this may be larger for some types of goods and services (e.g. fresh food) than other types. Alcohol expenditure tends to be a substitute for expenditure on necessary goods and services (Pu et al., 2008)[29], such as utilities, food or health services.

Spending by participants must be compared to the counterfactual, which is spending by participants if they had not been in the CDC program. The main counterfactual for this CBA is the price weight series from the Selected Living Cost Indexes (SLCIs) publication by ABS.[30] The SLCIs provide a measure of the cost of living for each of four types of households. To do this, they need a separate set of weights for each household. The 'other government transfer recipient' household category refers to all households whose principal source of income is a government pension or benefit other than the age pension or veterans affairs pension.

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[29] Pu, C., Lan, V., Chou, Y. and Lan., C., 2008, 'The crowding-out effects of tobacco and alcohol where expenditure shares are low: analysing expenditure data for Taiwan, *Social Science and Medicine*, 66(9), pp.1979-1989, available at: https://pubmed.ncbi.nlm.nih.gov/18313191/

[30] This is further discussed in the Economic Framework report.

However, this comparison of CDC expenditure to the SLCIs accounts only for the CDC participant expenditure that is on the Card. Since 20 per cent of participant's income support payments can be deposited into the participant's nominated account, this is not quite a complete list of all transactions. This has the impact of potentially understating some of the transaction groups for the CDC participants.

Comparing the spending shares of CDC program participants and those for 'other government transfer recipients' from the SLCIs reveals the following (chart 4.3):

- **Food spending is significantly higher** among CDC participants. The food category in the CDC spending dataset represents around 30 per cent of total spending across the entire time period of the program across the initial four regions. In contrast, the food category accounts for slightly more than 15 per cent of spending in the comparison group.

- If non card-based transactions in the CDC spending data are assumed to be entirely housing-related payments, then **spending on housing is very similar** between the CDC data and SLCI weights. Through discussions with stakeholders, it was confirmed that non-card-based payments include some direct debit transactions, such as rental payments, but also other direct debit transactions that may not relate to housing.

- **Transport and recreation spending** (which includes eating out in the CDC dataset) **are relatively similar** between the SLCIs and the CDC data.

- **Clothing and footwear spending is higher** in the CDC data than the SLCIs. This may suggest that on average, access to these goods and services is worse than in other areas such as urban locations, and that prices are higher as a result for this type of good.

- All other remaining categories are difficult to align between the CDC data and SLCIs, or are very different in magnitude. For example, health and education spending are fare lower in the CDC data, which may reflect lower availability of these services in non-urban area such as the program locations. Services and other spending in the CDC datasets may be components of the insurance, financial services and communication categories, but these cannot be easily aligned between the CDC and SLCIs to facilitate accurate comparison.

4.3 Comparison of CDC spending to spending by welfare recipients across Australia

CDC recipient data ■ **Cost of living weights** ■

Categories (top to bottom):
- Housing (+DSS non Card-based)
- Transport
- Food and non-alcoholic beverages
- Recreation and culture (inc. eating out)
- Clothing and footwear
- Health
- Education
- Furnishings, household equipment and services
- Insurance and financial services
- Alcohol and tobacco
- Communication
- Other
- Services

X-axis: Share of spending (per cent), 0 to 35

Data source: ABS SLCIs, CDC program data, CIE.

We cannot draw a conclusion from this data about whether spending on alcohol, other drugs or gambling has fallen as a result of the CDC. This is because 20 per cent of income support payments are unrestricted for participants, and there are other means of avoiding the restrictions such as asking non-participants to purchase restricted items in exchange for other goods/services.

However, the SLCI weights suggest that spending on alcohol and tobacco is around 8 per cent of total spending, which suggests that average spending on alcohol and tobacco could be maintained by a CDC program participant. Low income households sometimes spend more than 20 per cent of income on alcohol (chart 4.4), and these households may be more likely to have health or other costs associated with problematic consumption of alcohol. Therefore, the restriction of spending to, at most, 20 per cent may still be effectively reducing alcohol-related harm.

4.4 Distribution of household alcohol spending
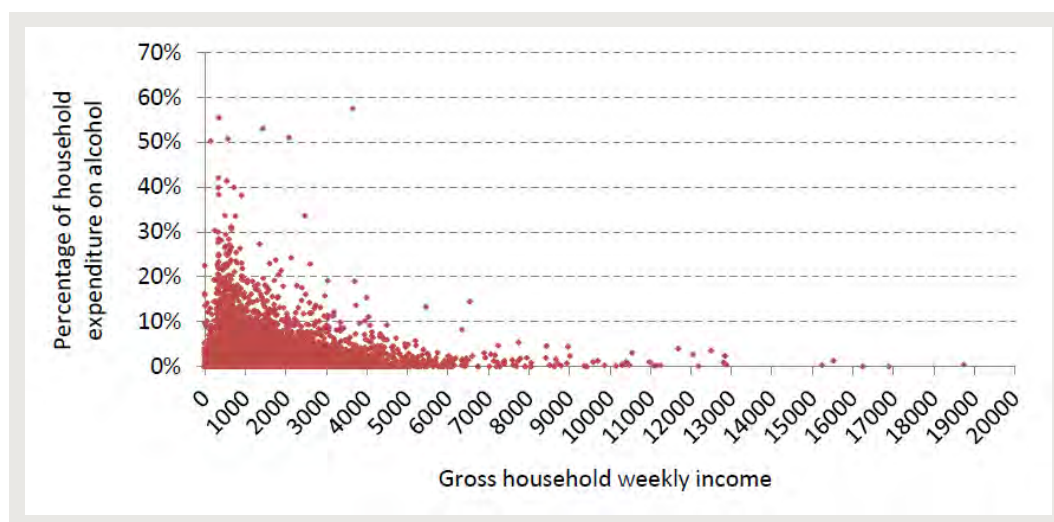
Data source: Jiang, Livingston and Room (2015).

4.5 Comments from stakeholder consultations – Reduced need for Christmas hampers and return to school support

Some community services provide disadvantaged community members with hampers during Christmas and additional financial support at the start of the year when children are returning to school.

One stakeholder mentioned that since the CDC program was implemented in their region, the number of community members needing this support has dramatically decreased, to the point where they no longer need to provide this additional support.

This stakeholder attributed this to CDC participants now having the financial capacity to better provide for their families during festive times and for school expenses.

Trends in spending shares

Consultations with DSS staff suggest that a potential impact from the CDC to investigate is a shift away from spending on types of goods and services that are unhealthy towards goods and services that are more healthy (based on the substitution effects like those discussed in Pu et al. 2008). For example, participants may be spending more on the 'food' category, which we expect primarily includes food from supermarkets, and less on other categories such as eating out.

This potential impact was further explored through the stakeholder consultation process. Although stakeholder could not definitely say if CDC participants were spending more on healthy food, but there were some specific examples of where this was the case.

Such changes in spending patterns may occur immediately once someone commences the CDC program, since they are immediately unable to purchase restricted items. However, there may also be more gradual changes in spending if behaviour changes

more gradually. It is worthwhile to assess if the data suggests any gradual shifts in behaviour that would be expected impacts of the CDC.

There is little evidence in the data of increases in the share of spending on food. Spending on food on the Card has represented a steadily declining share of spending over time (chart 4.6). In other words, a lower proportion of CDC program participant funds is being spent on food, and instead is spent on other types of goods and services.

The decline in spending on food could be attributable to a broader shift away from food spending due to factors affected both CDC participants and non-participants, such as an increase in prices of fresh food.

4.6   Share of spending on food
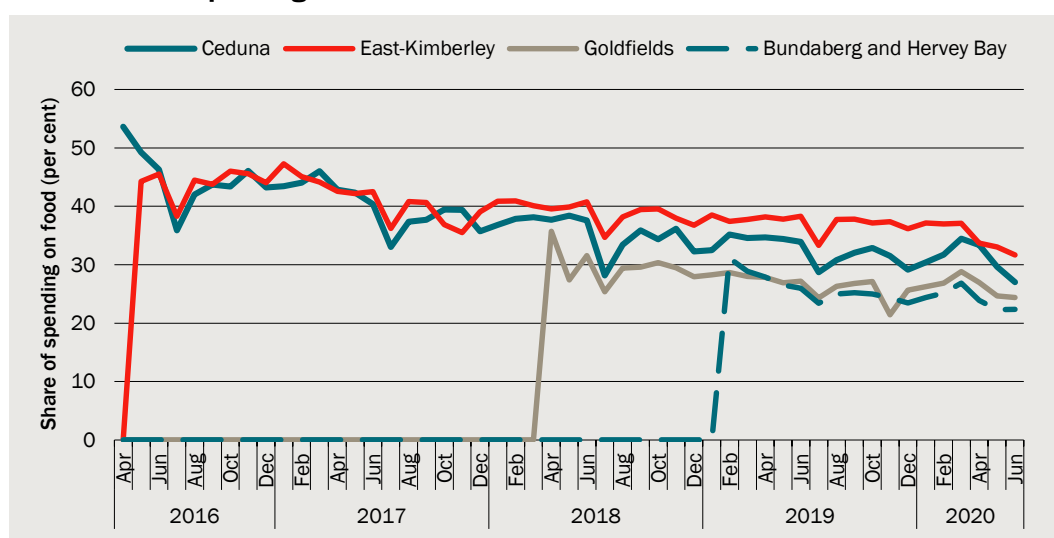
Data source: CDC Program Data, CIE.

All four regions saw a decrease in the share of spending on food from March 2020. This was an impact of the additional COVID-19 supplement payments, which increased the total income received by participants.

4.7   Comments from stakeholder consultations – Increased food expenditure

The stakeholder consultations provided anecdotal evidence that some CDC participants have been spending more on food.

Some families who previously purchased only a few food items have now been seen with 'full trolleys'. The example highlights that there are instances where the CDC is making a significant impact for families. Stakeholders saw this as a significant benefit from the CDC.

Although evidence was provided on specific instances/examples, stakeholders were unsure if this impact was widespread, or experienced by a few.

The reduction in spending on food is driven by an increasing share of spending on 'non-card-based transactions' (chart 4.8). Bundaberg and Hervey Bay did not experience the

same increase in non-card-based transactions. If these non-card-based transactions are primarily rent payments, this suggests that participants may be spending an increasing share of income on rent, which may result in greater housing benefits such as more secure tenancies.

4.8   Share of spending on non card-based transactions
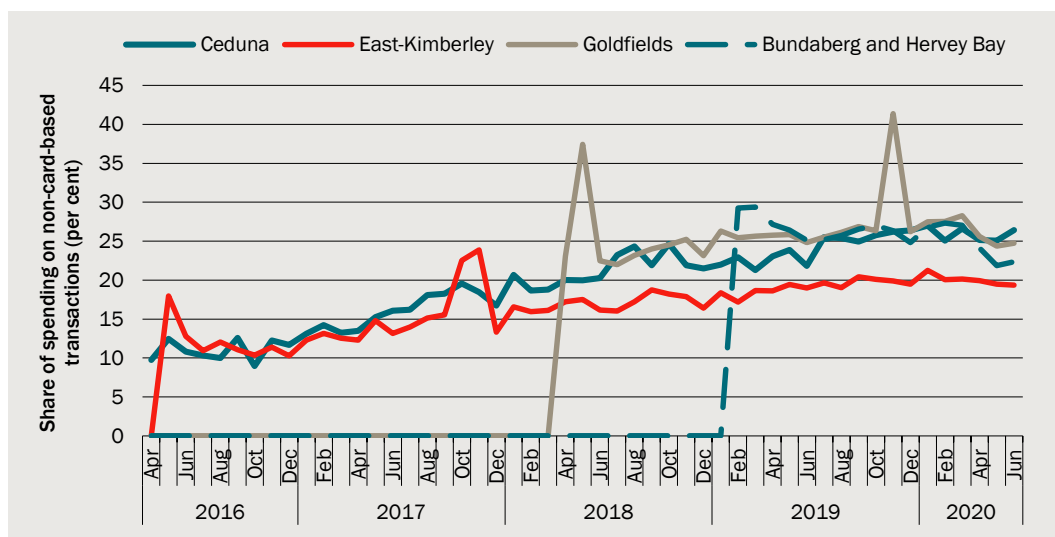
Data source: CDC Program Data, CIE.

In Ceduna, spending shares for other merchant types fluctuate and exhibit some seasonality, but remain relatively consistent over the period (chart 4.9). The key source of variation is in the ratio of food to non-card-based transactions.

4.9   Spending shares for Ceduna
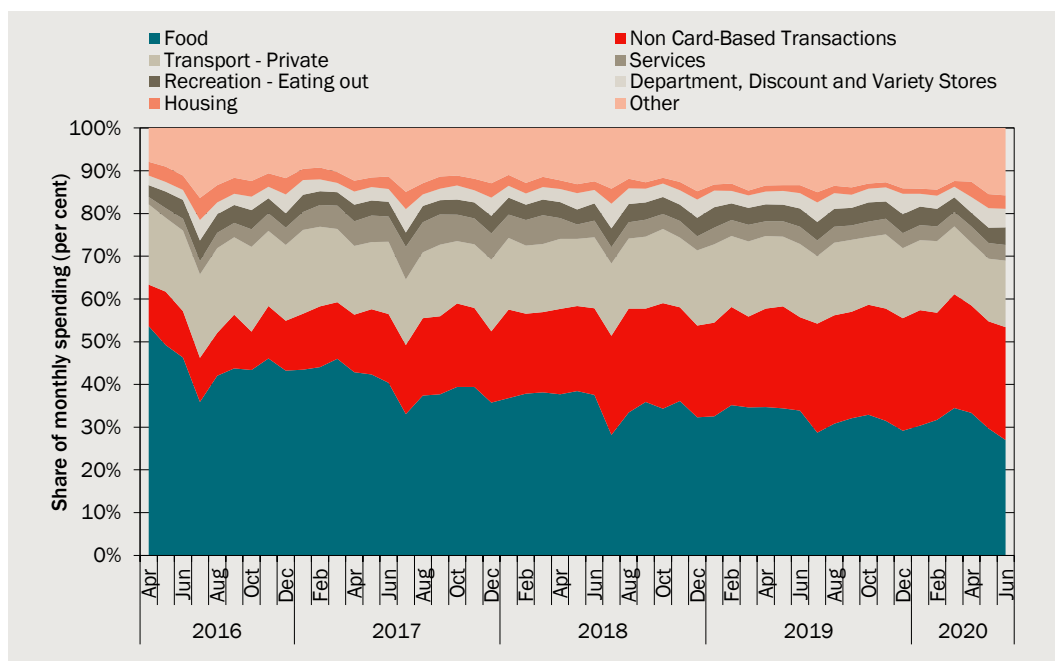
Data source: CDC Program Data, CIE.

Similar trends as those in Ceduna occurred in the Goldfields and East Kimberley regions.

However, Bundaberg and Hervey Bay exhibit a different trend, with the decrease in the share of spending on food attributable to a rise in spending on the 'other' category of merchants (chart 4.10).

4.10 Spending shares for Bundaberg and Hervey Bay
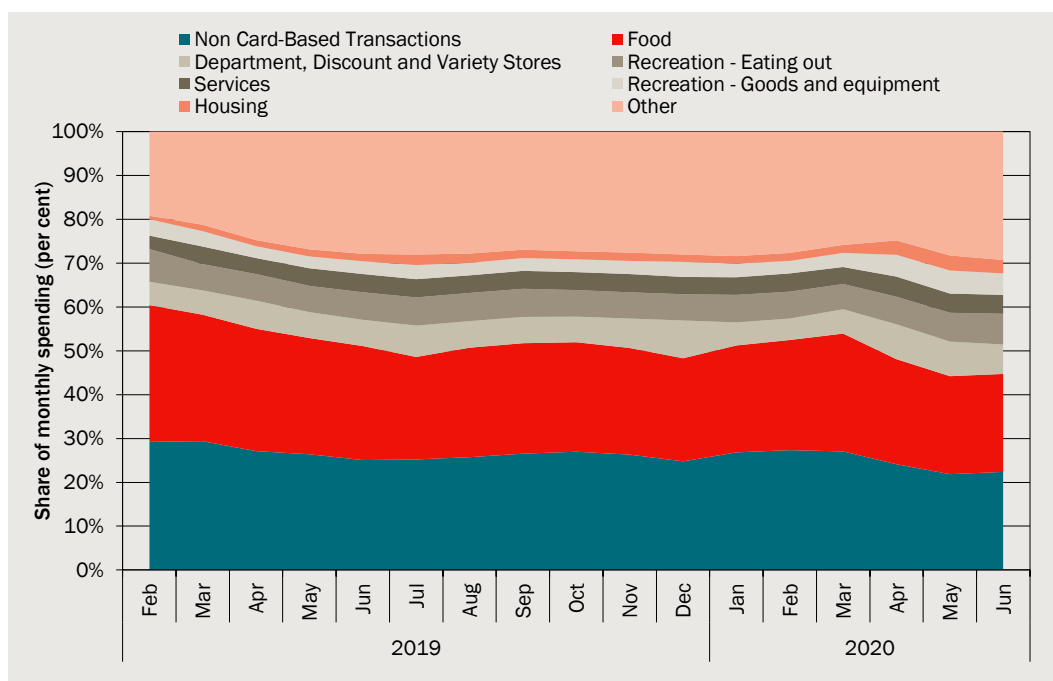
Data source: CDC Program Data, CIE.

Statistical modelling of spending shares

We have estimated a statistical model of the share of spending on each product category. We estimate a multiple regression model, which is an approach to disentangle multiple influences on a variable of interest. In this case, we aim to predict spending on each category of good and service (e.g. food) over time, based on seasonal patterns and trends over time for each category of spending.

This modelling confirms that there is a downward trend in food spending, and upward trend in the value of non-card-based transactions (table 4.11). The model estimates an annual trend in spending share for each type of good and service, which can be positive or negative. It also estimates a confidence interval for each estimate, which gives a lower and upper bound representing the uncertainty associated with the estimate. Some of the trends are not statistically significant, which means there is insufficient evidence to conclude they are different from zero. If the 'p-value' estimated for each trend is less than the conventional threshold of 0.05, then it suggests that the trend is statistically significant.

These trends are similar even if the period since March 2020 onwards is excluded, during which COVID-19 appears to have had a predominant influence on spending patterns

because of the associated increase in welfare payments and social distancing requirements.

4.11 Statistical results for annual trend in spending share

Spending category	Annual trend in spending share (per cent)	Signif.	P>t	95% Confidence interval	
				Lower bound	Upper bound
Childcare/Education/Training/Employment	0.02		0.829	-0.16	0.20
Clothing and footwear	-0.25	**	0.007	-0.43	-0.07
Department, Discount and Variety Stores	-0.06		0.544	-0.23	0.12
Food	-3.34	***	0.000	-3.52	-3.16
Holidays and travel	0.01		0.894	-0.17	0.19
Housing	-0.44	***	0.000	-0.62	-0.26
Medical	-0.04		0.626	-0.22	0.13
Non Card-Based Transactions	3.34	***	0.000	3.16	3.51
Other	0.64	***	0.000	0.46	0.82
Pets	0.00		0.991	-0.18	0.18
Recreation - Activities and memberships	0.08		0.374	-0.10	0.26
Recreation - Eating out	0.29	**	0.002	0.11	0.47
Recreation - Goods and equipment	0.04		0.654	-0.14	0.22
Services	-0.21	*	0.024	-0.38	-0.03
Transport - Private	-0.24	**	0.008	-0.42	-0.06
Transport - Public	-0.03		0.757	-0.21	0.15
Transport - Rental Car	0.00		0.995	-0.18	0.18
Utilities	0.18	*	0.043	0.01	0.36

Note: P < 0.05 = *, P < 0.01 = **, P < 0.001 = ***. A p-value is a result from a statistical test. It indicates whether the estimated coefficient is statistically significant (i.e. different from zero). More specifically, it shows whether an estimated effect as large as the estimated coefficient (in this case the annual trend) is likely to have been produced by the model if the true coefficient is zero. A low p-value means that the estimated effect is very unlikely to have been produced if there truly was no effect. Typically, a p-value of less than 0.05 is taken to suggest that a result is statistically significant, meaning that it is not spurious.

Source: CDC Program Data, CIE.

Full statistical modelling output for this estimation is presented in Appendix B.

Declined transactions using the CDC

The CDC restricts purchases of certain restricted items, such as alcohol purchases. When a participant attempts such a transaction, the transaction is declined. The Indue data provided by DSS for this project identifies the reason for declined transactions, with declined transactions occurring in relation to attempted purchase of restricted items or unrelated reasons such as having an insufficient account balance. Appendix C summarises our categorisation of declined transaction reasons.

The share of declined transactions that relate to attempted purchase of restricted items (or at restricted merchants) is quite volatile (chart 4.12), mainly because the number of declined transactions per person is volatile (chart 4.13). However, there is a general upward trend in the share of transactions that are declined, which is most apparent for

the locations where the CDC has been present for some time (i.e. Ceduna and Goldfields).

4.12 Ratio of declined to successful transactions
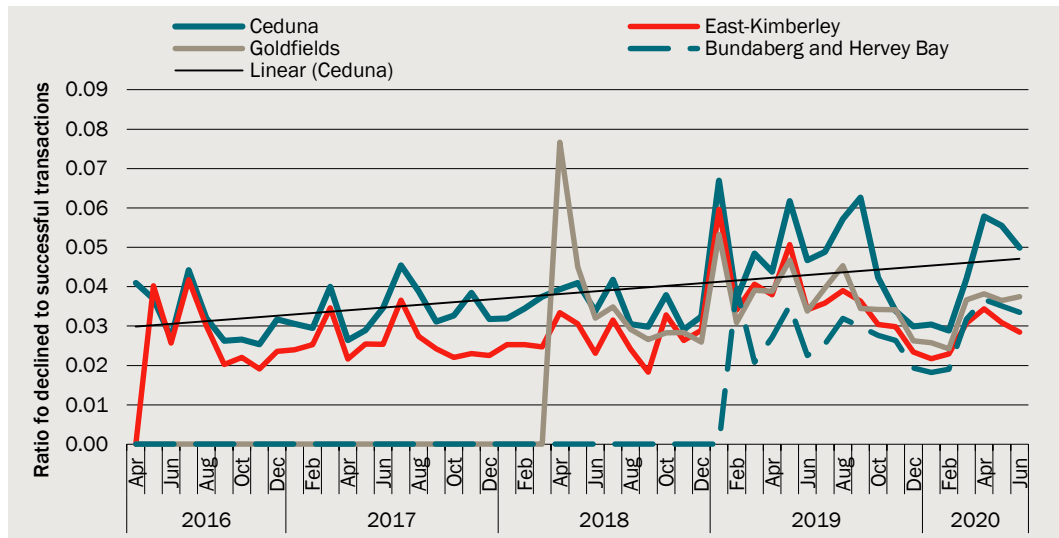
Data source: CDC Program Data, CIE.

4.13 Number of declined transactions related to restricted items per payer
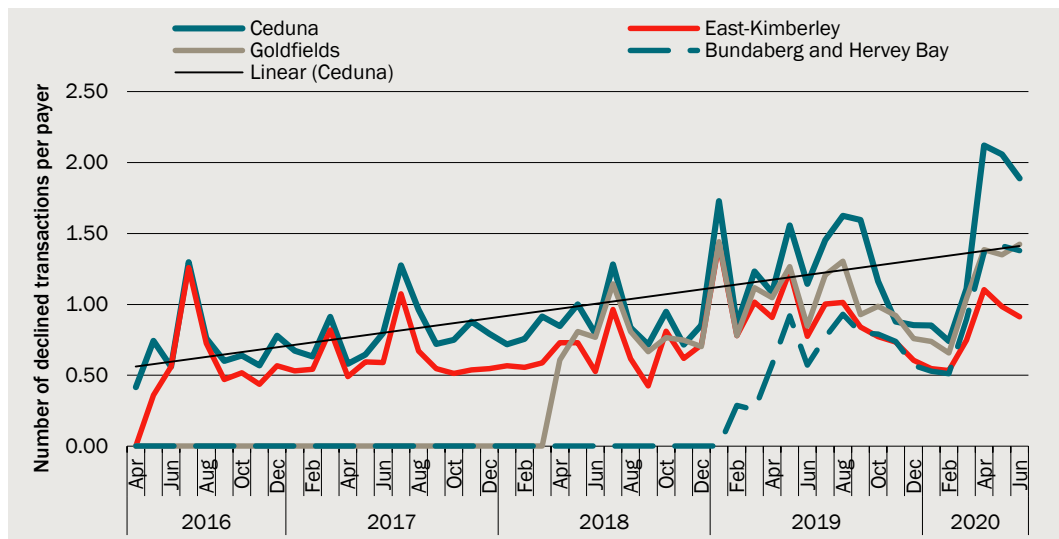
Data source: CDC Program Data, CIE.

> **4.14 Comments from stakeholder consultations – Concerns when travelling outside the program site**
>
> One of the limitations of the Card is that once a participant leaves the program region, they may encounter businesses that do not accept the Card.
>
> This was highlighted as a concern for participants, with multiple stakeholders receiving feedback that their customers were not able to pay for accommodation and other items outside of the program site.
>
> This 'dis-benefit' is especially apparent for transient participants that might frequently visit areas outside of the program location.

Number of declined transactions over time

Participants tend to have a similar number of transactions being declined irrespective of the amount of time that has passed since they received their CDC.

This means there is little evidence of a 'learning by doing' effect, whereby participants might attempt less alcohol-related or similarly restricted transactions after they have been on the Card for a while.

This would be expected for example, if such transactions are associated with attempts to purchase alcohol while intoxicated, and if alcohol consumption is falling among participants. That is, as participants consume less alcohol, we would expect them to attempt less restricted item transactions.

However, because there is no change in the number of declined transactions from when a participant commences and then becomes familiar with CDC, there is no evidence to support a learning by doing effect. The share of people with declined transactions since their commencement onto the Card is show in 4.15 below.

4.15 Share of people with declined transactions vs time since account was opened
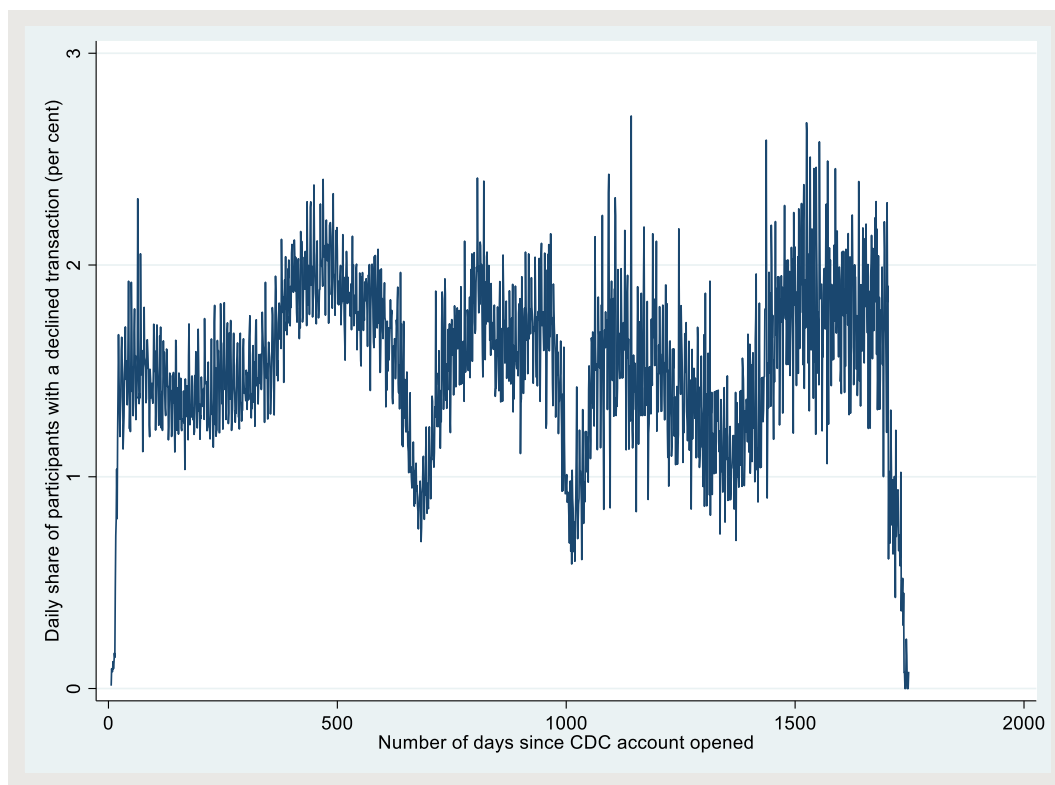
Data source: CDC Program Data, CIE.

This may suggest that participants are continuing to consume alcohol, as they are continuing to make these purchases.

4.16 Comments from stakeholder consultations – Paying rent can be challenging

We heard that some participants have ad-hoc and informal housing arrangements. For example, they might be paying board to a family member, or they might have been informally subletting.

Stakeholders stated that a common complaint about the Card is that some ad-hoc rental arrangements are blocked.

However, stakeholders also mentioned that there are processes in place to 'set-up' the CDC Card to support these rental arrangements. However, we heard that this process can lead to delays in rental payments, which can damage relationships between the participant and their landlord.

5   *Benefits from improved outcomes*

The CDC has generated $2.3 million in benefits from reducing gambling related social harms. The benefits of reduced gambling apply to all gambling activity, not just problem gambling activity. Most of the quantified benefits are attributable to Indigenous CDC participants.

The CDC also has generated a small net benefit for children's wellbeing. These benefits are associated with improved child health and nutrition. The net benefits to children are small because of worsening outcomes for school attendance and safety.

Summary of benefits from the second impact evaluation

The second impact evaluation found clear evidence of improvements in outcomes in a limited set of areas. Categorising these outcomes into the six benefit domains in our economic framework, the second impact evaluation found:

- Economic: **no discernible change** in employment outcomes, or any other economic benefit categories (such as welfare dependence)

- Health and wellbeing: **no evidence of an overall improvement**, with a larger proportion experiencing negative quality of life impacts than those experiencing an improvement

- Social and community: **positive** findings, with evidence of a short term improvement in family and social life

- Education and child wellbeing: **positive, albeit mixed**, findings

- Safety, crime and family violence: **mixed** evidence, with survey evidence showing a small improvement and statistical evidence showing a small deterioration, and without enough evidence to attribute the change to the CDC alone

- Housing and related services: **some evidence of worsening outcomes**, with twice as many participants having a change for the worse than those having a change for the better, but ultimately, little effect overall, and

- Individual stability: **negative impacts**, discussed further in the cost chapter of this report.

Based on the changes in outcomes measured by the second impact evaluation where there was a clear conclusion about the direction of the impacts, we estimate a set of benefits associated with social and community benefits from reduced gambling, and child wellbeing benefits and disbenefits (chart 5.1).

5.1 Total benefits associated with improved outcomes

Cost/benefit item	Undiscounted	Discounted
	$m	$m, NPV [a]
Social and community benefits of reduced gambling in the short term	2.8	2.3
Child wellbeing – health	0.6	0.5
Child wellbeing – food	0.1	0.1
Child wellbeing – safety	-0.4	-0.3
Child wellbeing – education	-0.2	-0.1
Total benefits associated with improved outcomes	**2.9**	**2.5**

[a] *The net present value is calculated by taking the present value of all cash inflows over the analysis period*

Data source: CIE.

Social and community benefits from less problem gambling

Gambling represents a significant social issue for each of the CDC program regions. Gambling can be an addiction, and it is often correlated with alcohol and drug-related social issues. For instance, some people may be drawn to gambling to fund alcohol and drug use.

The total level of gambling across the program regions is difficult to measure. This is because there are a wide range of modes, and there is limited data collected and reported on each. For instance, gambling could take place in legal and illegal card games, poker machines within a TAB, and online.

However, from the CDC baseline data collected, poker machines have been identified as a key mode of gambling within CDC communities.

Within the second impact evaluation, it was identified that the proportion of CDC participants who gamble differs by program site.[31] For instance the Ceduna region had the highest incidence, with 22 per cent of participants reporting that they gambled, followed by the Goldfields and East Kimberley regions (11 and 6 per cent respectively).

The CDC directly aims to reduce gambling across all the program sites by limiting the amount of cash available to participants and prohibiting the use of the Card towards gambling activities.

We note that there were some workarounds that have been applied by some participants to continue gambling activities, such as utilisation of the cash component of the Card, the utilisation of other income sources and seeking cash through other means. However, the extent to which these workarounds have taken place is undetermined.

[31] Mavromaras K., Moskos M., Mahuteau S., Isherwood L., 2021, *Evaluation of the cashless debit card in Ceduna, East Kimberley and the Goldfields region: Consolidated report*, Future of employment and skill research centre, The University of Adelaide

Evidence from the second impact evaluation

The second impact evaluation found that the frequency of gambling for CDC participants fell 3.5 percentage points since being on the CDC.[32]

For all program regions in scope, 21 per cent of participants reported that the CDC has helped reduce gambling problems. This benefit applied to the participant, their family, their friends, and the wider community ('where you live'). The results from the second impact evaluation's survey are summarised below in table 5.2.

5.2 Proportion for whom the CDC helped reduced gambling problems

	All sites	East Kimberley	Goldfields Indigenous	Goldfields Non-Indigenous	Ceduna and surrounds
	Per cent	Per cent	Per cent	Per cent	Per cent
Full sample					
Has CDC made a positive difference	21.0	22.9	27.3	12.2	23.8
Of those that reported a positive difference, who experienced the positive difference:					
Participant	34.8	53.3	28.0	20.7	32.4
Participant's family	43.0	56.5	44.4	10.3	50.8
Participant's friends	38.4	57.5	38.7	10.5	34.8
Where the participant lives	59.7	63.4	52.6	75.8	52.0

Source: Mavromaras K., Moskos M., Mahuteau S., Isherwood L., 2021, Evaluation of the cashless debit card in Ceduna, East Kimberley and the Goldfields region: Consolidated report, Future of employment and skill research centre, The University of Adelaide

When considering how to apply these results within the CBA, there are a few important distributional impacts that are visible, for instance:

- **Not all participants experience a benefit** — Although some participants have reported a positive difference, 79.1 per cent of the sample reported 'no difference' or 'Don't know/missing'. It is important that benefits are attributed only to those populations that reported a positive impact, and not the whole CDC population.

- **Indigenous participants appear to benefit the most** — Indigenous participants, along with their family and friends appear to benefit more than non-Indigenous people. When comparing the survey results across Goldfields Indigenous and Goldfields non-Indigenous responses, Indigenous participants report significantly higher 'positive differences', apart from responses to the wider community (i.e. 'where the participant lives'). For instance, across the whole sample, more than double the proportion of Indigenous responses reported a positive difference (27.3 per cent compared to 12.2 per cent). However, without the Indigenous survey data for the other regions, this cannot be confirmed with certainty.

- **Benefits are consistent across regions** — When comparing the responses for the full sample, there is not a substantial difference in responses across the regions, except for

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[32] Mavromaras K., Moskos M., Mahuteau S., Isherwood L., 2021, *Evaluation of the cashless debit card in Ceduna, East Kimberley and the Goldfields region: Consolidated report*, Future of employment and skill research centre, The University of Adelaide

the more detailed breakdown of the Goldfields Indigenous and Goldfields non-Indigenous responses. 21.0 of all responses reported a positive difference, compared to 22.9 per cent in East Kimberley and 23.8 per cent in Ceduna and surrounds.

- **Lack of data on the value of gambling activities** — Although the evaluation sought information on the frequency of gambling, it did not seek information on the amount spent on gambling. For instance, the evaluation found that more than 80 per cent of participants reported gambling once a month or less, and less than 20 per cent report gambling more regularly (e.g. weekly or daily/almost daily). However, it is unknown if the total value of gambling was different between these two groups.

Overall, the evaluation reported that the CDC has been helping to reduce gambling related harms, especially in the context of family and broader social life. Qualitative evidence also suggest that the trial has helped to redirect funds away from problem gambling towards essential spending such as food. However, the impact from the CDC was reported to be small, and applying to a small part of the CDC population.

Estimating the social cost from gambling

There are many previous studies considering the personal and social impacts of gambling.[33] [34] [35] [36] [37] [38] [39] Much of these relate to the costs to employment and productivity, individual emotional health, family and relationships, crime, and financial costs. However, many of these studies focus on the impact of problem gamblers, without consideration for lesser degrees of gambling activity.

[33] Walker, D., 2014, 'The Social Costs of Gambling', *International Centre for Youth Gambling Problems and High-Risk Behaviours*, Spring 2014 14(1), available at: http://youthgambling.mcgill.ca/en/PDF/Newsletter/Spring2014.pdf

[34] Mavromaras K., Moskos M., Mahuteau S., Isherwood L., 2021, *Evaluation of the cashless debit card in Ceduna, East Kimberley and the Goldfields region: Consolidated report*, Future of employment and skill research centre, The University of Adelaide

[35] Grinols, E., 2011, 'The Hidden Social Costs of Gambling', *The Gambling Culture*, available at: https://www.baylor.edu/content/services/document.php/144584.pdf

[36] Victorian Responsible Gambling Foundation, 2017, *The social cost of gambling to Victoria: Research report,* available at: https://responsiblegambling.vic.gov.au/documents/121/research-social-cost-of-gambling.pdf

[37] Livingstone, C., Francis, L. and Johnson, M., 2017, *Community benefits claimed by licensed clubs operating poker machines in the ACT*, available at: https://fare.org.au/wp-content/uploads/Community-benefits-claimed-by-licensed-clubs-operating-poker-machines-in-the-ACT-FINAL.pdf

[38] The SA Centre for Economic Studies, 2009, *Social Impacts of Gambling: A Comparative Study*, available at: https://www.cbs.sa.gov.au/sites/default/files/resource-files/social_impacts_of_gambling_-_a_comparative_study_-_april_2009.pdf?timestamp=1607644800065

[39] The Select Committee on Gambling 1999, *The Social and Economic Impacts of Gambling in the ACT*, Legislative Assembly for the Australian Capital Territory, available at: https://www.parliament.act.gov.au/__data/assets/pdf_file/0008/381878/3finalgamblingreport.pdf

The second impact evaluation found that of the CDC participants that gamble, more than 80 per cent gamble once a month or less, and less than 20 per cent report gambling more regularly (e.g. weekly or daily/almost daily). Although the total value of gambling activities was not captured, we can assume that those that gamble less frequently may still experience harms, but these harms might be less severe than those that gamble more frequently.

This assumption is consistent with previous reports, such as the Productivity Commission's Inquiry into Gambling (2010). This inquiry found that not all people who experience harms from gambling are considered to be problematic gamblers, with strong evidence that gambling can have adverse health, emotional and financial impacts on many more people than those categorised as 'problem gamblers'.[40]

Studies such as 'the social cost of gambling to Victoria' (2017) have estimated the social cost of gambling by low-risk, medium-risk and problem gamblers, based on the Problem Gambling Severity Index (PGSI).[41] This index is a standardised measure of at risk behaviour in problem gambling. People who 'sometimes' experience two of these nine questions are considered low-risk gamblers, with the risk increasing depending on the frequency of impacts experienced.

A summary of the estimated social costs identified in this study are included in the table below (values in 2014/15 dollars). The costs in this table represent the annual cost incurred in 2014. Because of this, some of the costs are the average annual costs, and some are a one-off cost. For example, the cost of fatality by suicide was calculated by dividing the average years of life lost to the average total cost of fatality by suicide, while the cost from divorce was estimated to be the average amount of financial assistance awarded to victims of crime in 2014/15.

5.3 Costs from gambling addiction (2014/15 values)

Cost	Description	Stakeholder impacted	Low risk	Moderate risk	Problem gamblers
			$	$	$
Reduced employment productivity and Income lost from missed work	Cost to the individual include loss of income, job search activities. Costs to businesses included lost productivity and other employer costs (such as retraining workers or searching for replacement workers)	Business and the individual	165	1 591	9 549

40 Productivity Commission, 2010, *Gambling*, Australia Government, available at https://www.pc.gov.au/inquiries/completed/gambling-2010/report

41 Victorian Responsible Gambling Foundation, 2017, *The social cost of gambling to Victoria: Research report*, available at: https://responsiblegambling.vic.gov.au/documents/121/research-social-cost-of-gambling.pdf

Cost	Description	Stakeholder impacted	Low risk	Moderate risk	Problem gamblers
			$	$	$
financial problems, bad debts and bankruptcies	Bankruptcy imposes costs on society in the form of legal and other resources expended. There are also significant opportunity costs for money that would have been better spent on other products and activities	Individual	807	2 751	13 536
Committing crimes to get money for gambling	The additional cost of crime can relate to police resources, apprehension, adjudication, and incarceration expenditure.	Governments	138	509	2 371
Strain on family and relationships	Include divorce, separation, child abuse and neglect. Domestic violence is also related to gambling disorders	Families	579	4 169	23 640
Strain on family and relationships		Individual	181	323	2 054
Mental and physical health issues related to stress	has been reported to include stress related sickness, cardiovascular disorders, anxiety, depression, and cognitive disorders	Individual	1 581	3 700	6 529
increased suicide attempts	ending the life of despondent gamblers.	Individual	502	190	1 959
increased suicide attempts	imposes costs on families and the wider society as well as	Families	748	283	2 916
Costs of Health and Human Services Support Services		Governments	1 621	2 244	5 190
Total costs			**6 322**	**15 761**	**67 745**

Source: Victorian Responsible Gambling Foundation, 2017, *The social cost of gambling to Victoria: Research report*, see
https://responsiblegambling.vic.gov.au/documents/121/research-social-cost-of-gambling.pdf

Not all of these impacts will be relevant or as severe for the CDC population. For example, given the CDC population is already receiving employment services and income support, the cost to the individual from loss of income, job search activities, lost productivity and other employer costs are already included in the baseline, and not directly related to gambling activities. For this reason, the costs associated with reduced employment productivity and income lost from missed work are not included within this analysis.

It is important to note that there are other personal and social issues that can also contribute to these negative personal and social impacts, such as addiction to drugs or alcohol, and mental health conditions. Attributing the full cost to an individual's gambling activities is often difficult. For example, many of the negative social impacts

listed above could also be linked to these comorbidities, attempting to proportion the cost attributed to the gambling and other drives costs is difficult.

Benefits related to reduced gambling because of CDC

The CDC is estimated to have created **$2.3 million in benefits** (in present value terms) associated with reduced gambling, between 2015/16 and 2019/20, most of which accrue to participants in the Bundaberg and Hervey Bay program site, based on assumptions set out in table 5.4.

5.4 Inputs to estimation of gambling benefits

Modelling input	Value	Source
CDC population that gambles	Ceduna - 22 per cent Goldfields - 11 per cent East Kimberley - 6 per cent Bundaberg and Hervey – 13 per cent (average of other locations)[a]	Mavromaras K., Moskos M., Mahuteau S., Isherwood L. 2021 'Evaluation of the cashless debit card in Ceduna, East Kimberley and the Goldfields region: Consolidated report'
Assumed distribution across low risk, moderate risk, and problem gamblers	Low risk - 80 per cent Moderate risk - 10 per cent Problem gamblers - 10 per cent	Mavromaras K., Moskos M., Mahuteau S., Isherwood L. 2021 'Evaluation of the cashless debit card in Ceduna, East Kimberley and the Goldfields region: Consolidated report' Drawing from the findings: ■ 80 per cent of participants gamble monthly or less, and ■ 20 percent weekly or daily/almost daily – evenly split between moderate risk and problem gamblers
Reduction in harms from reduced gambling	Associated costs relating to the following cost categories: ■ Committing crimes to get money for gambling ■ Strain on family and relationships ■ Mental and physical health issues related to stress ■ increased suicide attempts ■ Costs of Health and Human Services Support Services	Victorian Responsible Gambling Foundation 2017 'The social cost of gambling to Victoria: Research report' (Values inflated to 2021-22 values)
Participants that have benefited from CDC	The net proportion of people who experience a "positive difference". Ceduna - 24 per cent Goldfields - 20 per cent East Kimberley - 23 per cent Bundaberg and Hervey – 21 per cent (average across all regions)[a]	Mavromaras K., Moskos M., Mahuteau S., Isherwood L. 2021 'Evaluation of the cashless debit card in Ceduna, East Kimberley and the Goldfields region: Consolidated report'

Modelling input	Value	Source
Change in benefit value	Of those that reported a positive difference, the stakeholder that benefits will move to a lower risk category. For example, a participant with moderate risk would move to low risk.

Ceduna - 32 per cent for participant, 51% for families

Goldfields - 24 per cent for participant, 27% for families

East Kimberley - 57 per cent for participant, 51% for families

Bundaberg and Hervey – 35 per cent for participant, 43% for families (average across all regions)[a] | Mavromaras K., Moskos M., Mahuteau S., Isherwood L. 2021 'Evaluation of the cashless debit card in Ceduna, East Kimberley and the Goldfields region: Consolidated report'

This assumption is based off the proportion of participants and family member who benefited from this evaluation. |

[a] Without survey results for Bundaberg and Hervey, the average of the other three program sites has been applied.

Source: CIE and other sources as noted.

5.5   Benefits from a reduction in problem gambling
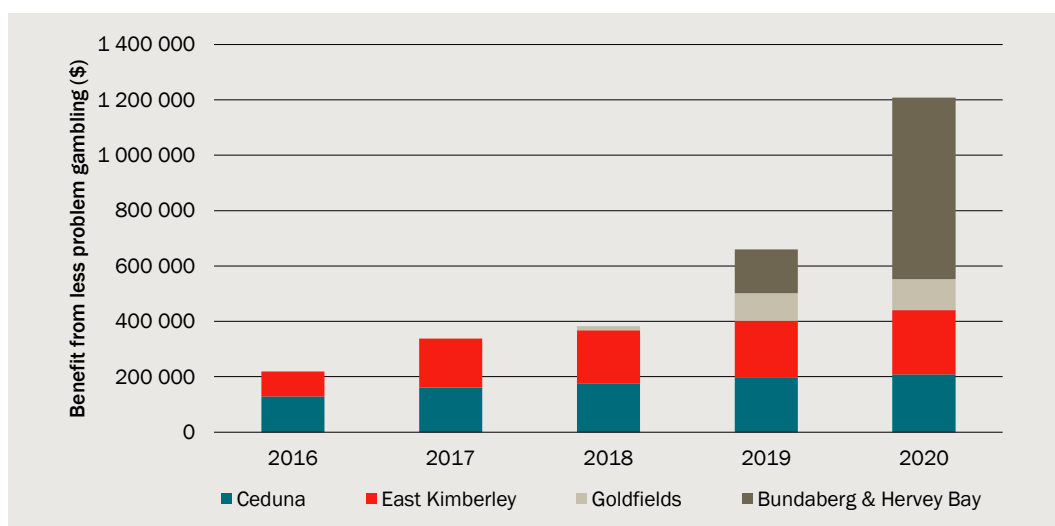
Note: Benefits are presented in undiscounted terms.
Data source: CIE.

When considering benefit values by stakeholder group, both participants and families benefit by the same proportion (chart 5.6). Governments also benefit through a reduction in Support Services.

5.6   Gambling benefits by stakeholder

Government 18%, Participants 41%, Families 41%

Legend: Participants, Families, Government
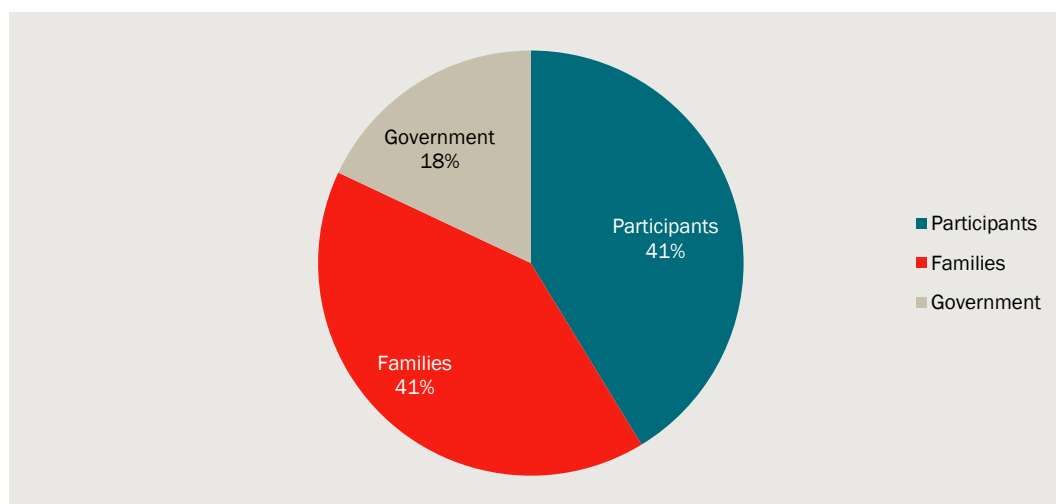
Data source: CIE.

Education and child wellbeing benefits

One of the objectives of the CDC is to encourage socially responsible behaviour.[42] An important component of this objective relates to the improvement of the welfare of participants' children and family members.

There is a strong argument for supporting and investing in child welfare and family wellbeing. One recent study estimated that the life-long economic cost of abuse and violence against children and young people cost a total of $11.2 billion.[43] This included costs directly related to abuse and assaults against children and young people, including life-long financial impacts on productivity, premature mortality, quality of life, burden of disease, health services, justice system, child protection services, education, and housing and homelessness.

Some of the expected benefits from improved child welfare and wellbeing include improved enhanced human capital productivity and participation, greater social

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[42] Australian Government, 2021, *Guides to Social Policy Law: Social Security Guide*, Version 1.282, available at: https://guides.dss.gov.au/guide-social-security-law/8/7/1/20

[43] Deloitte Access Economics, 2019, *The economic cost of violence against children and young people*, prepared for the Office of the Advocate for Children and Youth People, available at: https://www2.deloitte.com/au/en/pages/economics/articles/economic-cost-violence-against-children-young-people.html

inclusion, improvements in health outcomes, and reduced crime.[44] [45] [46] There is also potential for wider benefits beyond the individual, family or community to society more broadly.

Within the baseline data collected for Bundaberg and Hervey Bay and Goldfields regions, a wide range of concerns regarding the welfare of participants' children and family members were raised within the regions. Many of these concerns were consistent across the two program locations, as summarised in table 5.7.

5.7   Summary of baseline data regarding child wellbeing

Negative experience	Bundaberg and Hervey Bay	Goldfields
▪ Concern of the impact from alcohol and drug misuse and gambling on children's wellbeing	✓	✓
▪ AOD misuse linked to family violence and lack of adequate food, clothes and shelter	✓	✓
▪ Feelings of safety were negatively impacted	✓	
▪ Lack of appropriate supervision resulting in unsafe environments	✓	✓
▪ Grandparents needing to take on care responsibilities	✓	✓

Source: Mavromaras K., Moskos M., Mahuteau S., Isherwood L. 2019 Cashless Debit Card Baseline Data Collection in the Bundaberg and Hervey Bay Region: Qualitative Findings

Unfortunately baseline data collection was not undertaken in Ceduna and East Kimberley. However, many of these impacts were discussed in the first CDC impact evaluation, indicating that it is likely these concerns were also apparent in these locations.

Evidence from previous evaluations

The quantitative evidence supporting an impact to child wellbeing because of CDC is mixed. For instance:

▪ The first impact evaluation found that of the participants with children, 40 per cent were better able to look after their children post implementation, and 39 per cent were more involved with their children's homework. However, 24 per cent reported that they were worse off, as they could not buy goods for their children with cash, opposed to 17 per cent that felt better off, as there were better able to meet basic needs.

44 Council of Australian Governments, 2009, *Investing in the Early Years – A National Early Childhood Development Strategy*, Commonwealth of Australia, available at: https://www.startingblocks.gov.au/media/1104/national_ecd_strategy.pdf

45 Kilburn, M. and Karoly, L., 2008, *The Economics of Early Childhood Policy: What the Dismal Science Has to Say About Investing in Children*, available at: http://www.rand.org/pubs/occasional_papers/OP227/

46 Heckman, J., 2006, *The Economics of Investing in Early Childhood*, in The Niftey Conference, University of New South Wales, Sydney.

■ The second impact evaluation found that most participants experienced no major change regarding their children's welfare. However, across Ceduna, East Kimberley and the Goldfields, 17.8 per cent of survey respondents reported an overall positive change, compared to 22.5 per cent who reported an overall negative change.

The second impact evaluation asked CDC participants if change had been experienced since the start of the CDC across several domains—children's health, the amount of food children had access to, children's safety, school attendance, children's happiness, and children's participation in cultural and social activities. Program participants were asked to respond as either worse, same, or better. Table 5.8 outlines the net result from this survey, by subtracting the percentage of worse responses from the percentage of better responses.

However, there are limitations to this approach. For instance, participants were simply asked if they perceived the CDC to make each measure worse, the same, or better. No data was collected on the severity of the change. We have assumed that the distribution of the impact or quantum of change within each of these responses to be the same. However, this may not be true if the benefit generated are more significant than the negative impacts felt by others, although this cannot be determined.

5.8   Net impact on child wellbeing

Outcome measure	All evaluation sites	Ceduna	Goldfields indigenous	Goldfields non-indigenous	Goldfields total	East Kimberley
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Overall health	1.7	6.6	8.3	-5.7	1.4	-0.6
Access to healthy food	2.6	9.5	7.6	-7.3	0.3	3.1
Safety	-5.2	4.5	3.9	-23.2	-9.5	-2.1
School attendance	-3.3	8.3	5.3	-12.2	-3.3	-9.6
Happiness	-7.1	7.7	-2.7	-18.3	-10.2	-9.7
Participation in cultural activities	-10.7	0.3	-3.3	-18.1	-10.4	-17.7
Participation in social activities	-10.6	-4.8	-3.7	-18.3	-10.7	-13.7

Source: Mavromaras K., Moskos M., Mahuteau S., Isherwood L. 2019 *Cashless Debit Card Baseline Data Collection in the Bundaberg and Hervey Bay Region: Qualitative Findings*, and Mavromaras K., Moskos M., Mahuteau S., Isherwood L., 2021, *Evaluation of the Cashless Debit Card in Ceduna, East Kimberley and the Goldfields region – Quantitative Supplementary Report*.

The impact across the seven domains are mixed. There is an overall positive impact (albeit small) for overall health and access to healthy food, however, the remaining domains have had a net negative impact.

The qualitative evidence from the evaluation describes a much more positive response to the CDC. For instance, the most suggested positive impact of the CDC was that it increased the amount of money left over for food and clothing and an improved availability of money to do family activities on the weekends. However, other responses suggested that restrictions to cashflows were a negative aspect, with families needing to find the lowest cost avenue for family spending.

Given the difference in the second impact evaluation's findings regarding child welfare, it is useful to consider the findings from the first impact evaluation. Some of the key findings include:

- Many stakeholders reported that the CDC had a positive impact on parenting and family wellbeing, particularly in relation to parental responsibility, school attendance, and parent engagement with school and childcare.

- Merchant reports and observations from stakeholders and community leaders found an increase in purchases of baby items, food, clothing, shoes, toys and other goods for children.

- In addition to an increase school attendance, other positive education impacts included more children arriving to school with packed lunches, and an increase in the number of families paying for school excursions and other school-related costs.

- Family members reported there being a decreased reliance on grandparents to financially provide and care for their grandchildren.

This feedback from stakeholders was generally supported through the quantitative survey undertaken. For instance, 40 per cent of participants who had caring responsibilities reported that they had been better able to care for their children since participating in the CDC program. However, when asked about the impact of the program on their child/children's lives overall, the results were mixed.

When considering how to apply these results within the CBA, there are a few important impacts that will need to be considered, for instance:

- **The evidence is mixed, with both positive and negative impacts** — Given there are differences in the reported outcomes, from both qualitative and quantitative sources, the CBA will need to consider the net impact across the domains. The lack of consistent evidence highlights that the CDC appears to have improved the welfare of some children, but not for all children.

- **Indigenous participants are likely to benefit the most** — The Goldfields survey results were the only provide results spilt by Indigenous and non-Indigenous participants. The results highlight that the experience of Indigenous participants is significantly more positive than non-Indigenous participants across several of the outcomes. However further analysis of the second impact evaluation survey results would be needed to confirm this.

- **The quantum of change is not estimated** — Although the quantitative results highlight the net improvement of deterioration for outcome domains, i.e. the number of participants that reported a net increase or decrease, data on the degree to which an outcome has been changed was not requested. For example, across all evaluation regions, 3.3 per cent of participants reported that school attendance has gone down. However, this does not indicate if overall attendance has gone down 1 day or 5 days, as an example.

Estimating the social cost of child welfare

Given there are a range of outcomes discussed above under the umbrella of 'child welfare', the CBA will consider each of these in turn to calculate the net impact.

Drawing from the baseline data and the qualitative impacts heard from the evaluation survey, costs have been extracted for when a child's basic needs are not met.

Table 5.9 summarises the estimated value and approach for each impact.

5.9 Summary of quantified child wellbeing benefits

Impact domain	Economic impact of neglect	Source
Overall health	AIHW has estimated that, 2.2% of the disease burden in Australia was due to child abuse and neglect. This estimate attributes the mental health and injury outcomes experienced at all ages attributable to exposure during childhood. The study found that child abuse and neglect were causally linked to anxiety disorders, depressive disorders and suicide and self-inflicted injuries. The economic cost of this health burden has been estimated as the baseline cost from negative health impacts from childhood neglect within each region.	AIHW, 2015, *Australian Burden of Disease Study: Impact and causes of illness and death in Australia*, Risk factor estimates for Australia: Supplementary tables, Table S3
Access to healthy Food	Childhood abuse has lifelong impacts, including contributing towards obesity in adulthood. This link is driven by a range of factors, such as the development of low self-esteem, food insecurity, disturbed sleep patterns and elevated response to stress. The cost from a lack of healthy food has been estimated through the health cost of obesity.	Hemmingsson, E. Johansson, and K., Reynisdottir, S., 2014, 'Effects of childhood abuse on adult obesity: a systematic review and meta-analysis', *Obesity Review*
Safety	To estimate the costs of household safety issues, we have drawn from previous studies that have estimated the cost of childhood neglect on family Support Services. This approach avoids double counting across other quantified impacts.	Deloitte Access Economics, 2019, *The economic cost of violence against children and young people*
School attendance	The benefits from education include personal returns from future labour productivity, increased participation in the workforce, and improved health outcomes. However, these benefits are highly depended on high attendance rates in school years. There are various negative impacts from low school attendance, including: ▪ increased social isolation, including alienation and lack of engagement with the school community and peers, leading to emotional and behavioural difficulties ▪ an increased likelihood of drop-out. Students that are chronically absent between grades 8 to 12 are seven times more likely to drop out of school, and ▪ the relationship between absence and achievement is consistently negative and declines in achievement are evident with any level of absence. The estimated benefit from an additional day of education draws from a 2018 study undertaken by the World Bank that found that each additional year of education produces a private return between 8.2 per cent to 9.3 per cent, given the income level of the country. Considering that the Centre for Independent Studies have compared remote and very remote Aboriginal communities to "third world countries", we have adopted the World Bank's middle rate of return, being 9.2 per cent uplift for each additional year of education.	Price, J., 2020, *Worlds apart: Remote Indigenous disadvantage in the context of wider Australia*, The Centre for Independent Studies, Policy paper: No 34

Impact domain	Economic impact of neglect	Source
	If this rate of return was applied to the full time adult average ordinary time annual earnings, there is an estimated $44.06 per annum in additional earnings created from each school day attended once the student commences in employment. Over an individual's career, this is estimated to be $425 in personal benefits created for each additional day of school attended (present value).	
Happiness	Unable to be quantified	
Participation in cultural activities	Unable to be quantified	
Participation in social activities	Unable to be quantified	

Source: CIE.

It is important to note that these costs are considered relevant to only a small subset of the child population. Not all children of CDC participants are anticipated to experience these cost.

To estimate the proportion of children that may experience these harms, we have drawn from a study of harms attributable to child maltreatment in Australia.[47] This study identified the prevalence of a range of childhood harms, and estimated that 2.4 per cent of children suffer from 'neglect'. Because of the strong connection between neglect in this study and the impacts outlined above, we have applied this prevalence rate to the CDC population to estimate the number of children experiencing similar harms. This is a conservative assumption, since the CDC sites encounter more social harms than the average across Australia.

Quantified benefits of improved child welfare and family wellbeing

While evidence is mixed, on balance we conclude that of the benefits that can be quantified, there is a small overall net benefit.

- Health impacts — Ceduna, East-Kimberley, and Bundaberg and Hervey Bay all experienced a positive impact on overall health. Ceduna saw the greatest benefit per child (estimated to be over $7 916 per impacted child), however, because of the relatively small population in Ceduna, this region achieved the smallest total benefit value. East-Kimberley was the only region to experience a decline in health impacts. The decline experienced in East-Kimberley was not large enough to completely offset the positive health impacts from the other regions.

- Improved access to healthy food — Ceduna had a significantly higher per person benefit, compared to the other three program sites, being approximately four times the impact. Although positive, the impact to Goldfields and Bundaberg and Hervey Bay regions was low, with benefits estimated to be between $340 and $415 per impacted

47 Moore S. Scott, J., Ferrari, A., Mills, R., Dunne, M., Erskine, H., Devries, M., Degenhardt, L., Vox, T., Whiteford, H., McCarthy, M. and Norman, R., 2015, 'Burden attributable to child maltreatment in Australia', *Child Abuse and Neglect*, available at: https://pubmed.ncbi.nlm.nih.gov/26056058/

child respectively. East-Kimberley was the only region to have a decline in access to healthy food, however this negative impact was estimated to be low (approximately $147 per impacted child)

- Safety impacts — This analysis has estimated safety impacts as the cost to provide family Support Services for families where a child is suffering from neglect. Without a clear definition of what is a safety impact within the second evaluation, this approach was seen to be most appropriate. Based on the evaluation findings, all regions reported a negative impact to child safety (i.e. a decrease in child safety). The estimated per person cost ranges between $483 in East-Kimberley to nearly $2 200 in the Goldfields region.

- School Attendance — The impact on school attendance was inconsistent across the regions, with Ceduna experiencing a significant positive impact (positive 8.3 per cent), East-Kimberley experiencing a significant negative impact (negative 9.6%), and Goldfields and Bundaberg and Hervey Bay having smaller negative impacts. Overall, the impact on school attendance was negative.

Overall, the two positive impacts (heath impacts and improved access to healthy food) were sufficient to offset the negative impacts (net reductions in safety and school attendance). This is shown in chart 5.10 below.

5.10 Total child welfare and family benefits across the full program duration
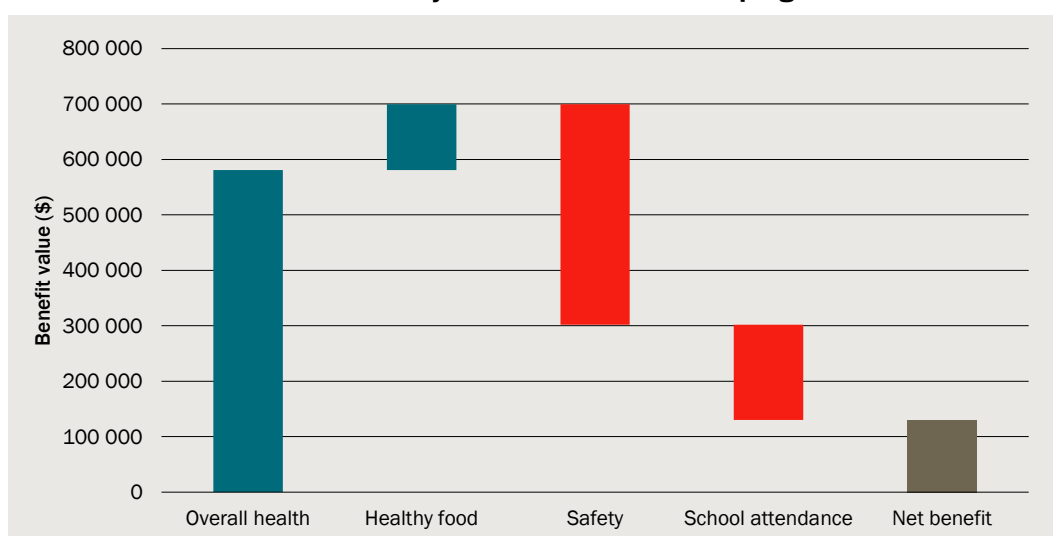
Data source: CIE.

Although there is a net benefit, the value of this benefit is small. The average net benefit for each impacted child between 2015/16 to 2019/20 is approximately $447. This includes a mix of one-off impacts/benefits (such as family Support Services) and lifelong impacts/benefits (such as improved health, obesity, and productivity uplift from school attendance).

The second impact evaluation also considered various other impacts that cannot be quantified, such as, happiness, participation in cultural activities, and participation in social activities. The reported change against these impacts were mostly (and significantly) negative across the program regions. It is unclear if the estimated net child

welfare benefit of $447 per child would be sufficient to offset these other negative qualitative impacts.

To calculate these impacts, the following general assumptions were used:

- There are 2.32 children per indigenous participant, and 1.66 children per non-indigenous participant.[48]
- The prevalence of childhood neglect is 2.4 per cent.[49]
- The value of a statistical life year is $217 000.[50]

5.11 Comments from stakeholder consultations – students receiving breakfast

The consultation process identified examples where the CDC made a considerable impact to individual families.

For example, in two separate consultations, stakeholders mentioned that there has been a noticeable increase in children having eaten breakfast before school. One stakeholder stated that **"the best benefit from the CDC is that kids are turning up to school having had breakfast and with a packed lunch".**

This stakeholder reflected that the community was aware of some struggling families in the community, and that the CDC has made a substantial impact on their ability to provide food for their children.

This highlights that there are specific examples of where the CDC is making a significant impact for families.

Unfortunately, this benefit cannot be incorporated because there is no systemic evidence indicating how many families experienced this benefit.

Economic benefits associated with improved employment outcomes

The second impact evaluation found 'no discernible change in employment outcomes since the introduction of the CDC … within all three trial sites'.[51]

One modelling approach not explored by the second impact evaluation is survival analysis, which is a statistical modelling type used to analyse the expected duration until

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48 Australian Bureau of Statistics, Births: Australia, Australian Government, available at: https://www.abs.gov.au/statistics/people/population/births-australia/latest-release

49 Moore S. Scott, J., Ferrari, A., Mills, R., Dunne, M., Erskine, H., Devries, M., Degenhardt, L., Vox, T., Whiteford, H., McCarthy, M. and Norman, R., 2015, 'Burden attributable to child maltreatment in Australia', *Child Abuse and Neglect*, available at: https://pubmed.ncbi.nlm.nih.gov/26056058/

50 Department of the Prime Minister and Cabinet, 2021, *Best Practice Regulation Guidance Note: Value of Statistical Life*, March 2021, available at: https://pmc.gov.au/resource-centre/regulation/best-practice-regulation-guidance-note-value-statistical-life

51 Mavromaras K., Moskos M., Mahuteau S., Isherwood L. 2021 '*Evaluation of the cashless debit card in Ceduna, East Kimberley and the Goldfields region: Consolidated report*', Future of employment and skill research centre, The University of Adelaide

an event occurs. In this context, survival analysis of unemployment spells can provide evidence as to whether CDC participants find employment more quickly once they are on the CDC. The implication of welfare recipients in the program sites finding employment more quickly would be to reduce welfare costs to government, improve wellbeing of individuals, and improve the economic welfare of the sites as a whole.

This section examines the impact of poor employment outcomes for communities, whether survival analysis provides evidence of superior employment outcomes for CDC participants compared to non-participants, and what value such an improvement would have.

Impacts of poor employment outcomes for a community

Low employment and labour force participation rates are a significant problem in the program sites.

These problems are especially acute for Indigenous Australians. According to the NSW Ombudsman, the Aboriginal unemployment rate is approximately three times greater than for the rest of the population.[52] When considering remote and very remote areas, the divide becomes greater. For instance, very remote areas, the unemployment rate for Indigenous people is 29 per cent, compared to 3 per cent for non-Indigenous people (nationally).[53]

The employment rate has been described as a key indicator of a stable community, providing income, fulfilment, and a sense of self-esteem.[54] Communities with high unemployment rates have been directly linked to a wide range of negative social outcomes, such as poor school attendance and higher crime rates.[55]

In a CBA, employment is generally considered a cost to the program, not in itself a benefit. This is because employment would represent a displacement of resources, rather than a net increase in employment. For example, this is the case when employing a person is at the expense of employing someone else (no additional job creation). However, employment benefits do exist if the labour resources employed by the project were previously unemployed or underemployed, or if the actual wage increased above the reservation wage.[56]

By supporting residents of the program sites into employment there is a benefit from:

- helping families to break the poverty cycle and address intergenerational unemployment. In 2018, the Inquiry into Intergenerational Welfare Dependence

[52] NSW Ombudsman, 2011, *Addressing Aboriginal disadvantage: the need to do things differently*, October, p.3.

[53] Price, J., 2020, '*Worlds apart: Remote Indigenous disadvantage in the context of wider Australia*', The Centre for Independent Studies, Policy paper: No 34

[54] Price, J., 2020, '*Worlds apart: Remote Indigenous disadvantage in the context of wider Australia*', The Centre for Independent Studies, Policy paper: No 34

[55] Price, J., 2020, '*Worlds apart: Remote Indigenous disadvantage in the context of wider Australia*', The Centre for Independent Studies, Policy paper: No 34

[56] The difference between a worker's actual wages and what they would be willing to accept.

reported on welfare dependence of families and children. The Inquiry identified various barriers to employment. These factors include location, transportation, appropriate and flexible employment opportunities, support to maintain employment, and parenting responsibilities.[57] These factors are compounded in regional and remote areas. In addition to this, Aboriginal people were identified as a group at greater risk of entrenched disadvantage,[58] and

- overcoming barriers for people that are long term unemployed. After a long period of unemployment, people face additional barriers to employment from loss of skills, loss of confidence, and resistance from employers.[59] Because of these impacts, on average, people who become long term unemployed are less than half as likely to gain employment within a month as someone who has been short-term unemployed.[60] This can have significant impacts to individuals and the wider community. For instance, being unemployed for more than six months is associated with lower wellbeing, poorer health, having children with worse academic performance, and communities have a higher rates of crime and violence.[61]

Impacts of the CDC on employment outcomes

There are a range of studies applying survival analysis approaches to analysis of unemployment spells, with the most relevant for this analysis being RBA (2020).[62] Hazard ratios for a range of characteristics were estimated in a Cox regression, which is statistical model that predicts the expected time of an event of interest based on a range of explanatory variables. In their modelling, the duration of employment spells was predicted on the basis of sex, age, country of birth, relationship in the household, social marital status, number of children, whether the person if looking for full-time or part-time work, and employment history.

[57] Parliament of the Commonwealth of Australia 2018 '*Living on the edge: Inquiry into Intergenerational Welfare Dependence*', House of Representatives Select Committee on Intergenerational Welfare Dependence

[58] Parliament of the Commonwealth of Australia 2018 '*Living on the edge: Inquiry into Intergenerational Welfare Dependence*', House of Representatives Select Committee on Intergenerational Welfare Dependence

[59] Parliament of the Commonwealth of Australia 2018 '*Living on the edge: Inquiry into Intergenerational Welfare Dependence*', House of Representatives Select Committee on Intergenerational Welfare Dependence

[60] Cassidy, N., Chan, I., Gao., A and Penrose, G., 2020, 'Long-term unemployment in Australia', *RBA Bulletin*, December 2020, available at: Reserve Bank of Australia https://www.rba.gov.au/publications/bulletin/2020/dec/long-term-unemployment-in-australia.html

[61] Nichols, A., Mitchell, J., Lindner, S., 2013, '*Consequences of Long-Term Unemployment*', Urban Institute

[62] Cassidy, N., Chan, I., Gao., A and Penrose, G., 2020, 'Long-term unemployment in Australia', *RBA Bulletin*, December 2020, available at: Reserve Bank of Australia https://www.rba.gov.au/publications/bulletin/2020/dec/long-term-unemployment-in-australia.html

We estimate a similar model using data from DOMINO for Newstart/JobSeeker recipients only. For this cohort of welfare recipients we observe:

- demographic characteristics such as age, sex and country of birth
- location (which we aggregate to the Statistical Area 3 level based on the Australian Bureau of Statistics region classification) at any period of time
- previous and future spells of receiving welfare, and
- the reason why a payment entitlement was suspended/cancelled, which we have categorised into reasons relating to obtaining employment and unrelated reasons.

We merge this data with Indue data about CDC participants, including the date that each participant opens their CDC account and the data of the last transaction.

Based on this data, we divide each welfare spell into segments defined by their CDC status (whether they are currently on the CDC) and their location (which changes over time for many participants). This provides a dataset of periods of time, with some periods of time ending in suspension or cancellation of the payment due to the recipient obtaining employment.

This forms the estimation dataset used to analyse the relative duration of unemployment spells for CDC recipients and non-recipients. For the purpose of this modelling, we include in the estimation dataset only spells of unemployment where the payment recipient is in the:

- Eyre Peninsula and South West SA3 (corresponds to Ceduna),
- Kimberley SA3,
- Goldfields SA3, or
- Wide Bay SA4 (corresponds to Bundaberg and Hervey Bay).

By comparing CDC participants to the wider SA3 and SA4 areas, we are ensuring that the counterfactual has the same labour market and employment conditions as the CDC population group. For some of the program sites, the SA3 or SA4 is closely aligned to the program location. In this case, the modelling is like a 'before and after' statistical approach, that compares the employment outcomes of the population before and after implementation of the CDC program.

We find insufficient evidence that CDC participants have shorter unemployment spells than non-participants, however the modelling cannot conclusively rule out that such differences do not exist. That is, there is no evidence of an improvement in employment prospects for the program sites collectively compared to surrounding areas after controlling for differences in demographic and other factors. There is some weak evidence for superior outcomes among CDC participants in East Kimberley but the difference in employment outcomes is not statistically significant (see Appendix B). This aligns with the finding from the second impact evaluation that East Kimberley had the highest alcohol consumption, and therefore may be most likely to have superior employment prospects as a result.

However, the model results are inconclusive because the relationship between likelihood of a welfare recipient remaining employed is not constant over time between CDC participants and non-participants (chart 5.12). The Kaplan-Meier curves estimate and

visualise survival functions. These curves show the share of Newstart/JobSeeker recipients in the vicinity of the program areas that are unemployed after the indicated number of days since they began receiving the payment.

The curves for CDC and non-CDC participants are close together, with the CDC curve mostly but not always above the non-CDC curve. This provides suggestive evidence that the CDC does not improve employment prospects, since a smaller share of Newstart recipients on the CDC (compared to non-participants) become employed after 1000, 2000 or 3000 days of receiving the payment.

5.12 Kaplan-Meier survival curves for CDC participants and non-participants
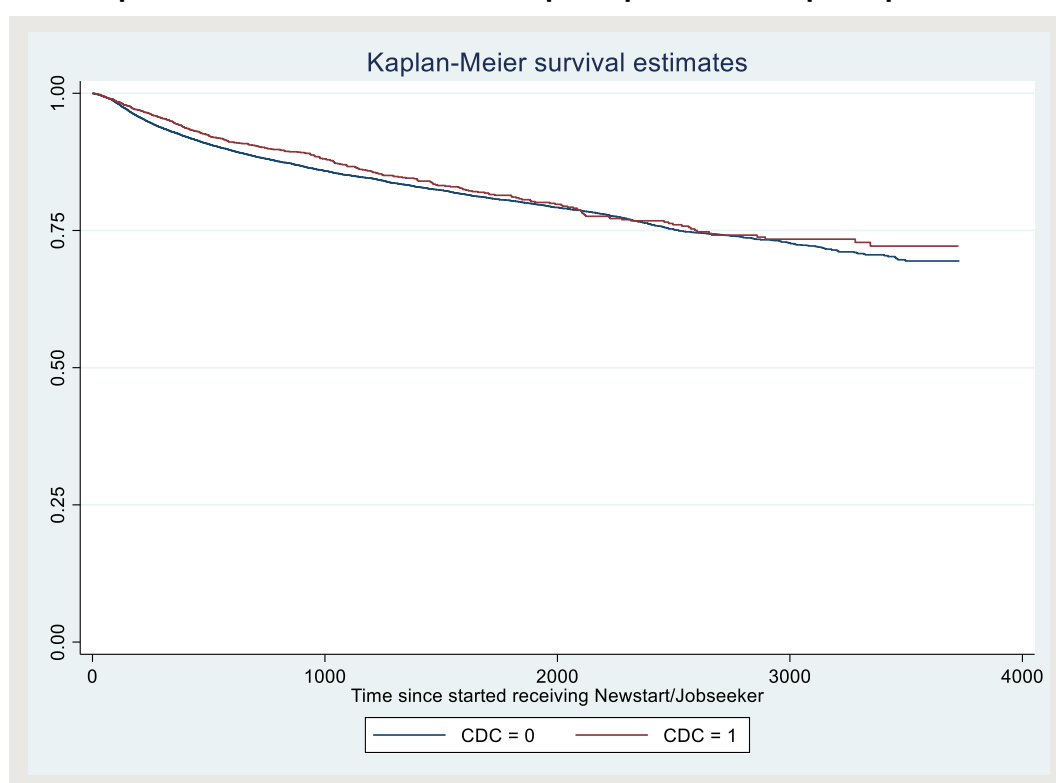
Note: Kaplan-Meier curves estimate and visualise the probability of an event (e.g. employment) occurring beyond a specified time. In this case, each curve measures the probability that an individual has not obtained employment since the time they first receive welfare payments. In this case, the proportion of Newstart/JobSeeker recipients continuing to receive welfare payment due to not obtaining employment declines as they have received payments for a longer period of time.

Data source: CIE.

However, these survival curves do not account for differences in characteristics such as age between the CDC and non-CDC cohorts. To control for these differences and test the statistical significance of any differences, we estimate a Cox proportional hazards regression, with the results of this modelling reported in Appendix B. The conclusion drawn from this statistical modelling is that there is no clear evidence of an impact of the CDC on employment prospects. This is consistent with the findings of the second impact evaluation.

> ### 5.13   Comments from stakeholder consultations – Motivating people to find employment
>
> One of the consequences of the Card reported by stakeholders is that it increases the motivation for welfare payment recipients to find employment and thereby not need to use the CDC.
>
> One stakeholder mentioned that the thought of commencing on the Card provided the motivation for some of their clients to increase job search activities. There had been instances where job seekers moved into employment just to avoid the Card.
>
> However, when analysing the data about when welfare payments stop because the recipient obtains employment, this does not appear to be a wide spread impact.

Value if employment outcomes were to improve

The above analysis found no evidence of an improvement in employment outcomes associated with or caused by the CDC program.

However, if the CDC program was to drive improved employment outcomes in the future, the value of these benefits would be significant.

As a financial proxy to estimate the value of this benefit we have applied the following logic:

- The economic benefit of an increase in the participation rate is the sum of consumer (employer) and producer (worker) surplus changes. If the employer's and worker's benefits and costs net to a positive value, then there have been economic benefits created.

- The workers in this context would obtain a surplus equal to the difference between the wage they receive and their opportunity cost. The opportunity cost for these workers is their 'reservation wage', which we have assumed is equal to the value from not working and receiving welfare, which is the next best alternative.

- The difference in the financial return from working (wage) versus not working (welfare) is the surplus obtained from working. We have assumed that all workers are eligible for JobSeeker payments (around $550 per fortnight at mid-2020[63]) and would gain employment at an entry level on the Building and Construction General On-site Award ($844.86 per week[64]). This assumption was tested through the consultation process. Since stakeholders across multiple CDC sites stated that there were many entry-level positions available within mining and construction industries, and one of the barriers to gaining employment in these positions was a lack of motivation. Because of this feedback, this entry level wage was seen to be an appropriate assumption. This comes to an estimated net surplus of $570 per week.

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[63] This rate has been provided by DSS to the CIE in generalisation. JobSeeker payments vary according to a person's individual circumstances, and it is possible to receive other payments alongside JobSeeker payments.

[64] Fair Work Ombudsman, 2020, *Pay Guide – Building and Construction General On-site Award*, Australian Government

- This assumes that these workers would be willing to accept a wage equal to their welfare payments (making them financial indifferent between working and not working).

This logic implies that the net benefit for workers is the difference between their wage and potential welfare payments.

However, there are other benefits from the attainment of sustainable employment. For instance, there are many studies drawing a link between personal or household income and health outcomes. Some of these have been summarised in table 5.14.

5.14 Studies linking economic outcomes with health outcomes

Study citation	Type of benefit	Findings
Australian studies		
Australian Institute of Health and Welfare (2016) 'Australia's health 2016)	Higher income could lead to better health outcomes	AIHW reported that the higher a person's income, education or occupation level, the healthier they tend to be.
		However, one of the health risk factors is inadequate fruit and vegetable consumption, which there is no significant difference between people in the lowest and highest socioeconomic groups. Those in the lowest socioeconomic group were more likely to smoke, have insufficient daily activity and suffer from some chronic diseases.
Friel, Denniss 'Unfair economic arrangements make us sick'	Higher household income could lead to improved health outcomes	This study found that health related outcomes are strongly correlated to a household's income, with a social gradient for health being observed for life expectancy and a range of chronic diseases.
Isaacs, Enticott, Meadows, Inder (2018) 'Lower Income Levels in Australia Are Strongly Associated With Elevated Psychological Distress: Implications for Healthcare and Other Policy Areas'	Increased socioeconomic status decreases psychological distress	This study compared psychological distress across socioeconomic groups. The researchers found that lower socioeconomic status was associated with elevated distress in all areas of Australia, and elevated distress was more likely in those with lower household incomes. For instance, more than 1-in-4 people making up the poorest one-fifth of Australians have current psychological distress at a high/very-high level, and this compares to about 1-in-20 in the richest one-fifth of Australians
International studies		
Chen, Liu, Binkey (2012), 'An exploration of the relationship between income and eating behavior'	Increased income can reduce annual calories	This study compared consumption pattern data of milk and soft drinks. These two products allowed the consumer to easily choose healthier (or less unhealthy) varieties as minimal nutrition knowledge was needed, with no price differences between products. Such as choosing low fat milk over high fat milk.
		The study found that for every $10,000 in income (2005-2006 dollars) the calories income per year was 2 932 calories (milk and soft drink results combined). This is the equivalent of 2/3 of a pound a year weight loss. As this study only considered milk and soft drink, it is expected that the impact across all food consumed is much higher.

Study citation	Type of benefit	Findings
French, Tangney, Crane, Wang, Appelhans (2019) 'Nutrition quality of food purchases varies by household income: the SHoPPER study'	Increased income can increase consumption of quality food	This study considered the associations between household income and the diet quality of household food purchases. The study found that lower-income households purchase less healthful foods overall, fewer fruits and vegetables and more sugary beverages compared to households with higher income. However, no significant differences were observed between low- and medium-income households after adjustment for education, marital status and race.
Schiller, Lucas, Peregoy (2012) 'Summary health statistics for u.s. Adults: national health interview survey, 2011'	Lower income families have worse health outcomes	This study found that 22.8 per cent of families with income less than $35 000 (US dollars in 2011) self-reported fair or poor health. This reduced to 12.9 per cent for families earning $35 000 to 49 999. For these families, there was lower life expectancy, and higher prevalence of coronary heart disease, stroke, emphysema, chronic bronchitis, diabetes, dental illnesses, and many others.
Woolf, Aron, Dubay, Simon, Zinnerman, Luk (2015) 'How are income and wealth linked to health and longevity'	Improved economic conditions lead to lower health care costs	This reported considered various research articles on health and income. The report concluded that improving economic conditions, for those who are poor and those in the middle class, could improve health and help control the rising costs of health care.

Source: CIE and other studies as noted.

Displacement of employment of non-participants

If the CDC improves employment outcomes for CDC participants, but at the expense of non-participants, this would mitigate the benefits of such an improvement.

6   Benefits from a change in consumption patterns

The CDC cannot be used to purchase alcohol, gambling, and illegal drugs or cash like products such as some types of gift cards. Reduced consumption of restricted items is anticipated to generate benefits for some participants.

The key benefit of the CDC in relation to changes in consumption relates to reduced alcohol spending, and the associated reduction in the cost of alcohol misuse. The cost of alcohol misuse in the CDC program sites is estimated to be $21 million in 2019/20, and $43.3 million (discounted) over the period (since 2015/16).

The benefit of *reduced* alcohol misuse as a result of the CDC program is estimated at $4 million in 2019/20, and $8.5 million (discounted) over the period from 2015/16 to 2019/20.

Stakeholders within the program sites confirmed that the consumption of alcohol appears to have reduced. However, these consultations also confirmed that participants can 'get around the Card' in creative ways to access alcohol. For this reason, stakeholders suggest that the biggest benefit from a change alcohol consumption has been seen in low and moderate users, and less so in high risk or dependent users.

We do not find any net quantifiable benefits associated with reduced cash availability, principally associated with the mixed evidence in this regard from the second impact evaluation.

Benefits associated with reduced alcohol consumption

There are three stages to estimating the benefit of reduced alcohol consumption/misuse:

- estimate the societal costs of alcohol misuse in Australia using the best available estimate from the academic literature
- attribute an amount of these costs to each program site based on the evidence in the second impact evaluation about relative consumption patterns, and
- estimate the difference in costs of alcohol misuse in the program sites associated with the CDC based on the evidence from the second impact evaluation about how alcohol consumption changed.

The following sections step through these stages of the analysis, including discussion of data, assumptions and calculation approaches.

Societal costs of alcohol misuse in Australia

The most recent study comprehensively estimating the societal costs of alcohol misuse in Australia is Manning, Smith and Mazerolle (2013). This study uses a mixed-methods approach to conduct bottom-up estimation of the total societal cost at an Australia-wide level, without any disaggregation by region or demographic characteristics. It estimated there to be $14.352 billion of costs associated with alcohol misuse in 2010.[65] This is comprised of:

- productivity costs (42.1 per cent), which is the sum of reduced workforce and household labour due to premature mortality and sickness, and reduced workforce participation due to absenteeism

- traffic accident costs (25.5 per cent), which includes human costs from fatalities and serious injuries, vehicle and property damage, and other general costs

- criminal justice system costs (20.6 per cent), including police attending and investigating alcohol-related incidents, child protection and Support Services, out-of-home care for family members affected by alcohol-related incidents, costs to government and lost productivity associated with imprisonment, loss of life and wellbeing associated with alcohol-related violence, and court costs, and

- health system costs (11.7 per cent), including hospital costs, nursing home costs, pharmaceutical expenses and ambulance costs.

This study is the only estimate of societal costs of alcohol misuse reported by the Australian Institute of Health and Welfare (AIHW) in their consolidation of the most recent information on the impacts of consumption of alcohol and other drugs.[66] A previous study, Collins and Lapsley (2008), estimated there to be $10.8 billion of intangible costs (e.g. labour and health costs) and $4.5 billion of intangible costs such as loss of life through violence.[67] Manning, Smith and Mazerolle (2013) updates and expands the estimates from Collins and Lapsley (2008), and is the preferred estimate due to its recency.

Some key exclusions that will tend to make the cost estimates from Manning, Smith and Mazerolle (2013) an underestimate include the following, as noted by the authors:

- Alcohol-attributable presenteeism, which relates to poor health leading to a reduction in a worker's capacity to perform. Sullivan (2019) estimates that presenteeism has a total societal cost approximately four times that of absenteeism in New Zealand. Manning, Smith and Mazerolle (2013) do not report the estimated cost of

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[65] Manning, M., Smith, C. and Mazerolle, P., 2013, 'The societal costs of alcohol misuse in Australia, *Trends & Issues in crime and criminal justice*, no.454, Canberra: Australian Institute of Criminology, https://www.aic.gov.au/publications/tandi/tandi454

[66] AIHW, 2021, *Alcohol, tobacco & other drugs in Austraia*, last updated 16 April 2021, available at: https://www.aihw.gov.au/reports/alcohol/alcohol-tobacco-other-drugs-australia/contents/impacts/economic-impacts

[67] Collins, D. and Lapsley, H, 2008, *The costs of tobacco, alcohol and illicit drug abuse to Australian society in 2004/05*, available at: https://nadk.flinders.edu.au/files/3013/8551/1279/Collins__Lapsley_Report.pdf

absenteeism, which would be necessary to enable applying this ratio to estimate presenteeism costs.

■ Negative impacts on others associated with someone else's drinking are partially accounted for in their direct cost estimates. For example, traffic accident costs will include costs to others associated with someone else's drinking. Direct inclusion of all costs associated with someone else's drinking would involve some extent of double-counting with the cost categories already quantified.

Projecting the total societal costs to 2020

The total societal cost of alcohol misuse will change over time due to a range of factors. Three of the key factors are:

■ how the number of people at risk changes

■ how the cost of resources changes, and

■ how the risk level of the population changes.

We project the total societal cost of alcohol misuse to be equal to $21.273 billion in 2020 (table 6.1), based on the combination of these three uplift factors (table 6.2), as summarised in the equation below:

$$Total\ societal\ cost\ of\ alcohol_{2020}$$
$$= Total\ societal\ cost\ of\ alcohol_{2010} \times (1 + Population\ growth)$$
$$\times (1 + Price\ growth) \times (1 + SEV\ growth)$$

The growth of each component is the growth between 2010 and 2020, the total societal cost of alcohol is obtained from Manning, Smith and Mazerolle (2013)[68], and each growth factor is as defined below:

■ **Population growth**: We assume that the growth in the adult population will be the most relevant driver for growth in the population at risk.[69]

■ **Price growth**: We use the GDP deflator from for general government at the national level to inflate prices for justice and health system costs, which are primarily costs to government. For traffic accident costs we use the Consumer Price Index (CPI)[70] and for productivity costs we use the Wage Price Index.[71]

[68] Manning, M., Smith, C. and Mazerolle, P., 2013, 'The societal costs of alcohol misuse in Australia, *Trends & Issues in crime and criminal justice*, no.454, Canberra: Australian Institute of Criminology, https://www.aic.gov.au/publications/tandi/tandi454

[69] Australian Bureau of Statistics, 2020, *National state and territory population*, September 2020, available at: https://www.abs.gov.au/statistics/people/population/national-state-and-territory-population/latest-release#data-download

[70] Australian Bureau of Statistics, 2021, *Consumer Price Index, Australia*, March 2021, available at: https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/consumer-price-index-australia/latest-release

[71] Australian Bureau of Statistics, 2021, *Wage Price Index, Australia*, March 2021, available at https://www.abs.gov.au/statistics/economy/price-indexes-and-inflation/wage-price-index-australia/latest-release

▪ **Growth in the Summary Exposure Value (SEV) for Australia**: SEV is obtained from the GBD Compare data tool.[72]. The GBD Compare tool states that "SEV, or summary exposure value, is a measure of a population's exposure to a risk factor that takes into account the extent of exposure by risk level and the severity of that risk's contribution to disease burden.". We extract the SEV data series from GBD Compare between 2010 and 2019, and apply an average growth rate over this period to further project SEV to 2020.

6.1 Total societal cost of alcohol misuse each year in 2010 and 2020

Year	Justice	Health system	Productivity	Traffic accidents	Total
	$ billion	$ billion	$ billion	$ billion	$ billion
2010	2.958	1.686	6.046	3.662	**14.352**
2020	4.217	2.404	9.312	5.340	**21.273**

Note: Estimates are shown to 3 decimal places to remain consistent with the precision of results reported by Manning, Smith and Mazerolle (2013).

Source: Manning, M., Smith, C. and Mazerolle, P., 2013, 'The societal costs of alcohol misuse in Australia, Trends & Issues in crime and criminal justice, no.454, Canberra: Australian Institute of Criminology, CIE.

6.2 Inflators to project the total societal cost of alcohol misuse in 2020

Inflator	Justice	Health system	Productivity	Traffic accidents
	Ratio	Ratio	Ratio	Ratio
Population inflator	1.18	1.18	1.18	1.18
Price inflator	1.20	1.20	1.30	1.23
SEV inflator	1.01	1.01	1.01	1.01

Source: CIE and sources as noted above table.

Use of the SEV to project the level of risk for a given population is the most uncertain aspect of this approach. Two key concerns are summarised in box 6.3. Noting these issues, SEV is an appropriate measure because it captures the complexity of changes in alcohol consumption behaviour via a single metric. As this discussion makes clear, there is a complex relationship between alcohol consumption behaviour and the costs of alcohol misuse.

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[72] https://vizhub.healthdata.org/gbd-compare/

6.3   The SEV as a projector of risk associated with alcohol misuse

Firstly, using the average growth in SEV from 2010 to 2019 in order to project 2020 will not account for any step change in growth associated with the COVID-19 pandemic and associated lockdowns. The pandemic affected patterns of alcohol consumption in a range of ways, such as increasing typical volumes consumed, a shift in locations of consumption away from licenced premises towards home consumption, and other factors. However, these impacts may have been less in the program locations compared to capital cities due to shorter/fewer lockdowns and less disruption in general. Additionally, some of these changes in alcohol consumption may have been associated with new unemployment, and given that the cohort which is the focus of this analysis is welfare recipients on the CDC program, more of whom are not employed, these impacts may be less than reported for other areas/cohorts.

Secondly, we assume that the risk level associated with alcohol misuse relating to other cost burdens (e.g. justice costs), increases in proportion with the SEV. This is appropriate if risk exposure for disease will be similar to risk exposure for other types of costs. However, for example, risk exposure for drink driving incidents may also change if vehicle ownership patterns change. Alternative measures, such as the number of people exceeding the lifetime risk guideline or single occasion risk guideline,[73] but these measures ultimately suffer from the same issue that they may be better predictors of health risk than risk of other cost types (such as imprisonment risk or risk of presenteeism costs).

Source: CIE.

Estimated costs of alcohol misuse in the communities under the CDC case

We estimate the base case costs of alcohol misuse among CDC participants by multiplying the number of participants by a societal cost of alcohol misuse per adult, which varies across the program locations.

Based on the current adult population of Australia of 20.03 million, this implies a societal cost of alcohol misuse of $1 062/person in 2020. We adjust this by a set of factors reflecting the relative risk of adults in each program location compared to the Australia-wide average.

The Alcohol Use Disorders Identification Test (AUDIT) score provides an indication of the level of risky drinking behaviour.

East Kimberley has higher proportions of risky drinking behaviour, with higher shares of participants being in the 'very high', 'high' and 'moderate' risk levels than all benchmarks

[73] See: Australian Bureau of Statistics, 2018, *National Health Survey: First Results, 2017-18 — Australia*, table 10.1 'Alcohol consumption — Lifetime Risk(a), Persons' and table 11.1 'Alcohol consumption — Single occasion risk(a), Persons', which are discussed at: https://www.abs.gov.au/statistics/health/health-conditions-and-risks/alcohol-consumption/2017-18

(chart 6.4). However, the Goldfields region has similar or slightly lower risk levels than benchmarks. Comparison of Ceduna to benchmarks is mixed (chart 6.5), with higher levels in the low risk category and less people at moderate risk, but approximately twice as many people in the 'very high' category compared to the Australia-wide (or other) averages.

6.4   Comparison of AUDIT scores for Western Australian Program sites to benchmarks
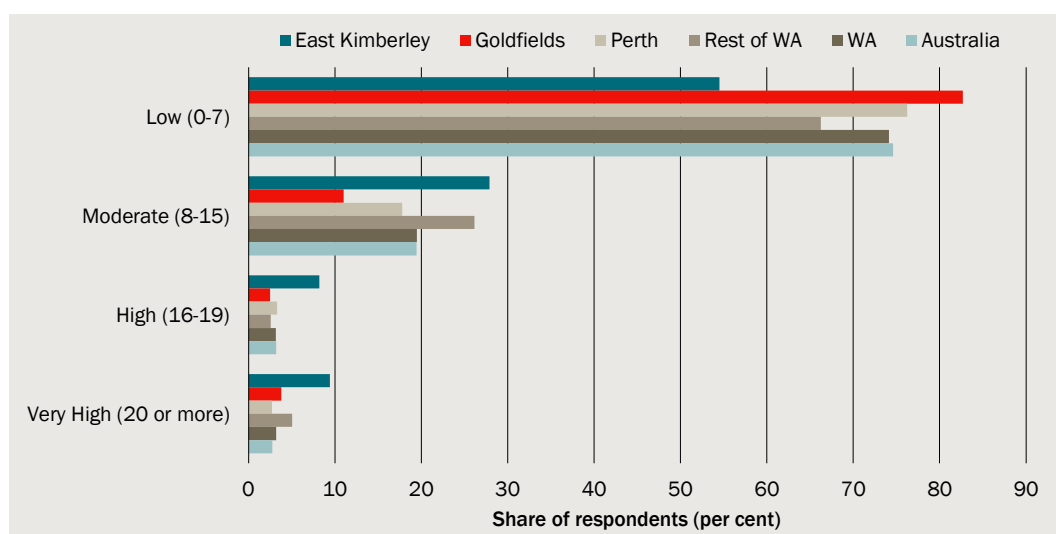
Data source: Mavromaras K., Moskos M., Mahuteau S., Isherwood L., (2021) Evaluation of the Cashless Debit Card in Ceduna, East Kimberley and the Goldfields Region, prepared by University of Adelaide, CIE.

6.5   Comparison of AUDIT scores for Ceduna to benchmarks
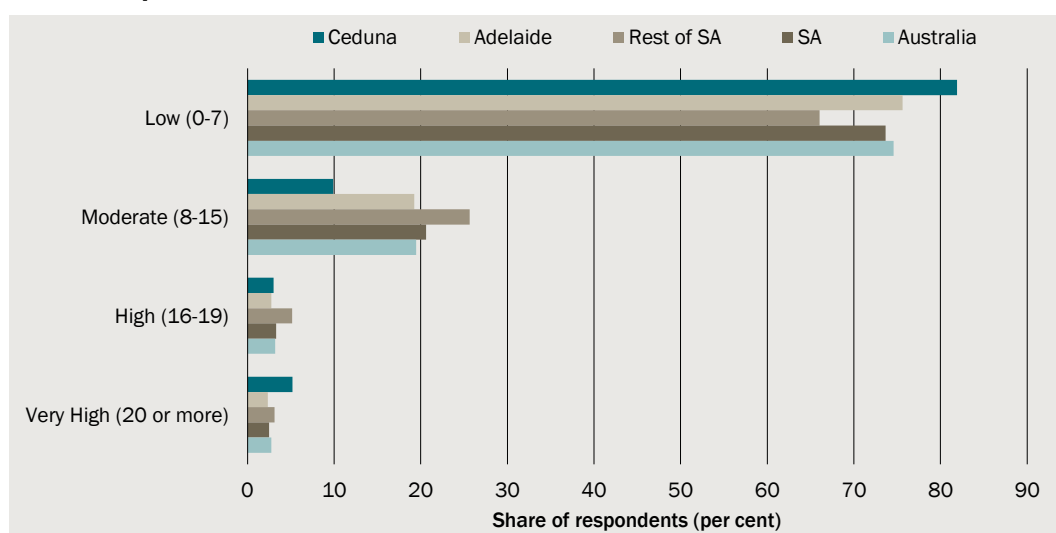
Data source: Mavromaras K., Moskos M., Mahuteau S., Isherwood L., (2021) Evaluation of the Cashless Debit Card in Ceduna, East Kimberley and the Goldfields Region, prepared by University of Adelaide, CIE.

The second impact evaluation did not collect AUDIT data for Bundaberg and Hervey Bay. However, the rates of reported drink driving offences are higher in Bundaberg and lower in Hervey Bay (contained within Fraser Coast LGA) than the Rest of Queensland (chart 6.6). The combined Bundaberg and Fraser Coast LGAs have similar levels of

reported drink driving offences compared to the Rest of Queensland. This suggests that costs of alcohol misuse may be similar in Bundaberg and Hervey Bay compared to the Queensland and likely Australian average.

There are limitations in linking reported drink driving offences to the cost of alcohol misuse. As seen in table 6.1, costs of traffic accidents represent 25 per cent of the total costs of alcohol misuse. However, we do not have data about alcohol-related presenteeism or absenteeism for Bundaberg and Hervey Bay, which is the largest component of costs. Alcohol-related health costs and criminal justice costs were relatively smaller components of costs than traffic accidents, and thus we have focussed on drink-driving offences as a measure of relative costs in Bundaberg and Hervey Bay.

6.6   Drink driving in Bundaberg and Hervey Bay compared to Rest of Queensland
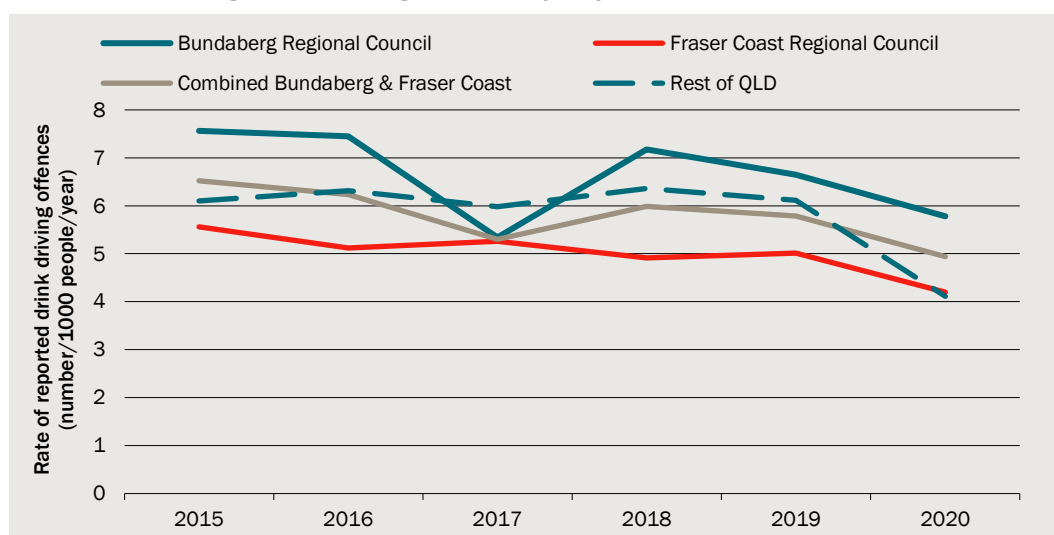
Data source: CIE.

6.7   Frequency and amount of drinking in program sites (ex. Bundaberg and Hervey Bay)

Measure	Units	East Kimberly	Goldfields	Ceduna and surrounds	All three sites
Frequency of drinking days per month	No./month	3.0	1.7	1.5	**2.1**
Amount of alcohol consumed on a usual drinking day	No./day	8.1	4.9	5.5	**6.1**
Average drinks per week	No./week	5.5	2.0	1.9	**2.9**

Note: Responses to questions about frequency and amount of consumption were in bands. Responses to the frequency question were 'Never', 'Monthly or less', '2-4 times per month', '2-3 times per week', and '4 or more times per week', which were assumed to correspond to 0, 1, 3, 10.83, and 17.33 drinks respectively. Responses to the amount question were '1-2', '3-4', 5-6', 7-9', and '10 or more', which were assumed to correspond to 1.5, 3.5, 5.5, 8 and 11 drinks respectively. The average drinks per week is the product of the average frequency of drinking days and amount of alcohol consumed on a usual drinking day.

We multiply the cost per person by an assumed ratio of alcohol misuse costs per person for each program site compared to the Australian average (chart 6.8).

- For Bundaberg and Hervey Bay, on the basis of there being little systematic difference in reported drinking driving incidents per person compared to the Rest of Queensland,

we have assumed that the cost of alcohol misuse is the same per person as the rest of Australia (i.e. $1 062/person).

■ For the remaining sites, we calculate the ratio of the share of people in the very high and high AUDIT score categories between each site and the Australia-wide average.

  – For example, East Kimberley has a total of 17.6 per cent of participants in the very high or high band, while the Australia-wide average is 5.95 per cent of people being in this tier. Accordingly, we apply a factor of 296 per cent to the cost per person for Australia to estimate the cost per person for East Kimberley, which is $3 141/person.

  – The relationships between consumption measures, risk and costs are complex. For example, it is unclear what proportion of total costs of misuse are associated with the proportion of people in the 'very high' AUDIT score category. This method is an approximation to adjust for risk levels using the most timely and comprehensive data available about consumption by CDC participants (the Second Evaluation Report data). There are limitations with this approach, in that the cost has not been built up via a bottoms-up approach, and that using the AUDIT score in this manner is not an established approach. We have not identified a preferred approach in the literature for mapping AUDIT score results to costs.

  – This approach implicitly assumes that people with high and very high AUDIT scores are entirely responsible for the costs of alcohol misuse, which is unlikely to be true. As a result of this assumption, we will overestimate the cost per person in the program sites.[74]

Note, importantly, that these adjustment factors are based on the AUDIT score results for CDC participants, who would already have experienced the reduction in alcohol consumption they reported was associated with the CDC. Therefore, the cost per person implied by these factors will be the total cost of alcohol misuse with the CDC.

6.8   Ratio of alcohol misuse cost per person between program sites and rest of Australia

Factor	Ceduna	East Kimberley	Goldfields	Bundaberg and Hervey Bay
	Per cent	Per cent	Per cent	Per cent
Ratio of alcohol misuse costs in each community relative to Australian average	138	296	106	100

Source: CIE.

Applying these factors to the cost per person of $1 026, and multiplying by the total number of CDC participants in each year produces an estimate of the costs of alcohol misuse with the CDC, totalling $43.3 million for the first four program sites (table 6.9).

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[74] As discussed below, this overestimation is counteracted by the effect of this assumption in causing underestimation of the impact of the CDC on the cost of alcohol misuse.

6.9 Costs of alcohol misuse by participants under the CDC case

Site	2015/16	2016/17	2017/18	2018/19	2019/20	Total undisc.	Total disc.
	$million	$million	$million	$million	$million	$million	$million, NPV
Ceduna	1.0	1.3	1.4	1.6	1.7	**7.0**	**6.7**
East Kimberley	2.5	4.9	5.3	5.7	6.4	**24.7**	**22.3**
Goldfields	0.0	0.0	0.7	4.3	4.8	**9.8**	**7.3**
Bundaberg and Hervey Bay	0.0	0.0	0.0	1.9	7.8	**9.7**	**7.0**
All sites	**3.5**	**6.2**	**7.4**	**13.5**	**20.8**	51.3	43.3

Note: 'Undisc' and 'disc' refer to undiscounted and discounted respectively.
Source: CIE.

Estimated costs of alcohol misuse relative to the base case

The estimated costs of alcohol misuse in the base case are calculated as:

$$Cost_{base\ case,p} = Cost_{CDC\ case,p} \times \frac{1}{\left(1 - impact\ of\ CDC_p\right)}$$

where the impact of the CDC for program site *p* is a percentage point change in alcohol misuse costs based on evidence from the second impact evaluation.

It is not straightforward to estimate the change in alcohol misuse costs based on the changes in consumption reported in the second impact evaluation. The frequency and amount of consumption reduced for 20-30 per cent of participants, while around 40-50 per cent of participants had at least some change in consumption. Importantly, the proportional change in drinking is very similar across the program sites.

6.10 Perceived changes in consumption as a result of the CDC
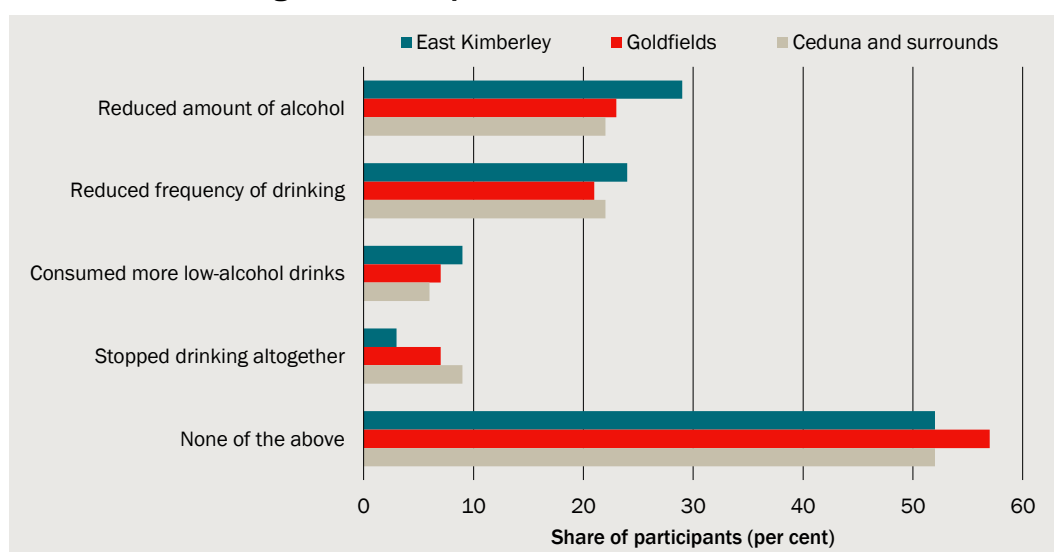
Data source: Mavromaras K., Moskos M., Mahuteau S., Isherwood L., (2021) Evaluation of the Cashless Debit Card in Ceduna, East Kimberley and the Goldfields Region, prepared by University of Adelaide, CIE.

However, it is crucial whether it is high or low risk/cost individuals that are decreasing consumption. The impacts of all low risk participants stopping drinking would be much lower or negligible in comparison to the impact of all moderate or higher risk participants stopping drinking.

Data from the second impact evaluation suggests that participants with more risky consumption habits were disproportionately represented among those that reduced drinking (chart 6.11). For example, 15 per cent of participants that reduced the amount of alcohol at any one time were in the very high risk category, but this category only represented 10 per cent of the participant population.

Data about the changes in consumption by AUDIT score are presented separately by program site in the second impact evaluation,[75] but not replicated here for brevity.

6.11 Changes in consumption due to the CDC, by AUDIT score level
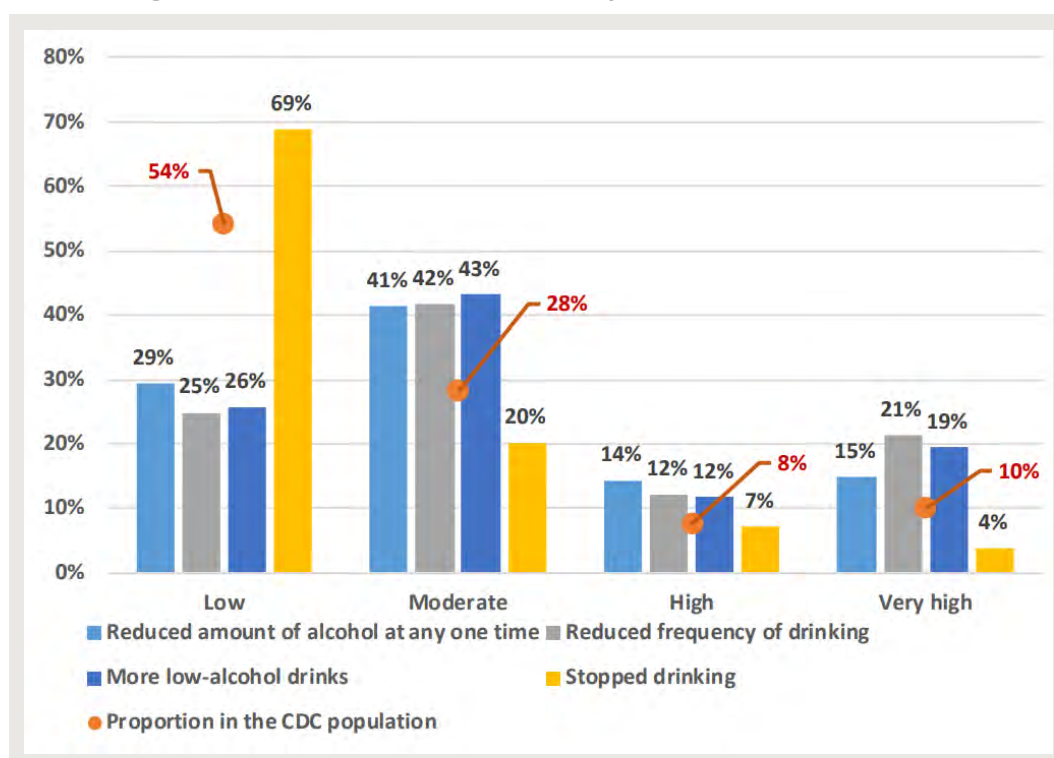
Data source: Mavromaras K., Moskos M., Mahuteau S., Isherwood L., (2021) Evaluation of the Cashless Debit Card in Ceduna, East Kimberley and the Goldfields Region, prepared by University of Adelaide.

We estimate the proportional reduction in alcohol consumption in each community (chart 6.12) as follows:

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[75] This is presented at Figure A 4-7, 4-8 and 4-9 in section 6 of the Quantitative Supplementary Report: Mavromaras K., Moskos M., Mahuteau S., Isherwood L.,, 2021, *Evaluation of the Cashless Debit Card in Ceduna, East Kimberley and the Goldfields Region — Quantitative Supplementary Report*, p.336, available at:
https://www.dss.gov.au/sites/default/files/documents/02_2021/fac_evaluation-cdc-ceduna-east-kimberley-and-goldfields-quantitative-supplementary-report_012021.pdf

- **The share of the CDC population that reduced drinking:** The share of the CDC population that reduced drinking is the average among the share that reduced the amount of alcohol consumed, share that reduced the frequency of drinking and share that consumed more low-alcohol-drinks.[76]

- **Relative reduction of moderate-or-higher risk cohort compared to average reduction across entire cohort:** Based on the ratio between the share of moderate, high and very high risk participants that report reductions in consumption to the share of participants that report reductions in consumption.

- **Share of moderate or higher risk cohort that reduced drinking**: This is the product of the share of the population that reduced drinking and the relative reduction of the moderate-or-higher risk cohort.

- **Reduction in drinking risk:** This is calculated according to the following formula

$$Reduction\ in\ risk = Share\ reducing\ consumption \times \left(1 - \frac{1}{RR}\right)$$

where

– *Share reducing consumption* is the share of moderate-or-higher risk cohort that reduced drinking

– *RR* is the relative risk of people with moderate-or-higher AUDIT score to those with low but non-zero AUDIT scores. We assume this is equal to 2.7, which is the average relative risk factor for a range of alcohol-related health issues, social problems related to alcohol, and hospital admission.[77]

Appendix D provides the data underlying these calculations, and discusses the limitations of the approach chosen to estimate these values.

6.12 Reduction in drinking risk among CDC cohort relative to the base case

Measure	East Kimberley	Goldfields	Ceduna and surrounds	Average (applied to Bundaberg and Hervey Bay)
	Per cent	Per cent	Per cent	
Share of CDC population that reduced drinking	20.7	17.0	16.7	
Relative reduction of moderate-or-higher risk cohort compared to average reduction across entire cohort.	163.0	170.4	149.6	
Share of moderate-or-higher risk cohort that reduced drinking	33.7	29.0	24.9	29.2
Reduction in drinking risk	21.4	18.4	15.8	18.5

Source: CIE.

[76] We do not include the share that stopped drinking altogether in this calculation based on the less than proportional share of people with a moderate, high or very high that indicated they stopped drinking altogether.

[77] See Appendix E, which explains CIE calculations to derive 2.7 from: Conigrave, K., Saunders, J. and Reznik, R., 'Predictive capacity of the AUDIT questionnaire for alcohol-related harm', *Addiction*, 1995(90), 1479-1485

Assuming these reductions in costs of alcohol misuse across the program sites implies a total cost (without the CDC program) of $43.3 million (table 6.13).

6.13 Costs of alcohol misuse by participants under the base case

Site	2015/16	2016/17	2017/18	2018/19	2019/20	Total undisc.	Total disc.
	$million	$million	$million	$million	$million	$million	$million, NPV
Ceduna	1.0	1.3	1.4	1.6	1.7	**7.0**	**6.7**
East Kimberley	2.5	4.9	5.3	5.7	6.4	**24.7**	**22.3**
Goldfields	0.0	0.0	0.7	4.3	4.8	**9.8**	**7.3**
Bundaberg and Hervey Bay	0.0	0.0	0.0	1.9	7.8	**9.7**	**7.0**
All sites	**3.5**	**6.2**	**7.4**	**13.5**	**20.8**	**51.3**	**43.3**

Note: 'Undisc' and 'disc' refer to undiscounted and discounted respectively.
Source: CIE.

The benefit of avoided costs of alcohol misuse relative to the base case are shown in table 6.14. Consistent with the original estimation of Manning, Smith and Mazerolle (2013), these are split among productivity costs (42.1 per cent), traffic accident costs (25.5 per cent), criminal justice system costs (20.6 per cent) and health system costs (11.7 per cent)

6.14 Benefit of avoided costs from alcohol misuse, relative to the base case

Site	2015/16	2016/17	2017/18	2018/19	2019/20	Total undisc.	Total disc.
	$million	$million	$million	$million	$million	$million	$million, NPV
Ceduna	0.2	0.2	0.2	0.2	0.3	**1.1**	**1.1**
East Kimberley	0.5	1.0	1.1	1.2	1.4	**5.3**	**4.8**
Goldfields	0.0	0.0	0.1	0.8	0.9	**1.8**	**1.3**
Bundaberg and Hervey Bay	0.0	0.0	0.0	0.4	1.5	**1.8**	**1.3**
All sites	**0.7**	**1.3**	**1.5**	**2.6**	**4.0**	**10.0**	**8.5**

Note: 'Undisc' and 'disc' refer to undiscounted and discounted respectively.
Source: CIE.

Benefits from reduced cash availability

Cash availability is a distinct outcome from reduced spending on restricted goods and services. A range of studies have estimated the relationship between cash availability and crime and found robust evidence of a positive relationship. That is, less cash availability is causally linked to less crime in a region (table 6.15).

There might be site specific factors that make benefit realisations more difficult. A study conducted on mobility based on ethnographic research by Vincent and Klein in Ceduna and East Kimberly, as well as regression analysis by Vincent, Markham and Klein in

Ceduna, provided evidence of displacement of local populations coinciding with the introduction of the CDC scheme in the areas. The narrative accounts by Vincent and Klein in Ceduna and East Kimberly were partly substantiated through a statistical analysis that found evidence of net migration being 9.3 per cent lower in Ceduna, Wyndham and Kununurra in comparison to similar towns without CDC and 5.2 per cent lower compared to Australia as a whole.[78]

6.15 Estimates from the literature about cash availability affecting crime rates

Study name	Key findings	Quantitative outputs
Wright et al (2017) 'Less Cash, Less Crime: Evidence from the Electronic Benefit Transfer Program	▪ Transition from check-based welfare payments to Electronic Benefit Transfer (EBT) is associated with a decrease in street crime, including burglary and larceny ▪ Likely explanation is that EBT reduced the amount of cash on the streets available to be stolen or used for illegal purposes.	Introduction of EBT led to falls in crime of 9-13 per cent depending on the region where EBT was introduced
Mai, H. , Cash, freedom, and crime: Use and impact of cash in world going digital, EU Monitor	▪ While the abolition of cash will not eliminate shadow economy, it might shrink the size raise the cost of illegal payments and reduce the size of the shadow economy. ▪ The shift from cash to electronic payments in Sweden led to a significant decline in the number of bank robberies and security van robberies and therefore less cash could lead to fewer crimes related to cash stealing.	Abolition of cash is likely to reduce the size of the shadow economy by an estimated 2 to 3 per cent.
Muyiwa et al, Impact of cashless economy in Nigeria	▪ The implementation of a cashless policy using electronic-based transaction is expected to increase employment, reduces cash related robbery thereby reducing the risk of carrying cash, reduces cash related corruption and attracts foreign investment to the country.	This study was based on the survey participants perception of benefits and therefore no quantitative outputs were reported.

Data source: CIE and other studies as noted.

We have not included any benefits from reduced cash availability because evidence about how safety outcomes have changed for the communities is thoroughly assessed in the second impact evaluation, with a finding of mixed impacts. It may be that there are benefits from reduced cash availability that are reducing crime, but that there are counteracting impacts from the CDC increasing crime (such as decreased quality of life, less autonomy, added stigma, or thefts associated with obtaining stolen goods to sell for cash as a means of purchasing restricted items).

[78] Vincent, E. Markham, F. and Klein, E. 2019, '"Moved on"? An exploratory study of the Cashless Debit Card and Indigenous mobility', *Aust Journal of Social Issues*, 55, 27-39, available at: https://onlinelibrary.wiley.com/doi/abs/10.1002/ajs4.84

7   Estimated costs of the CDC Program

The Australian Government is estimated to have spent $67.4 million (discounted) on the CDC program since its inception.

This excludes the costs of other Support Services available to CDC participants, which are intertwined with the program but separate from the impact of the CDC itself. While participant access to wrap around services positively contributes to final outcomes, it does come at a cost to the Australian Government. Across all program sites, CDC participants had a weighted average of 160 per cent more attendances at Support Services per person per year, compared to non-participants.

Costs to participants include the inconvenience of less available cash, and the costs to mental health, essentially related to the association of being 'on the Card'. The costs of reduced cash are calculated to be small, and relatively negligible per person. The costs to mental health are deemed to be inseparable to the mental health costs of being unemployed, and no such costs are considered to be specifically related to the Card.

Costs to the Australian Government

The costs of delivering the CDC program have been provided by DSS (table 7.1). The cost categories presented are those that were provided by DSS. We have not included the cost of Support Services, as described below.

7.1   Costs of the CDC Program borne by government until 2019/20

Cost item	2015/16	2016/17	2017/18	2018/19	2019/20	Total undiscounted	Total discounted
	$million	$million	$million	$million	$million	$million	$million
Card provider	5.8	4.0	5.0	9.3	14.9	39.0	32.9
Evaluation	0.3	1.0	0.5	1.1	1.9	4.8	4.0
Other (communications, legal, consultancy)	0.6	0.0	0.4	0.9	0.4	2.3	2.0
Departmental	4.3	3.1	9.1	4.9	12.3	33.6	28.5
Total	**11.0**	**8.1**	**15.1**	**16.2**	**29.4**	**79.8**	**67.4**

Data source: CIE.

Extrapolation of costs to 2020/21 is presented in Appendix E, which is used in sensitivity analysis shown in Chapter 8.

Engagement with Support Services

This cost-benefit analysis is limited to the Cashless Debit Card program, but a range of other policy initiatives in the program areas were pursued concurrently. A key example of such a policy initiative is the increased funding for and intended increase in take-up of Support Services.

This additional funding was used to commission services such as drug and alcohol rehabilitation services, financial management services, and family violence services. These services were provided in addition to the existing services provided through jobactive and the Community Development Program (CDP).

Various reviews have highlighted the additional need for such wraparound services, particularly in regional and remove areas, and the significant benefits associated with them. The need for additional local Support Services (such as drug and alcohol rehabilitation services, financial management services, and family violence services as mentioned above) was also one of the key reasons why some Indigenous leaders supported the program within the community.[79]

However, it is important to note that the response to these additional wrap around services has been mixed. Through the qualitative evidence gathered within the second impact evaluation, respondents stated a lack of awareness of additional Support Services that had been funded under the umbrella of the CDC in their locations. Although some respondents were aware of these additional services, concerns were expressed that these funds had not been targeted well. A local Indigenous leader who previously supported the CDC program stated that the needed Support Services were introduced late and was not appropriate.[80]

Support Services provided to welfare payment recipients in the CDC program areas before the program are still considered in the base case.

Higher rate of support service engagement among CDC participants

We observe that take-up in 2019 of Support Services by CDC Program Participants is higher than take-up by non-participants (chart 7.2). This includes all Support Services, such as those provided through jobactive, CDP and the additional services funded through the roll-out of the CDC in each region.

This comparison is shown for a selection of SA3s with the most CDC participants in 2019. For example, while non-participants each had around 0.6 support service attendances in 2019, CDC program participants had on average more than 1.2 attendances.

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[79] Davey M., 2017, *Aboriginal leader withdraws support for cashless welfare card and says he feels used*, the Guardian, available at: https://www.theguardian.com/australia-news/2017/aug/23/aboriginal-leader-withdraws-support-for-cashless-welfare-card-and-says-he-feels-used

[80] Davey M., 2017, *Aboriginal leader withdraws support for cashless welfare card and says he feels used*, the Guardian.

7.2   Engagement with Support Services by CDC participants and non-participants
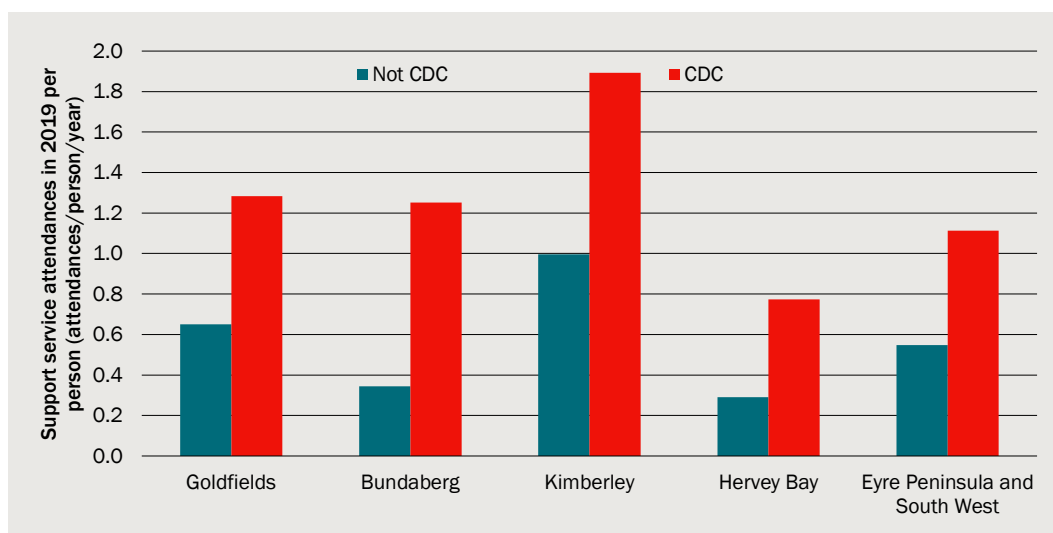
Note: Support services include drug and alcohol rehabilitation services, financial management services, and family violence services. Support services in this chart does not include jobactive and the CDP.

Data source: Data extracted from the Data Exchange by DSS.

Across all regions, CDC participants had a weighted average of 160 per cent more attendances per person per year, compared to non-participants.[81]

There are a range of potential explanations for this higher rate of participation amongst CDC participants:

- This higher rate of engagement may partially reflect increased engagement as a direct result of having the CDC. The second impact evaluation reported that many stakeholders felt there was increased workload for local organisations, particularly to assist participants with practical issues associated with the CDC.

- The uplift in engagement may also reflect greater funding for local organisations providing Support Services. This may translate into greater availability of Support Services, and thus greater take-up. For instance, as part of the CDC rollout, each region received additional funding for local Support Services.

- Support service engagement may be higher among CDC participants because of their other characteristics, rather than directly because they receive the CDC. Looking at a selection of areas where the CDC program was implemented, there is a consistently higher rate of support service attendance among people who eventually or current have the CDC compared to those who never do (chart 7.3). This is more consistent with CDC participants having higher engagement because of their characteristics, rather than as a direct result of the CDC or an uplift in funding.

  - Further, there is little evidence of a consistent change in support service engagement correlated with timing of implementation of the CDC. Take-up by CDC participants has been roughly similar or slightly falling since implementation in Ceduna, while Bundaberg has experienced a steady increase during the past 5

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[81] This is a weighted average, with the weighting of the uplift in each SA3 being the number of people in that SA3 in 2019 with the CDC.

years. This weakens the evidence for the CDC implementation being associated with an uplift in engagement.

7.3 Support service attendance of eventual CDC participants
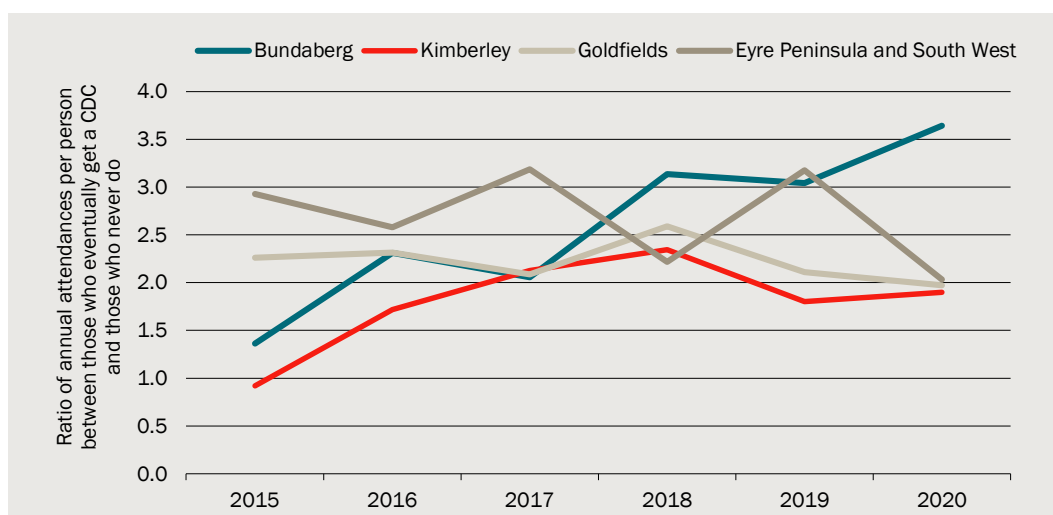
Note: Support services include drug and alcohol rehabilitation services, financial management services, and family violence services. Support services in this chart does not include jobactive and the CDP.

Data source: CIE.

Implication of increased support service engagement for costs and benefits

Ideally, if the CDC drives uplift in support service attendances relative to the base case, it would be ideal to measure the costs and benefits of this uplift. We have not done so for the following reasons:

- The DEX dataset provides individual-level data about the number and provider of support service episodes, but the dataset does not categorise each support service. For example, while we can identify that a support service attendance occurred at a particular primary school or community centre, we cannot identify whether the support service was related to financial support, alcohol or other drug counselling, or something else. The type of support service is a key determinant of both costs and benefits of the service.

- We cannot estimate the share of uplift in Support Services attributable to the CDC directly. Any concurrent but separate policy change to increase funding for Support Services in the CDC communities would occur both in the base case and the policy case.

- The benefits of changed support service engagement may already be captured through benefits we measure associated with reduced alcohol misuse and other benefits. That is, as the second impact evaluation noted, the reduction in alcohol consumption could not be attributed specifically to the CDC, but rather to the range of policies implemented concurrently.

The choice not to add the costs of an uplift in Support Services to the other costs of the CDC will result in the incremental costs of the CDC relative to the base case being underestimated. However, our approach to estimation of benefits means that most of the

benefits of an uplift in Support Services are likely already being captured in other benefit estimates included. The net effect of this assumption is that the net cost (benefit) of the CDC Program will be underestimated (overestimated).

DSS have supplied data about the costs borne by DSS associated with the additional Support Services funded alongside the CDC program (such as additional drug and alcohol rehabilitation services, financial management services, and family violence services as mentioned above). The total costs of these additional services was $6.8 million between 2015/16 and 2019/20.[82] However, almost none of this expenditure is associated with Goldfields, despite it having more participants in 2018/19 than East Kimberley and Ceduna combined, and no estimate has been provided of this expenditure in Bundaberg and Hervey Bay.

7.4   Support Services expenditure (DSS component)
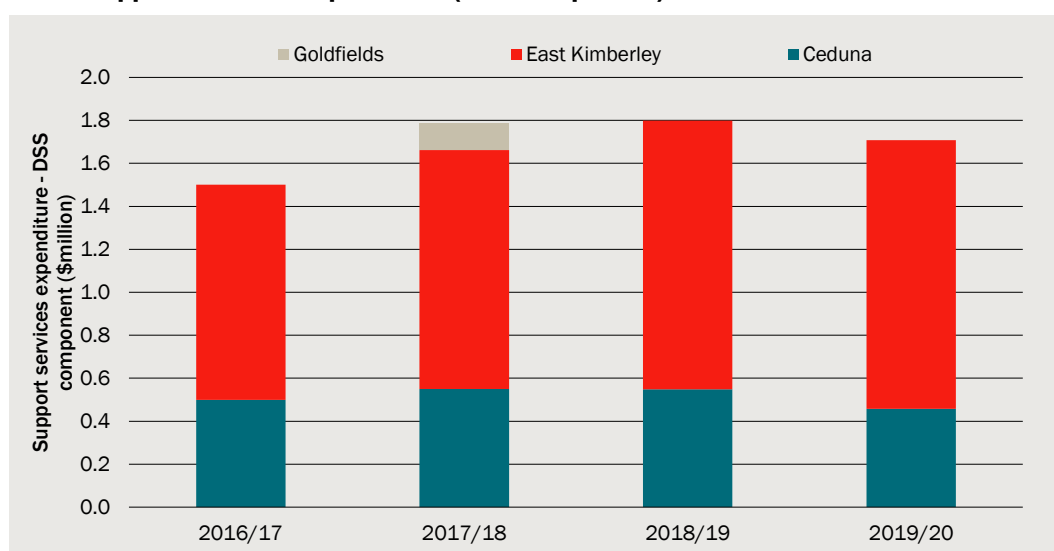
Note: Support services include drug and alcohol rehabilitation services, financial management services, and family violence services. Support services in this chart does not include jobactive and the CDP.

Data source: CIE.

Costs to participants

Previous CDC evaluations have explored the perceptions, views, and overall wellbeing of participants after participating in the program.

Through these evaluations, participants raised various unintended consequences and social concerns. These relate to feelings of discrimination, stigma, and embarrassment from being on the Card. Table 7.5 summarises some of the key impacts reported by participants, from the second impact evaluation.

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82 This is based on a cost estimate supplied by DSS for 'Support services expenditure - DSS component' over 2015/16 to 2019/20, and our extrapolation for 2020/21 based on the ratio of Program participants in Sep-20 and Dec-20 to the number of Program participants in 2019/20.

7.5   Summary of participant's feelings while on CDC

Impact from participants	All participants	Indigenous status	Gender
Feelings of discrimination	• 57% of participants felt discriminated against most or all the time	• Indigenous people were no more or less likely to feel discriminated compared to non-indigenous people	• There was no significant difference between female and male participants
Feelings of embarrassment	• 58% of participants felt embarrassed most or all the time	• There was a very small increase in the proportion of non-Indigenous people feeling embarrassed sometimes, most, or all the time (77% compared to 71%)	• There was no significant difference between female and male participants
Feelings of unfair treatment	• 61% of participants felt that being on the CDC was unfair most or all the time	• There was a very small increase in the proportion of non-Indigenous people that felt the CDC was unfair sometimes, most, or all of the time (77% compared to 73%)	• There was no significant difference between female and male participants

Data source: Mavromaras K., Moskos M., Mahuteau S., Isherwood L. 2021 'Evaluation of the cashless debit card in Ceduna, East Kimberley and the Goldfields region: Consolidated report'.

The second impact evaluation concluded that approximately 75 per cent of participants had negative feelings of discrimination, embarrassment, and unfairness from being on the Card. These quantitative results were consistent with the qualitative evidence collected through the second impact evaluation's discussions with participants.

Based on the findings from the second impact evaluation, the convenience, social and mental health costs have been summarised into two groups:

- cost to participants from having limited access to cash, and
- mental distress associated with participation.

Cost from limited access to cash

Throughout various sections of the second impact evaluation, the reduced ability to use cash to purchase goods and services has been raised as a cost for participants. For instance:

- many expenses that are cash-dependent like school excursions, some bills and rents, and some large denomination purchases like buying car and furniture, and
- there is a limited ability to buy products in the second-hand market.

This limited ability to use cash as the preferred method of payment has been considered a cost for participants.

Proportion of the population that use cash

A proportion of the national population continues to prefer to make payments using cash, and cash payments make up a significant share of lower-value payments. For instance, the Reserve Bank's 2019 Consumer Payments Survey found that cash payments make up 27 per cent of the total number of payment transactions in 2019.[83]

There are a wide range of reasons why people choose to use cash. However, one of the main reasons is to assist in budgeting or to spend using their own (rather than borrowed) funds.[84] For high cash users,[85] this benefit is true for nearly 50 per cent, and approximately 15 per cent of all consumers.

This may be because when using cash, it is easier to recognise the financial impact by physically taking the cash out of your pocket and giving it to someone else. However, with electronic payments, it is easy to 'tap' a card without appreciation for the amount of money that has been spent.

Within the Consumer Payments Survey, respondents were asked if they would be affected if shops stopped accepting cash or if it became difficult to withdraw cash. From this question, the majority of high cash users reported that they would experience a "major inconvenience or genuine hardship" if cash were no longer available, compared to approximately 25 per cent of all respondents.

However, there is a trend of people shifting away from cash payments.

- 27 per cent of all consumer payments were made with cash in 2019, compared with 37 per cent in 2016 and 69 per cent in 2007, and

- Although cash payments still account for a significant share of small value transactions, the introduction of credit and debit cards that can 'tap and go' has shifted consumers preferences more towards using cards even for small transactions. For instance, the share of transactions of $10 or less made in cash has reduced by 18 percentage points since 2016.[86]

Although Australian consumers in general are increasingly preferring to use electronic payment methods, surveys such as the Consumer Payments Survey indicate that there is still a preference for some consumers to continue to use cash. This is particularly true in regional areas, which have a greater proportion of people in both 'high cash user' and 'intermediate cash user' categories.

83 Caddy J., Delaney l., Fisher C., Noone C., 2020, 'Consumer Payment Behaviour in Australia', *RBA Bulletin March 2020*, available at:
https://www.rba.gov.au/publications/bulletin/2020/mar/consumer-payment-behaviour-in-australia.html

84 Caddy J., Delaney l., Fisher C., Noone C., 2020, 'Consumer Payment Behaviour in Australia', *RBA Bulletin March 2020*.

85 Those that use cash for over 80 per cent of transactions

86 Caddy J., Delaney l., Fisher C., Noone C., 2020, 'Consumer Payment Behaviour in Australia', *RBA Bulletin March 2020*.

7.6 Comments from stakeholder consultations – Availability of EFTPOS a concern

Some CDC communities prefer cash payments, partly because of the cost of operating EFTPOS machines, and partly because of the reliability of cash payments.

For instance, one stakeholder mentioned that it is common for EFTPOS machines to go offline in their community. When this happens, it can take several days before the system is back online.

While EFTPOS is offline, businesses often rely on 'IOUs', for customers that cannot provide cash payments, such as CDC participants. However, this creates a risk for the business that the customer may not return to pay off their debt.

Cost per transaction method

There are a few Australian studies that considered the benefits and costs of payment methods. For example, a 2005 study found that for a transaction of $50, the cost of payment for cash was $1.64, compared to $0.80 for a debit card and 0.99 for a credit card. However, for a $10 transaction, the cost of a cash-based payment type decreased to 0.96, while the costs for debit cards and credit cards remained the same.[87]

A more recent study undertaken by the Reserve Bank of Australia (RBA) in 2007 attempted to measure the long-run incremental resource cost of using cash, EFTPOS and credit cards as payment methods. The analysis included costs such as communications technology, producing cash, issuing cards, and withdrawing cash from ATMs. The study found that cash is the lowest cost payment method for small transaction sizes, which generally cash is most commonly used. However, the cost of a cash payments rises with the value of the transaction, to the point where cash becomes more costly than EFTPOS for payments above $50 in value. Table 7.7 below outlines the findings from this study.

7.7 Estimated payment method costs per transaction

Transaction size	Credit Card	EFTPOS	Cash [a]
($)	($, 2007/08)	($, 2007/08)	($, 2007/08)
10	0.80	0.50	0.31
20	0.82	0.50	0.35
50	0.86	0.52	0.66
100	0.94	0.54	0.70
200	1.10	0.59	0.75
500	1.57	0.73	1.42

[a] The source document applied two different approaches to calculate this cost per transaction. This table has taken the average of the two approaches.

Source: Schwartz, C., Fabo, J., Bailey, O. and Carter, L. 2007, *Payment Costs in Australia*, Table 14., see
https://www.rba.gov.au/payments-and-infrastructure/resources/publications/payments-au/paymts-sys-rev-conf/2007/7-payment-costs.pdf

87 Simes R., Lancy A. and Harper, I., 2006, *Costs and Benefits of Alternative Payments Instruments in Australia*, Melbourne Business School Working Paper No 2006-08.

One limitation of this study is that is does not attempt to measure the benefits associated with various payment methods.

Estimating the cost to participants

When estimating the cost for participants of having limited access to cash, it is important to note that 20 per cent of a participant's income support payment remains unrestricted and that up to $200 could be externally transferred by a participant out of their Indue account to their personal unrestricted account every 28 days. These funds could still be withdrawn as cash.

Because of this, any cost imposed by CDC will need to consider that this portion of income could still be used as cash.

When estimating the number of transactions that could have been made with cash, we have considered that cash is used more often for small transactions. Based on calculations from the RBA, the proportion of cash sales and the resulting estimated number of CDC transactions that would have been cash are outlined in table 7.8.

7.8 Number of potential cash payments by size

Size of transaction	Per cent of transactions that used cash (based on 2019 values)	Cash payment now on Card FY16	Cash payment now on Card FY17	Cash payment now on Card FY18	Cash payment now on Card FY19	Cash payment now on Card FY20
$	Per cent	Number	Number	Number	Number	Number
1-10	45	129 511	248 500	571 243	1 485 270	2 251 805
11-20	32	6 160	92 045	195 257	476 073	756 447
21-50	22	122 153	140 261	304 176	741 871	1 336 195
51-100	13	52 185	64 358	140 361	335 832	645 159

Source: Consumer Payment Behaviour in Australia, Bulletin March 2020, and CIE

To estimate the cost to participants from restricting the amount of cash available, we have considered the total cost of transactions that would have previously been paid by cash to the cost of transactions that would now be made through the Card.

As a proxy for the benefit received by consumers from using cash over a card payment, we have assumed that the difference in the transaction costs between the two methods represents the consumer benefit from using cash. This would be an underestimate of the true cost, as non-financial costs have not been captured (such as the benefits from budgeting).

Based on this approach, the cost for CDC participants from having 80 per cent of their income not able to be withdrawn in cash is shown in table 7.9, and are considered to be small, and comprise a relatively negligible impost per person.

7.9   Cost from restricting cash payments between 2015/16 and 2019/20

Transaction amount	2015/16	2016/17	2017/18	2018/19	2019/20
$	$	$	$	$	$
10	26 220	50 310	115 651	300 700	455 888
20	809	12 082	25 630	62 492	99 295
50	1 067	1 225	2 656	6 479	11 669
100	359	443	966	2 311	4 439
Total cost	28 455	64 060	144 903	371 981	571 292

Data source: CIE.

Mental distress associated with participation

The second evaluation found that around 75 per cent of CDC participants felt embarrassed, stigmatised and unfairly targeted by the program. They reported that feelings of stigmatisation led to some CDC participants trying to hide the fact they were on the Card and avoided their usual local shops.

This provides strong evidence that participants experience mental distress while being on the Card. However, it is difficult to separate the feelings of stigma and disconnection with the wider community from CDC and from being on income support and unemployed.

Many studies show that being unemployed has a negative health and social impact. For instance:

- after becoming unemployed, men experienced significantly greater symptoms of depression and anxiety than employed men[88]

- social stigma around unemployment had a highly corrosive negative impact on people's social and emotional wellbeing, such as symptoms of anxiety, depression and feeling worthless[89]

- unemployed people are stigmatised in the labour force and experience disadvantages when applying for job vacancies.[90] This is particularly true for long-term unemployed people

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[88] Linn, M., Sandifer, R., and Stein, S., 1985, Effects of unemployment on mental and physical health, *American Journal of Public Health* 75(5), pp:502-506, available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1646287/

[89] Anti-poverty Week, 2019, *The Stigma of Unemployment*, available at: https://antipovertyweek.org.au/2019/08/the-stigma-of-unemployment/

[90] Krug, G., Drasch, K., Jungbauer-Gans, M. 2019, 'The social stigma of unemployment: Consequences of stigma consciousness on job search attitudes, behaviour and success', *Journal for Labour Market Research* 53, available at: https://labourmarketresearch.springeropen.com/articles/10.1186/s12651-019-0261-4

- being unemployed leads to a drop in 'status among friends, family and the community, which can lead to loss of self-esteem[91]

- becoming unemployed can affect mental and physical health, relationships and sense of identity[92], and

- people experiencing unemployment are more than twice as likely to have feelings of worthlessness, and not feel "reasonably happy", and three times more likely to not feel useful.[93]

Paying for items through the Card makes it more visible that an individual is receiving income support. It is likely that this increased visibility strengthens the negative associations from being on income support, further contributing to feelings of stigma and embarrassment. However, we note that the Card provided has made changes to the design of the card to limit this impact.

With the evidence available, the additional mental distress associated with the CDC program cannot be separated from the negative impacts of being unemployed.

> **7.10 Comments from stakeholder consultations – The Card adds to the stigma of being on income support**
>
> Stakeholders agreed that being unemployed and on income support can be stigmatising and can lead to negative mental health impacts (such as anxiety, depression, loss of confidence, disconnection with community, etc.). This is not an impact of the CDC.
>
> However, stakeholders stated that being on the Card makes it more obvious that an individual is on income support, and adds to these negative mental issues. We heard that this impact can be especially concerning for those participants that feel like they do not suffer from drug or alcohol harms. These participants feel like they are being socially judged and grouped together with people that are experiencing drug or alcohol addiction.
>
> Even though the Card provider has taken steps to make the Card not stand out from other bank cards, many of the towns within the CDC program areas are small, and we heard that 'everyone knows what the card looks like' and 'everyone knows who is on the Card'.

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[91] Institute for Work and Health, 2009, *Unemployment and mental health*, available at: https://www.iwh.on.ca/sites/iwh/files/iwh/reports/iwh_issue_briefing_mental_health_2009.pdf

[92] Beyond Blue, 2021, *Unemployment and mental health*, available at: https://www.beyondblue.org.au/the-facts/unemployment

[93] Farre, L., Fasani, F., Mueller, H., 2018, 'Feelings useless: the effect of unemployment on mental health in the Great Recession', *IZA Journal of Labor Economics*, 7(8), available at: https://izajole.springeropen.com/articles/10.1186/s40172-018-0068-5

7.11 Comments from stakeholder consultations – The 'white card'

One stakeholder reported that CDC participants feel that the Card was 'imposed upon them' and see it as a way of being controlled.

For example, some Indigenous communities refer to the Card as the "white card"- referring feeling that the Card is a "top down" measure that is being imposed on them by non-Indigenous people.

8 Cost-benefit analysis results

The CDC program is associated with a net cost of $57.4 million in present value terms.

The main benefit category is reduced costs of alcohol misuse ($8.5 million), followed by the social and community benefits of reduced gambling ($2.3 million). However, these benefits are relatively small in comparison to the total costs of $68.8 million.

Total benefits were highest in East Kimberley, which has the highest costs of alcohol misuse. Ceduna has relatively high benefits per person, due largely to gambling reduction benefits.

A number of non-financial costs were supported by evidence but could not be quantified, and were therefore excluded from the CBA model, including an uplift in Support Services expenditure directly associated with the CDC, mental distress, and disempowerment/lack of autonomy.

Similarly, there are likely to be benefits *associated* with the CDC that have not been valued because of weak evidence of attribution in the previous evaluations.

Results summary

The costs and benefits of the CDC program in the first four sites are shown in table 8.1. These costs and benefits mostly accrue over the period from 2015/16 to 2019/20, except costs associated with reduced alcohol misuse and child wellbeing, which accrue over a longer period. For example, reduced loss of life costs from reduced drink driving accidents includes the lost productivity over the remainder of an individual's life.

8.1 Cost-benefit analysis results (2015/16 to 2019/20)

Cost/benefit item	Evidence of a clear change due to the CDC?	Source of evidence	Quantified	Total undisc.	Total disc.
				$m	$m, NPV
Costs					
Costs of system administration by Indue	✓	UoA	✓	39.0	32.9
Cost of policy evaluation	✓	UoA	✓	4.8	4.0
Other communications, legal and consultancy costs	✓	UoA	✓	2.3	2.0
Other departmental costs attributable to the CDC Program	✓	UoA	✓	33.6	28.5
Support Services expenditure - DSS component	✓	CIE	✗	0.0	0.0

Cost/benefit item	Evidence of a clear change due to the CDC?	Source of evidence	Quantified	Total undisc.	Total disc.
				$m	$m, NPV
Support Services expenditure - non-DSS component	✓	CIE	✕	0.0	0.0
Inconvenience to participants who prefer cash	✓	CIE	✓	1.2	1.0
Mental distress associated with participation	✓	UoA	✕	N/A	N/A
Disempowerment of vulnerable groups	✓	UoA	✕	N/A	N/A
Impact on small businesses	✕	UoA	N/A	N/A	N/A
Total costs				**80.9**	**68.3**
Benefits					
Alcohol misuse — criminal justice	✓	UoA	✓	2.0	1.7
Alcohol misuse — health system	✓	UoA	✓	1.1	1.0
Alcohol misuse — productivity	✓	UoA	✓	4.4	3.7
Alcohol misuse — traffic accidents	✓	UoA	✓	2.5	2.1
Reduced gambling	✓	UoA	✓	2.8	2.3
Child wellbeing — health	✓	UoA	✓	0.6	0.5
Child wellbeing — food	✓	UoA	✓	0.1	0.1
Child wellbeing — safety	✓	UoA	✓	-0.4	-0.3
Child wellbeing — education	✓	UoA	✓	-0.2	-0.1
Improved employment prospects	✕	UoA/CIE	N/A	N/A	N/A
Improved health eating	✕	CIE	N/A	N/A	N/A
Safety, crime and family violence	✕	UoA	N/A	N/A	N/A
Housing and related services	✕	UoA	N/A	N/A	N/A
Total benefits				**13.0**	**10.9**
Net results					
Net benefit					**-57.4**
Benefit-cost ratio					**0.16**

Source: CIE.

8.2   Breakdown of net cost (up to 2019/20)
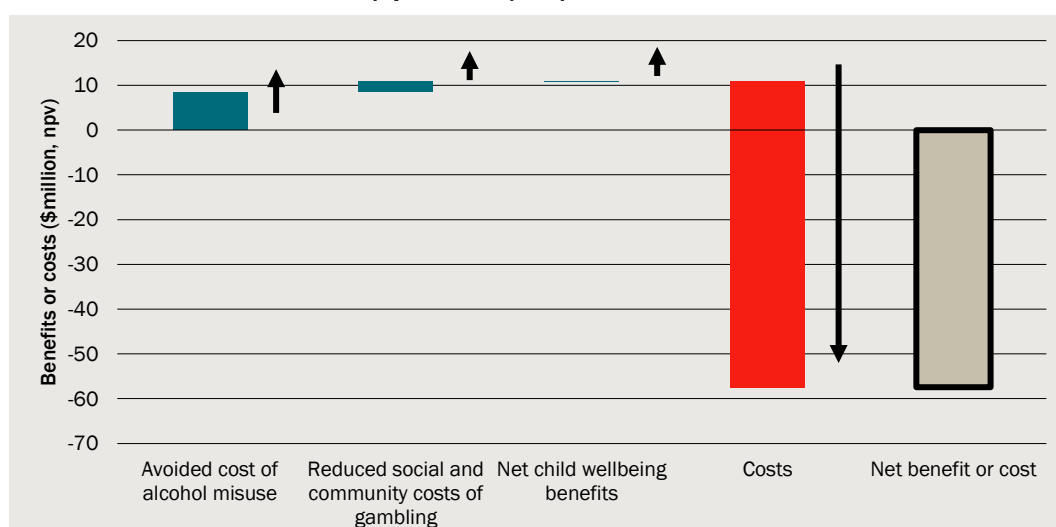
Data source: CIE.

Benefits by program site compared to costs

The program site with the greatest benefits is East Kimberley (chart 8.3 and 8.4), mainly because it has the highest costs of alcohol misuse in the base case, and because Bundaberg and Hervey Bay has only been recently implemented and have had less time for benefits to be realised. Despite Bundaberg and Hervey Bay only having been recently implemented, it has the same total benefit as Ceduna due to its higher count of participants. Goldfields has a slightly smaller total benefit amount compared to these two sites.

Note that while we have estimated benefits for each program site separately, cost data provided by DSS have not been disaggregated by program site.

8.3   Total discounted benefits by Program site, compared to costs

Benefit category	Avoided cost of alcohol misuse	Reduced social and community costs of gambling	Net child wellbeing benefits	Total benefit	Costs	Net benefit
	$million, npv	$million, npv	$million, npv	$million, npv	$million, npv	$million, npv
Ceduna	1.1	0.8	0.5	2.3	N/A	N/A
East Kimberley	4.8	0.8	0.1	5.6	N/A	N/A
Goldfields	1.3	0.2	-0.3	1.2	N/A	N/A
Bundaberg and Hervey Bay	1.3	0.6	-0.1	1.8	N/A	N/A
Total	**8.5**	**2.3**	**0.1**	**10.9**	**68.3**	**-57.4**

Source: CIE.

8.4 Total discounted benefits by Program site

Legend:
- Net child wellbeing benefits
- Reduced social and community costs of gambling
- Avoided cost of alcohol misuse
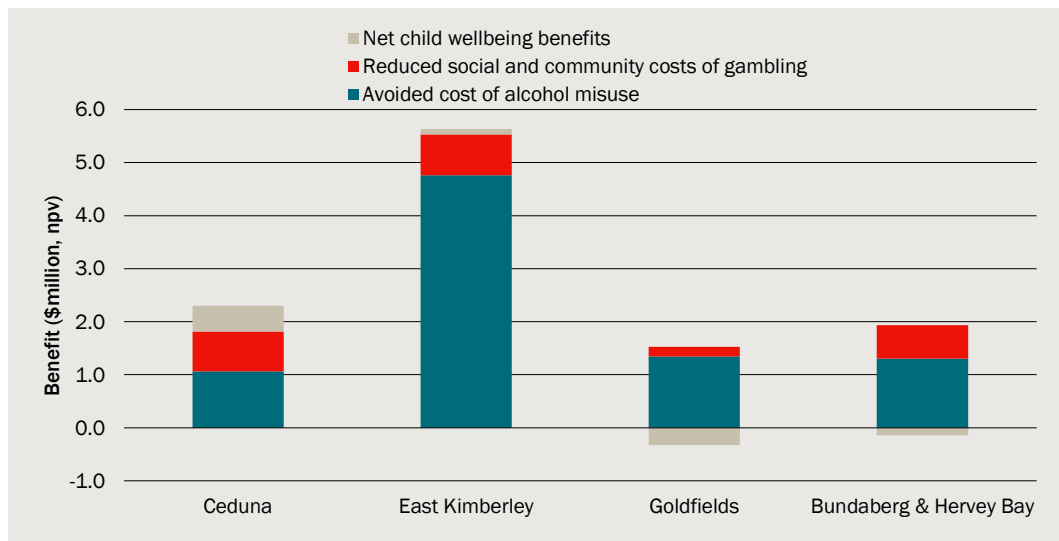
Data source: CIE.

Benefits and costs per participant

As with total costs and benefits, the majority of benefits per person are avoided costs of alcohol misuse, which are $419 per person (chart 8.5).

8.5 Breakdown of net cost per person
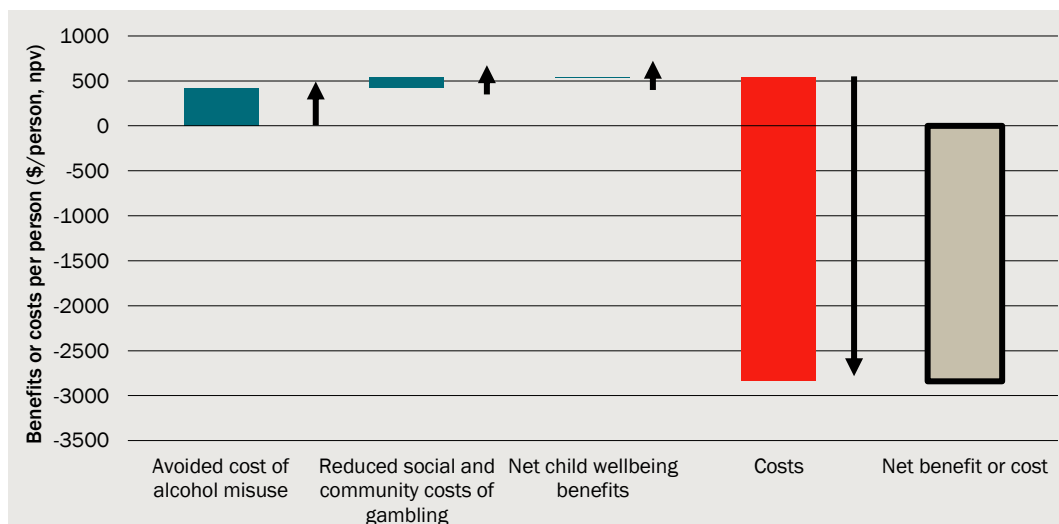
Data source: CIE.

However, the benefits per CDC participant[94] (table 8.6 and chart 8.7) is quite different across program sites. While East Kimberley still has the highest benefit in total, Ceduna

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94 The denominator in the calculation of benefit per participant is the present value of the number of total participants in the program. That is, it is the sum of the discounted number of participants over 2015/16 to 2019/20. This results in a 'discounted benefit per participant'.

has a high benefit per person with a particularly significant contribution from gambling reduction benefits.

8.6   Discounted benefits per person by Program site, compared to costs

Benefit per participant	Avoided cost of alcohol misuse	Reduced social and community costs of gambling	Net child wellbeing benefits	Total benefit	Costs	Net benefit
	$/person, npv	$/person, npv	$/person, npv	$/person, npv	$/person, npv	$/person, npv
Ceduna	304	216	140	660	N/A	N/A
East Kimberley	900	135	19	1 053	N/A	N/A
Goldfields	237	110	- 57	289	N/A	N/A
Bundaberg and Hervey Bay	226	108	- 25	309	N/A	N/A
Total	**419**	**134**	**6**	**559**	**3 401**	**- 2 842**

Note: The number of participants used to calculate benefits per person is also discounted.
Source: CIE.

The findings in 8.6 represent the average benefit and cost across the CDC participant population.

8.7   Discounted benefits per person by Program site
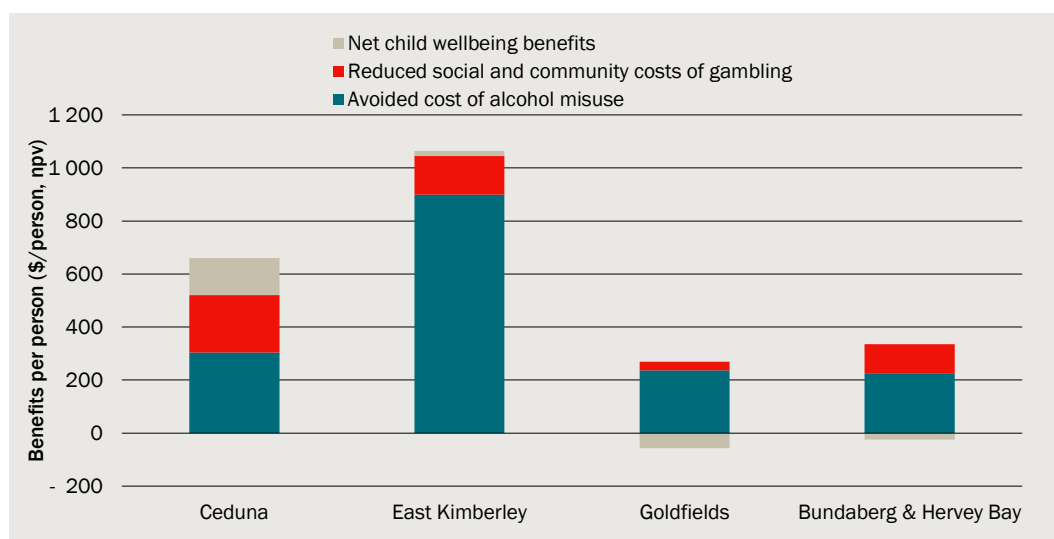
Note: The number of participants used to calculate benefits per person is also discounted.
Data source: CIE.

Throughout all consultations, stakeholders were able to identify both benefits and costs for CDC participants. Many of the benefits reported by stakeholders are hearsay or anecdotal in nature. However, through these discussions, it was clear that not all participants experience the same impact.

Stakeholder agreed that the impact for CDC participants would differ among three general groups:

1 **Those experiencing drug or alcohol related harms and benefit from Card** –
   Stakeholders described specific instances where participants were experiencing harms
   from their alcohol, drug, or gambling consumption, and because of the Card, their
   consumption and harms were reduced. Examples were provided of family members
   who participated in Support Services funded by CDC, and they had a noticeable
   change in spending behaviours and started to spend more on food for their families.
   Other examples were provided of school children who came to school having eaten
   breakfast and with a packed lunch.

   a) However, some stakeholders mentioned that participants facing harms from
      addiction and dependence still find ways to buy drugs and alcohol. These
      participants may be experiencing the highest harm, but through creative means are
      continuing to fund their alcohol or drug consumption.

2 **Those who do not experience harms, but still benefit** – There were some
   participants who did not experience alcohol or drug related harms, but benefited from
   the Card. For example, one stakeholder stated that "older CDC participants" in their
   region have benefited greatly from the Card, however, not because of the reduced
   expenditure on alcohol, but because of a reduction in elder abuse. For instance, before
   the CDC program, family members previously stole cash from elderly family
   members to fuel their own drug or alcohol use. With the CDC program, even if the
   Card is stolen by family members, the Card could not be used to withdraw cash or
   used to buy alcohol. There were other examples of participants who for the first time
   had sufficient funds to pay for school excursions.

3 **Those who do not experience harms, but do not benefit** – Some participants felt like
   they did not benefit from the restrictions imposed onto them from the Card, and
   overall, the feelings of stigma from the Card outweighed any benefit they may have
   received. For example, we heard examples of people who had successful careers and
   were financially adapt, but after moving into a carer's role, they commenced on the
   Card and felt their behaviours was being unfairly restricted. Some of these participants
   attempted to get off the Card without success. Stakeholders mentioned that many
   CDC participants initially feel concerned when moving onto the Card. Although
   some concerns are reduced over time for many, concerns regarding social
   discrimination and stigma remained.

There is no systemic evidence available to categorise participants into these three groups
or to validate that these impacts are experienced by other participants. Further, there is a
complex relationship between alcohol consumption and costs of alcohol misuse
(discussed in Chapter 6). However, the second impact evaluation outlined on how
specific impacts relate to demographic characteristics.

For example, the Evaluation found that female participants were more likely to report a
reduction in alcohol consumption than male participants, and indigenous participants
were similarly more likely to report a reduction.[95]

95 Mavromaras K., Moskos M., Mahuteau S., Isherwood L., 2021, '*Evaluation of the cashless debit
    card in Ceduna, East Kimberley and the Goldfields region: Consolidated report*', Future of employment
    and skill research centre, The University of Adelaide, p.60.

Benefits and costs over time

The CDC program is associated with a net cost in all years (chart 8.8), but the benefit-cost ratio fluctuates over time (table 8.9). The interaction between the growing scale of the program and different patterns of benefits across sites results in a changing pattern of overall net benefits, with a particularly large cost in 2015/16 relative to benefits suggesting that start-up costs for the program were relatively higher.

8.8   Costs and benefits over time
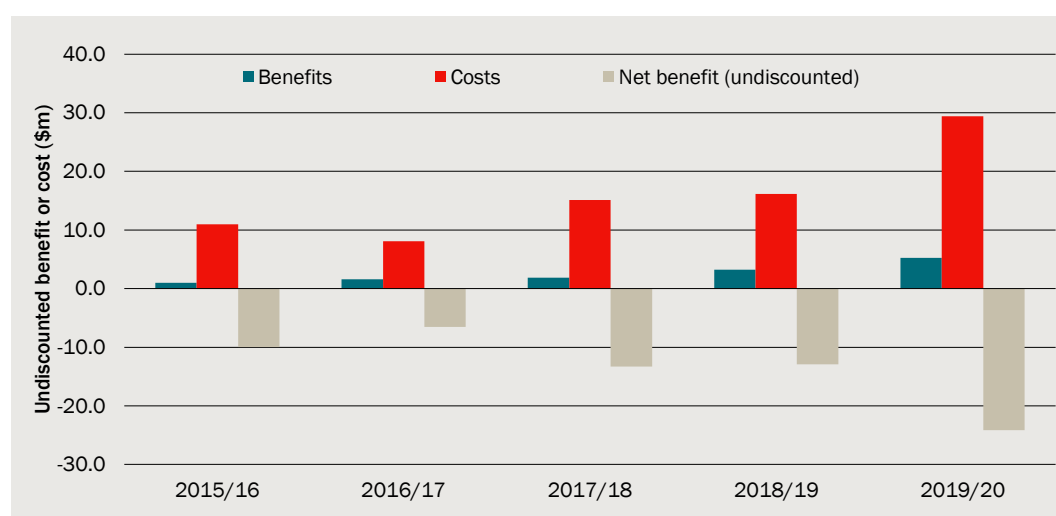
Note: All values are undiscounted.

Data source: CIE.

8.9   Cost-benefit analysis results for each year

Measure	2015/16	2016/17	2017/18	2018/19	2019/20	Total
	$million, npv	$million, npv	$million, npv	$million, npv	$million, npv	$million, npv
Benefits	1.0	1.6	1.9	3.3	5.2	13.0
Costs	11.0	8.1	15.1	16.2	29.4	79.8
Net benefit (undiscounted)	-10.0	-6.5	-13.3	-12.9	-24.1	-66.8
Benefits	1.0	1.5	1.6	2.7	4.0	10.8
Costs	11.0	7.5	13.2	13.2	22.4	67.4
Net benefit (discounted)	-10.0	-6.1	-11.6	-10.5	-18.4	-56.6
Benefit-cost ratio	0.09	0.19	0.12	0.20	0.18	0.16

Source: CIE.

Sensitivity analysis

We test the sensitivity of the results to key assumptions by varying assumed parameters one-at-a-time and measuring the net benefits under these alternative parameter values. For example, we test how the results for the CBA are altered by assuming a lower discount rate of 3 per cent. This also includes alternative approaches to the analysis to

understand the sensitivity of the results to the methodological approach in addition to the parameter values.

The results for the sensitivity analysis show that the overall CBA results for the program are not highly sensitive to the chosen range of assumptions:

- A lower or higher discount rate has a negligible impact on the net benefit or benefit-cost ratio, because the evaluation period of the analysis is relatively short. A key caveat to this sensitivity analysis is that we cannot vary the discount rate for alcohol misuse costs, because Manning, Smith and Mazerolle (2013) do not provide their estimates of the societal costs of alcohol misuse in Australia under different assumed discount rates.

- The productivity costs of alcohol misuse may not be applicable to the cohort of CDC participants, because these participants are often not employed. If the costs associated with lost productivity (presenteeism and absenteeism) are excluded, the benefit-cost ratio of the CDC program falls to 0.11. These costs are included in the central case because there are costs to lost productivity associated with CDC participants that lose future prospects of work and alcohol may be the cause of unemployment for CDC participants.

- Inclusion of costs and benefits for 2020/21 has little effect on the results, because the benefits are similar in per person terms in 2020/21, and costs are projected for this year to remain the same in per person terms as 2019/20 (see Appendix E). Data about fixed and recurrent costs of the CDC program has not been provided by DSS, but if a large share of costs are fixed, then the cost per person in 2020/21 may be lower than previous years. This would result in an improved benefit-cost ratio for this sensitivity test.

- A higher relative risk of moderate-or-higher drinking risk (compared to low risk drinking) would increase the benefits of alcohol misuse from $8.5 million to $12.0 million in present value terms. Varying this assumption doesn't affect the conclusion of the analysis that the costs of the CDC program outweigh the benefits. This sensitivity test assumes a relative risk factor of 5.9 instead of 2.7 (as discussed in Appendix D). This alternative parameter value implicitly assumes that the costs of alcohol misuse are more closely related to prevalence of social problems from alcohol rather than alcohol-related health problems, which we believe is a less plausible assumption that the central case.

- A larger base case cost of alcohol misuse in Bundaberg and Hervey Bay has little impact on the overall results. This is mainly because the CDC was only more recently implemented in Bundaberg and Hervey Bay, and benefits from this program site accrue over fewer years as a result. For this sensitivity test we assume that the societal cost of misuse of alcohol is $1 909 per person rather than $1 062, which is based on the average cost per person across the other three program sites.

The benefit-cost ratio of 0.16 under the central case indicates that benefits would have to be more than six times higher than estimated to result in a positive net benefit (i.e. a benefit-cost ratio above 1). Similarly, for the program to have broken even between 2015/16 and 2019/20, the cost per participant would need to have been 84 per cent lower at $540 per person.

8.10 Sensitivity analysis results

Sensitivity analysis case	Total costs	Alcohol misuse	Gambling	Child wellbeing	Net benefit	Benefit-cost ratio
	$m, NPV	$m, NPV	$m, NPV	$m, NPV	$m, NPV	Ratio
Central case	68.8	8.5	2.3	0.1	-57.4	0.16
Low discount rate (3%)	75.1	9.7	2.6	0.1	-62.7	0.16
High discount rate (10%)	63.9	7.7	2.2	0.1	-53.9	0.16
Exclude productivity costs of alcohol misuse	68.3	4.8	2.3	0.1	-61.1	0.11
Include costs and benefits for 2020/21	92.0	11.5	3.3	0.1	-77.1	0.16
Higher relative risk of problem drinking	68.3	12.0	2.3	0.1	-53.9	0.21
Larger base case cost of alcohol misuse in Bundaberg and Hervey Bay	68.3	9.5	2.3	0.1	-56.4	0.18

Source: CIE.

9   Conclusion

By setting aside 80 per cent of participant's welfare payments to a restricted access bank account, the CDC aims to reduce social harms caused by excessive consumption of alcohol, illicit drugs, and gambling.

Within the first four CDC regions, the largest benefit was from a reduction in alcohol related harms, with an estimated benefit value of $8.5 million between 2015/16 to 2019/20. These benefits are seen through improved productivity, reduced traffic accidents, and reduced interactions with the criminal justice system and the health system.

Other benefits include a reduction in gambling related harms ($2.3 million) and a small net benefit for child welfare.

Total benefits and benefits per person were highest in East Kimberley, which has the highest costs of alcohol misuse.

There are likely to be other impacts and benefits associated with the CDC that could not been valued because of weak evidence of attribution in the comprehensive evaluations. For instance:

- There have been significant benefits for some individual participants and families. However, the evidence does not indicate that these impacts have been experienced by a statistically significant proportion of the population. For example, anecdotal evidence highlighted that some families are spending more on food, and there are more children attending school having eaten breakfast and with a packed lunch. This points to the heterogenous nature of the participant population, with some participants experiencing significant benefits, and others that are not.

- There are some impacts that have inconclusive results and further data collection is required to value the impact. For example, the impact of community safety and consumption of illicit drugs is unclear.

- Although there is evidence of stigmatisation of participants, it is difficult to isolate this from the negative mental health impacts from being unemployed and on welfare payments in general. However, the CDC program does make it more visible when someone is on welfare payments, especially within small communities, which does escalate these mental health concerns.

With the total program costs being $68.3 million in present value terms, the benefits were not sufficient to outweigh the costs. Other non-financial costs were supported by evidence but could not be quantified, and were therefore excluded from the CBA model, including an uplift in Support Services expenditure directly associated with the CDC, mental distress, and disempowerment/lack of autonomy.

This analysis found that the program has generated a net cost of $57.4 million in present value terms, representing a benefit-cost ratio of 0.16. This indicates that the benefits would have to be more than six times higher than estimated to result in a positive net benefit.

This analysis draws from a wide range of data sources, including previous evaluations and new analysis of DSS's administrative data. Interpreting the CBA results should be undertaken with care, and in consideration of the limitations outlined within this report.

A   Data available about spending patterns

This appendix summarises the two most relevant data sources for spending patterns across types of goods and services. These are the *Household Expenditure Survey* (HES) publication[96] and the Selected Living Cost Indexes (SLCIs)[97], both published by the Australian Bureau of Statistics (ABS). The SLCIs are preferred because they are split by type of household, as discussed below.

Household Expenditure Survey

The HES reports estimates of average weekly expenditure on different broad expenditure groups, such as Current housing costs, Alcoholic beverages, and Clothing and footwear. The ABS produces these estimates by asking a large sample of people to keep a diary recording their expenditures over a short period (a week or so, from memory). They also ask respondents to recall some big infrequent expenditures like motor vehicle purchases outside of this short period, so they can be 'spread' over a longer period.

ABS reports estimated average weekly expenditure of Australians with their main source of income being government pensions and allowances, with a breakdown into spending categories (chart C.1). Similarly, the HES publication contains estimates income decile, wealth decile, and for low economic resource households.

There are a range of limitations to drawing inferences from comparison between the expenditure shares in the HES and expenditure shares from the CDC data:

- Spending cannot be categorised by the type of good and service in the CDC dataset, where only the merchant can be identified.
- Spending shares for alcohol and tobacco are identified in the HES and the CDC data, but because 20 per cent of income is provided to CDC program participants in cash, this is not a full picture of CDC participant spending. Further, the HES data suggests expenditure on alcohol and tobacco is significantly less than 20 per cent of weekly expenditure, meaning that this average level of spending is still possible for CDC participants.

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96 Information about the HES is available at:
   https://www.abs.gov.au/statistics/economy/finance/household-expenditure-survey-australia-summary-results/latest-release

97 Australian Bureau of Statistics, 2017, *Selected Living Cost Indexes: 17th Series Weighting Pattern, Sep 2017*, available at:
   https://www.abs.gov.au/ausstats/abs@.nsf/PrimaryMainFeatures/6474.0?OpenDocument

- Spending on gambling is not identified in the HES, but understood to be included in the 'recreation' component.

- Spending on illegal drugs cannot be identified in the HES.

- HES data is not spatially disaggregated, so differences between regions will not be visible to enable a more relevant comparison for each program location.

- HES data for the 'government pensions and allowances' category of 'main source of income' will include aged pension recipients, who may have very different spending characteristics to recipients of other payments due to being older.

A.1   Expenditure shares for Australians with government pensions and allowances as the main source of income
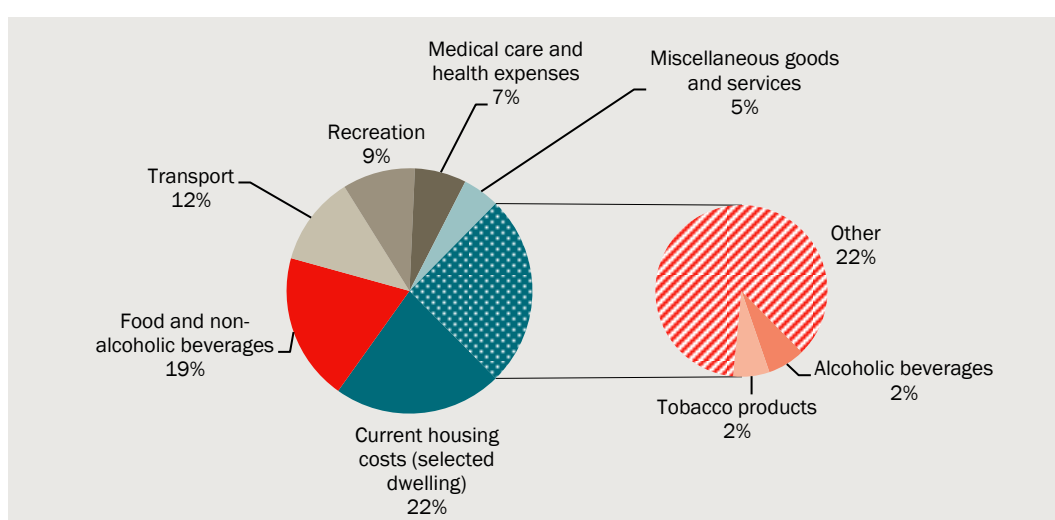
Data source: ABS *Household Expenditure Survey 2015-16.*

Another key issue with the HES is that HES respondents tend to understate their expenditure on alcohol and tobacco.[98] The ABS produces the Consumer Price Index (CPI) by adjusting the HES data to account for this underreporting (among other adjustments) to obtain new CPI weights. However, the CPI weights are published by capital city, but not by type of household, so they are not a useful comparator to CDC program participants.

Selected Living Cost Indexes

The SLCIs provide a measure of the cost of living for each of four types of households. To do this, they need a separate set of weights for each household. They produce the weights in almost the same way as the CPI. The 'other government transfer recipient' column (table A.2) refers to all households whose principal source of income is a

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[98] Australian Bureau of Statistics, 2019, *Consumer Price Index: Concepts, Sources and Methods, 2018*, available at:
https://www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/6461.0Main%20Features620 18?opendocument&tabname=Summary&prodno=6461.0&issue=2018&num=&view=

government pension or benefit other than the age pension or veterans affairs pension'. The SLCIs are a more useful comparator because they are split by type of household.

A.2 Selected Living Cost Indexes

Commodity group	Pensioner and beneficiary Living Cost Index (LCI)	Employee LCI	Age pensioner LCI	Other government transfer recipient LCI	Self-funded retiree LCI	CPI
	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Food and non-alcoholic beverages	18.28	16.45	19.21	17.59	15.54	15.75
Alcohol and tobacco	8.87	8.17	6.25	11.11	7.40	7.71
Clothing and footwear	3.16	3.41	2.92	3.35	2.65	3.23
Housing	23.33	14.82	20.32	26.00	12.40	22.93
Furnishings, household equipment and services	8.02	8.93	8.73	7.42	9.23	8.56
Health	7.17	5.81	10.69	4.09	10.99	5.88
Transport	9.45	10.62	9.94	9.32	10.74	10.68
Communication	3.31	2.44	3.13	3.28	2.70	2.41
Recreation and culture	9.52	13.14	11.24	8.10	20.98	12.81
Education	1.88	4.45	0.15	3.35	1.24	4.44
Insurance and financial services	7.02	11.79	7.41	6.35	6.12	5.59
All groups	100.00	100.00	100.00	100.00	100.00	100.00

Note: Based on 2015-16 Household Expenditure Survey (HES) data and 2017-18 Household Final Consumption Expenditure (HFCE) data. Figures may not add up due to rounding.
Source: ABS, CIE.

Alignment of SLCI and CDC spending categories

There is not a straightforward alignment between the SLCI weight categories and CDC spending categories (table A.3). There are multiple categories of spending in the CDC dataset that correspond to individual SLCI categories, and then a few categories from each that do not have a corresponding category in the other dataset (e.g. insurance and financial services, and 'other' in the CDC dataset). The alignment between furnishing, household equipment and services in the SLCIs and the sum of utilities, pets, department, discount and variety stores in the CDC dataset is particularly prone to error, given that department, discount and variety stores sell many products apart from furnishings and household equipment.

A.3 Alignment of SLCI and CDC categories

SLCI category	CDC category 1	CDC category 2	CDC category 3	CDC category 4
Housing	Housing	Non Card-Based Transactions		
Transport	Transport - Private	Transport - Public	Transport - Rental Car	

SLCI category	CDC category 1	CDC category 2	CDC category 3	CDC category 4
Food and non-alcoholic beverages	Food			
Recreation and culture	Recreation - Eating out	Recreation - Goods and equipment	Recreation - Activities and memberships	Holidays and travel
Clothing and footwear	Clothing and footwear			
Health	Medical			
Education	Childcare/ Education/ Training/ Employment			
Furnishings, household equipment and services	Utilities	Pets	Department, Discount and Variety Stores	
Insurance and financial services				
Alcohol and tobacco				
Communication				
Other	Other			
Services	Services			

Source: ABS Selected Living Cost Indexes, DSS, CIE.

B   Detailed statistical modelling output

Modelling of spending shares

Full statistical output including tests of the significance of coefficients is presented in table B.1. Note that a dummy variable is included for each combination of location and spending category. For example, the average spending share for Bundaberg and Hervey Bay clothing and footwear purchases is 9.22 per cent, and there is an trend decrease in spending on clothing and footwear of 0.25 per cent per annum. The annual spending trends are the key coefficients of interest, with other variables included as controls to yield an accurate estimate of the common trend across locations for each spending category.

B.1   Detailed statistical model output for regression predicting spending shares

Variable name		Coef.	Std. Err.	t	P>t	[95% Conf. Lower	Interval] Upper
Bundaberg and Hervey Bay	Clothing and footwear	9.22	4.86	1.90	0.058	-0.31	18.74
	Department, Discount and Variety Stores	63.39	4.86	13.06	0.000	53.87	72.91
	Food	319.98	4.86	65.90	0.000	310.46	329.50
	Holidays and travel	-0.67	4.86	-0.14	0.891	-10.19	8.85
	Housing	12.62	4.86	2.60	0.009	3.09	22.14
	Medical	9.23	4.86	1.90	0.057	-0.29	18.75
	Non Card-Based Transactions	289.80	4.86	59.69	0.000	280.27	299.32
	Other	111.15	4.86	22.89	0.000	101.63	120.67
	Pets	-6.82	4.86	-1.40	0.160	-16.34	2.70
	Recreation - Activities and memberships	10.38	4.86	2.14	0.033	0.85	19.90
	Recreation - Eating out	62.91	4.86	12.96	0.000	53.39	72.44
	Recreation - Goods and equipment	26.12	4.86	5.38	0.000	16.60	35.64
	Services	38.48	4.86	7.92	0.000	28.95	48.00
	Transport - Private	84.16	4.86	17.33	0.000	74.64	93.68
	Transport - Public	-2.00	4.86	-0.41	0.680	-11.52	7.52
	Transport - Rental Car	-10.04	4.86	-2.07	0.039	-19.56	-0.51
	Utilities	-6.36	4.86	-1.31	0.190	-15.89	3.16
Ceduna	Childcare/Education/Training/Employment	-8.87	4.13	-2.15	0.032	-16.97	-0.77
	Clothing and footwear	5.53	4.40	1.26	0.209	-3.10	14.16
	Department, Discount and Variety Stores	30.67	4.40	6.97	0.000	22.04	39.30
	Food	516.96	4.40	117.47	0.000	508.33	525.59
	Holidays and travel	6.68	4.40	1.52	0.129	-1.95	15.31

Variable name		Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
						Lower	Upper
	Housing	28.83	4.40	6.55	0.000	20.20	37.46
	Medical	5.55	4.40	1.26	0.208	-3.08	14.18
	Non Card-Based Transactions	139.68	4.40	31.74	0.000	131.05	148.31
	Other	22.96	4.40	5.22	0.000	14.33	31.59
	Pets	-9.73	4.40	-2.21	0.027	-18.36	-1.10
	Recreation - Activities and memberships	-6.50	4.40	-1.48	0.140	-15.13	2.13
	Recreation - Eating out	30.16	4.40	6.85	0.000	21.53	38.79
	Recreation - Goods and equipment	13.02	4.40	2.96	0.003	4.39	21.65
	Services	46.74	4.40	10.62	0.000	38.11	55.37
	Transport - Private	199.23	4.40	45.27	0.000	190.60	207.86
	Transport - Public	4.72	4.40	1.07	0.284	-3.91	13.35
	Transport - Rental Car	-10.26	4.40	-2.33	0.020	-18.89	-1.63
	Utilities	-3.83	4.40	-0.87	0.385	-12.46	4.80
East Kimberley	Childcare/Education/Training/Employment	-8.04	4.12	-1.95	0.051	-16.12	0.05
	Clothing and footwear	11.57	4.39	2.64	0.008	2.97	20.18
	Department, Discount and Variety Stores	38.37	4.39	8.75	0.000	29.77	46.98
	Food	543.52	4.39	123.89	0.000	534.92	552.12
	Holidays and travel	14.87	4.39	3.39	0.001	6.26	23.47
	Housing	19.91	4.39	4.54	0.000	11.31	28.52
	Medical	-1.26	4.39	-0.29	0.775	-9.86	7.35
	Non Card-Based Transactions	111.36	4.39	25.39	0.000	102.76	119.97
	Other	13.26	4.39	3.02	0.003	4.66	21.86
	Pets	-9.50	4.39	-2.17	0.030	-18.10	-0.90
	Recreation - Activities and memberships	-6.37	4.39	-1.45	0.146	-14.98	2.23
	Recreation - Eating out	24.68	4.39	5.63	0.000	16.08	33.29
	Recreation - Goods and equipment	13.55	4.39	3.09	0.002	4.94	22.15
	Services	48.42	4.39	11.04	0.000	39.81	57.02
	Transport - Private	186.85	4.39	42.59	0.000	178.25	195.46
	Transport - Public	31.78	4.39	7.24	0.000	23.17	40.38
	Transport - Rental Car	-10.15	4.39	-2.31	0.021	-18.76	-1.55
	Utilities	-11.30	4.39	-2.58	0.010	-19.91	-2.70
Goldfields	Childcare/Education/Training/Employment	-7.14	4.26	-1.67	0.094	-15.50	1.22
	Clothing and footwear	7.57	4.39	1.72	0.085	-1.04	16.18
	Department, Discount and Variety Stores	53.83	4.39	12.26	0.000	45.22	62.45
	Food	359.47	4.39	81.85	0.000	350.85	368.08
	Holidays and travel	8.91	4.39	2.03	0.043	0.30	17.52
	Housing	16.52	4.39	3.76	0.000	7.91	25.14
	Medical	9.06	4.39	2.06	0.039	0.45	17.68
	Non Card-Based Transactions	269.20	4.39	61.30	0.000	260.59	277.81
	Other	53.77	4.39	12.24	0.000	45.16	62.38

Variable name		Coef.	Std. Err.	t	P>t	[95% Conf. Lower	Interval] Upper
	Pets	-7.83	4.39	-1.78	0.075	-16.45	0.78
	Recreation - Activities and memberships	0.64	4.39	0.14	0.885	-7.98	9.25
	Recreation - Eating out	53.62	4.39	12.21	0.000	45.01	62.23
	Recreation - Goods and equipment	25.66	4.39	5.84	0.000	17.05	34.27
	Services	48.30	4.39	11.00	0.000	39.69	56.91
	Transport - Private	126.53	4.39	28.81	0.000	117.92	135.15
	Transport - Public	8.75	4.39	1.99	0.046	0.14	17.36
	Transport - Rental Car	-10.02	4.39	-2.28	0.023	-18.63	-1.41
	Utilities	-5.31	4.39	-1.21	0.227	-13.92	3.30
Annual trend	Childcare/Education/Training/Employment	0.02	0.09	0.22	0.829	-0.16	0.20
	Clothing and footwear	-0.25	0.09	-2.71	0.007	-0.43	-0.07
	Department, Discount and Variety Stores	-0.06	0.09	-0.61	0.544	-0.23	0.12
	Food	-3.34	0.09	-36.66	0.000	-3.52	-3.16
	Holidays and travel	0.01	0.09	0.13	0.894	-0.17	0.19
	Housing	-0.44	0.09	-4.79	0.000	-0.62	-0.26
	Medical	-0.04	0.09	-0.49	0.626	-0.22	0.13
	Non Card-Based Transactions	3.34	0.09	36.57	0.000	3.16	3.51
	Other	0.64	0.09	7.04	0.000	0.46	0.82
	Pets	0.00	0.09	-0.01	0.991	-0.18	0.18
	Recreation - Activities and memberships	0.08	0.09	0.89	0.374	-0.10	0.26
	Recreation - Eating out	0.29	0.09	3.16	0.002	0.11	0.47
	Recreation - Goods and equipment	0.04	0.09	0.45	0.654	-0.14	0.22
	Services	-0.21	0.09	-2.25	0.024	-0.38	-0.03
	Transport - Private	-0.24	0.09	-2.65	0.008	-0.42	-0.06
	Transport - Public	-0.03	0.09	-0.31	0.757	-0.21	0.15
	Transport - Rental Car	0.00	0.09	-0.01	0.995	-0.18	0.18
	Utilities	0.18	0.09	2.02	0.043	0.01	0.36
Constant		10.47	3.43	3.05	0.002	3.74	17.20

Data source: CIE.

Approach to modelling survival benefits

Survival analysis is an established method for analysing the determinants of duration for unemployment spells. This enables us to construct a time to event dataset (in this case a time to death) and to conduct a high-level survival analysis.

For this analysis, we have used a Cox proportional hazard regression model as the preferred method to conduct the survival analysis, which allows for multiple coexisting effects in one model (as opposed to the more popular Kaplan-Meier Curves) (box 6.7).

B.2   Survival Analysis

Survival Analysis is a set of statistical methods to estimate expected durations until one and more events happen.[99] Survival analysis requires time-to-event data and special techniques as the data violates crucial assumptions for standard linear regression models (for example non-normality or censoring, i.e., the event of interest does not fall into the time span that we observe).

Common techniques for survival analysis include:

- **Life tables:** (or actuarial tables) often used by insurance companies to derive the probability to survive to a particular age or the remaining life expectancy
- **Survival functions:** estimate the probability of surviving any past a point in time
- **Kaplan-Meier curves:** estimate and visualise survival functions, and
- **Cox proportional hazard regression model:** describe effects of categorical and quantitative variables on survival.

For any statistical model, some assumptions are necessary and biases distorting results are possible. In particular, models can suffer under endogeneity problems and selection bias, which arise from the nature of treatments and health programs. Broadly, endogeneity arises when variables are excluded, which have a potential effect on both the independent and dependent variable. Selection bias occurs when a selection of participants or patients is not random.

The DOMINO dataset allows us to estimate the time to an unemployment spell ending, whether due to the person obtaining employment or some other reason.

Multivariate Cox regression

The model results suggest that there is not a statistically significant difference in the probability of obtaining employment for a CDC participant compared to a non-participant, after controlling for the characteristics of the participant such as their age (table B.3). This is shown by the p-values on the CDC-coefficient well-exceeding 0.05, a standard threshold for p-values to identify whether a result is statistically significant. This means that being in the CDC cohort for any of the sites does not result in your hazard for becoming employed (and ending the unemployment spell) deviating from the average. That is, there is no statistically significant difference between whether someone becomes employed depending on whether they are a CDC participant in any of the sites. The result for CDC participation in East Kimberley has a positive point estimate that is materially above 1, which provides some suggestive evidence that there may be a benefit

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[99] See Cassidy et al (2020) for an example of a recent application to the Australian unemployment context: Cassidy, N., Chan, I., Gao, A. and Penrose, G., 2020, 'Long-term Unemployment in Australia', *RBA Bulletin*, December 2020, available at:
https://www.rba.gov.au/publications/bulletin/2020/dec/long-term-unemployment-in-australia.html

of increased employment probability for participants at that site. Given the result is not statistically significant, we do not rely on this as evidence of such benefits.

The sample size for this analysis is 75 181 individuals, among which 6 921 individuals become employed at the end of their unemployment spell. The remainder have other reasons for the end of the unemployment spell, such as death or moving overseas.

B.3 Cox proportional hazards model results for unemployment spells

Variable	Coefficient	Standard error	z-score	P-value	95 per cent confidence interval	
					Lower bound	Upper bound
CDC (Ceduna)	0.87	0.14	-0.88	0.380	0.63	1.19
CDC (Bundaberg and Hervey Bay)	0.97	0.07	-0.45	0.655	0.83	1.12
CDC (Goldfields)	1.05	0.11	0.44	0.657	0.85	1.30
CDC (East Kimberley)	1.23	0.17	1.51	0.132	0.94	1.60
Age	1.01	0.00	2.25	0.025	1.00	1.01
Age (18-29)	1.21	0.07	3.34	0.001	1.08	1.35
Age (30-44)	1.02	0.05	0.31	0.754	0.92	1.12
Age (45-64)	0.82	0.07	-2.33	0.020	0.69	0.97
Age (65+)	0.68	0.06	-4.16	0.000	0.57	0.82
Male	1.00	0.02	0.03	0.975	0.95	1.05
Born overseas (English-speaking country)	0.88	0.06	-1.76	0.079	0.76	1.01
Born overseas (non-English-speaking country)	1.22	0.07	3.32	0.001	1.08	1.37
Burnett	0.71	0.03	-7.84	0.000	0.65	0.77
Eyre Peninsula and South West	0.73	0.03	-7.02	0.000	0.67	0.80
Goldfields	0.57	0.04	-9.15	0.000	0.50	0.64
Gympie	0.74	0.03	-6.90	0.000	0.68	0.81
Hervey Bay	0.92	0.03	-2.28	0.023	0.85	0.99
Kimberley	0.40	0.02	-16.18	0.000	0.36	0.45
Maryborough	0.77	0.03	-6.11	0.000	0.71	0.84
Time trend based on start-date of spell	1.00	0.00	-0.72	0.471	1.00	1.00
Time trend based on start-year of spell	1.05	0.04	1.12	0.264	0.97	1.13

Source: CIE.

However, if the 'hazard' of being a CDC participant is not proportional to duration to the event, the Cox proportional hazards model will not produce accurate coefficient estimates. Visually, on survival curves, hazards will likely not be proportional if the survival curves cross over. Testing for proportionality of hazards, we find we cannot reject the assumption that hazards are proportional for Ceduna (p-value 0.43), Goldfields (p-value 0.936) and East Kimberley (0.31), but not for Bundaberg and Hervey Bay (0.0018).

C   Declined transaction reasons

This study only includes declined transactions where the reason is associated with the product/merchant type being disallowed. That is, we excluded declined transactions for reasons such as having insufficient funds. Table C.1 provides details of which reasons for declined transactions are assumed to be related to restricted item or merchant types.[100]

C.1   Reasons for a declined transaction related to restrict item types

Reason transaction declined	Reason relates to restricted item types?
Card Not Present not allowed	No
Declined – Advised to Reject	Yes
Declined – Terminal in Excluded List	Yes
Declined – Terminal not in Approved List	Yes
Direct Debit Insufficient funds	No
Direct Debits have been stopped for merchant	Yes
Direct debits not allowed for this merchant	Yes
Transaction declined due to Card elapsing its expiry date	No
Transaction declined due to exceeding withdrawal limit	Yes
Transaction declined due to incorrect PIN entry	No
Transaction declined due to insufficient funds	No
Transaction declined due to restricted Merchant Category Code	Yes
Transaction declined due to terminal not on whitelist	Yes
Transaction declined due to terminal on blacklist	Yes
Transaction declined due to the Card being listed as lost	No
Transaction declined due to the Card being listed as restricted	No

[100]   One notable exclusion of a reason assumed to be related to restricted items is where a transaction is declined because the merchant is not on the whitelist. In the early stages of the CDC rollout, all merchants had to be whitelisted to be considered an approved merchant type, but some (perhaps smaller) merchants weren't whitelisted yet despite not selling restricted item categories. We have excluded these transactions from counts of declined transactions related to restricted item types, which will underestimate the number of declined transactions in early periods that were related to restricted items. Including these transactions in counts of declined transactions has little effect on the overall results, but does suggest a slightly weaker trend increase in declined transactions related to restricted items.

Reason transaction declined	Reason relates to restricted item types?
Transaction declined due to the Card being listed as stolen	No
Transaction declined due to the Card not being issued yet however it is embossed	No

Source: CIE.

D Calculation of changes in alcohol consumption by program site

Relative risk reduction among moderate-or-higher risk drinkers

Table D.1 presents the data underlying the calculation of relative risk reduction among the cohort with an AUDIT score greater than or equal to 8 (i.e. Moderate, High and Very High). This is a key input to estimating the reduction in costs of alcohol misuse associated with the CDC and discussed in Chapter 6.

This approach uses proportions of the CDC population that report changes in various measures of consumption, and maps this to a single change in costs. This faces the following limitations:

- Reported changes in consumption may not be an accurate estimate of actual changes in consumption.

- Reported changes in consumption cannot be attributed to the CDC alone, but rather to the CDC along with concurrent policy changes such as the increase in provision of Support Services.

- Changes in each measure of consumption may have different impacts on cost of alcohol misuse for that respondent.

  – For example, someone who reduced the amount of alcohol at any one time may reduce their consumption sufficiently to move to the low risk category if they drink infrequently and the reduction in consumption was large. Alternatively, if they drink frequently and made only a small reduction in alcohol consumption, this may imply a negligible reduction in risk.

  – Ultimately, the intention in using the approach of taking the average share across reduced amount, frequency and alcohol concentration is to factor in the responses to these questions and obtain a single estimate of the reduction in cost, which is necessary because we have only a single estimate of the cost of alcohol misuse by program site (rather than an estimate of alcohol misuse by AUDIT score, or cost by amount/frequency/concentration of alcohol consumption). We use a simple average across these three measures because:

    ⋯ some combination of reduction in these three factors is likely to be associated with a material reduction in risk, rather than merely a change in one of these variables,

    ⋯ academic literature often finds that those who do not drink at all sometimes have less of a reduction in alcohol risk than those who are low drinkers.[101]

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[101] See, for example, Kuitunen-Paul and Roerecke (2018) which states "Compared to past year abstainers (AUDIT=0), moderate drinkers had a lower mortality risk": Kuitunen-Paul, S. and

⋯ it avoids a misleading impression of precision in this estimate,

⋯ it is consistent with other parts of the analysis.

- Changes in only moderate, high and very high risk participants are counted, based on the most relevant literature measuring differences in relative risk between people with AUDIT scores greater than or equal to 8 (i.e. moderate, high or very high risk) and those less than 8 (i.e. low risk).[102]

D.1 Estimation of the relative risk reduction in each program site

Measure	Low	Moderate	High	Very high	Average
	Per cent	Per cent	Per cent	Per cent	Per cent
East Kimberley					
Reduced amount of alcohol at any one time	14	42	22	22	
Reduced frequency of drinking	12	47	15	26	
Consumed more low-alcohol drinks	5	44	19	31	
Stopped drinking altogether	50	10	22	17	
Proportion in the CDC population	39	38	11	13	
Average share across reduced amount, frequency and alcohol concentration	10	44	19	26	
Relative risk reduction of cohort	**26**	**117**	**170**	**203**	**163**
Goldfields					
Reduced amount of alcohol at any one time	39	42	10	10	
Reduced frequency of drinking	33	44	9	14	
Consumed more low-alcohol drinks	41	39	8	12	
Stopped drinking altogether	75	22	2	1	
Proportion in the CDC population	63	23	5	8	
Average share across reduced amount, frequency and alcohol concentration	38	42	9	12	
Relative risk reduction of cohort	**60**	**181**	**180**	**150**	**170**
Ceduna					
Reduced amount of alcohol at any one time	49	38	6	7	
Reduced frequency of drinking	34	21	16	30	
Consumed more low-alcohol drinks	33	57	0	10	
Stopped drinking altogether	65	24	11	0	
Proportion in the CDC population	61	21	6	11	
Average share across reduced amount, frequency and alcohol concentration	39	39	7	16	
Relative risk reduction of cohort	**63**	**184**	**122**	**142**	**150**

Source: Data from the Mavromaras K., Moskos M., Mahuteau S., Isherwood L., (2021) *Quantative Supplementary Report*, CIE calculations.

Roerecke, M., 2018, 'Alcohol Use Disorders Identification Test (AUDIT) and mortality risk: a systematic review and meta-analysis', *Journal of Epidemiology & Community Health*, available at: https://pubmed.ncbi.nlm.nih.gov/29921648/

102   For example: Kuitunen-Paul, S. and Roerecke, M., 2018, 'Alcohol Use Disorders Identification Test (AUDIT) and mortality risk: a systematic review and meta-analysis', *Journal of Epidemiology & Community Health*, available at: https://pubmed.ncbi.nlm.nih.gov/29921648/

Relative risk of moderate-or-higher drinking

The relationship between more risky drinking as measured by the AUDIT score and the costs of alcohol misuse is complex. For example, the relationship between consumption and absenteeism is likely to be different than the relationship between consumption and liver disease.

However, for the purpose of this study, we estimate a single relative risk factor between moderate-or-higher risk drinking and alcohol misuse, which is 2.7 (table D.2). This is the average across multiple relative risk factors for the end-points shown in table D.2.

These relative risk factors are obtained from Conigrave, Saunders and Reznik (1995).[103] It is a single study of 330 ambulatory care patients in Sydney.

This is not a recent study, and the literature on alcohol-related harms is developing, notably with a greater understanding of the risks associated with lower levels of consumption, and the magnitude of any benefits from low consumption relative to zero consumption.[104]

However, it is the only study able to be identified that estimates the relationship between AUDIT score and social harms, which based on this study have a much stronger relationship with risky alcohol consumption than health-related harms. While there are many studies examining the relationship between alcohol consumption and health issues, a much smaller proportion specifically analyse the relationship between AUDIT score[105] and these outcomes. Also, most studies identified that measure relationships between AUDIT score and health outcomes were studies in the US context, which would have a different relationship between drinking risk and costs. Therefore, we have preferred to use Conigrave, Saunders and Reznik (1995), but test a higher relative risk factor in sensitivity analysis. Some other studies identified are summarised below for comparison:

- Kuitunen-Paul and Roerecke (2018):[106] An AUDIT score of greater than or equal 8 was associated with elevated mortality risk after 2-10 years of follow-up, with a relative risk factor of 1.24. This study was a comprehensive meta-analysis. It also found that moderate drinkers had a similar or lower mortality risk compared to past-year abstainers (relative risk of 0.75 in US Veterans studies and relative risk of 0.99 in population-based studies).

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103   Conigrave, K., Saunders, J. and Reznik, R., 'Predictive capacity of the AUDIT questionnaire for alcohol-related harm', *Addiction*, 1995(90), 1479-1485: Table 1

104   See the conclusions of: Iranpour, A. and Nakhaee, N., 2019, 'A Review of Alcohol-Related Harms: A Recent Update', *Addict Health*, 11(2): 129-137, available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6633071/

105   We use AUDIT score as the primary measure of alcohol use risk because it is measured robustly in the second impact evaluation.

106   Kuitunen-Paul, S. and Roerecke, M., 2018, 'Alcohol Use Disorders Identification Test (AUDIT) and mortality risk: a systematic review and meta-analysis', *Journal of Epidemiology & Community Health*, available at: https://pubmed.ncbi.nlm.nih.gov/29921648/

- Jia et al (2013):[107] The average AUDIT score for general drivers in Guangzhou was 7.4, while for convicted drunk driving offenders it was 11.1, suggesting a moderate level of alcohol problems and potentially a causal relationship.
- Bradley et al (2016):[108] A single cohort study of 24 Veterans Affairs systems in the United States, which found positive relationships between higher AUDIT scores and higher gastrointestinal hospitalisations and physical trauma. There were inconsistent findings with respect to outcomes for patients who decreased to lower AUDIT score risk groups at follow-up.

We have used a simple average in the absence of a reliable way to apply weightings to these different endpoints. Health outcomes will likely be drivers of other categories of alcohol costs. For example, hospital admission would be associated with the prevalence of absenteeism, as would social problems related to alcohol.

In sensitivity analysis we have assumed that the relative risk factor is 5.9, based on only the relative risk of social problems related to alcohol. This alternative assumption would reflect the majority of costs of alcohol misuse being more closely associated with prevalence of social problems rather than the range of health issues associated with drinking. As discussed above, while health system costs are relatively small, much of the remainder of societal costs of alcohol misuse are related to health outcomes, such as traffic accidents (related to hospital admissions and trauma) and productivity (with absenteeism perhaps being more closely related to health status rather than prevalence of social problems).

D.2 Relative risk for moderate-or-higher risk consumption

Endpoint	Relative risk factor
	Ratio
Death	2.4
Liver disease or gastrointestinal bleed	4.0
Elevated blood pressure	1.8
Trauma	1.8
One or more medical disorders which could be related to alcohol	1.8
Social problems related to alcohol	5.9
Hospital admission	1.5
Simple average	**2.7**

Source: Conigrave, K., Saunders, J. and Reznik, R., 'Predictive capacity of the AUDIT questionnaire for alcohol-related harm', *Addiction*, 1995(90), 1479-1485: Table 1, CIE calculation of average.

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107   Jia, G., King, M., Sheehan, M., Fleiter, J., Ma, W., & Zhang, J., 2013, 'Baseline study of alcohol dependence among general drivers and drunk driving offenders in Guangzhou, China', *Proceedings of the 2013 Australasian Road Safety Research, Policing and Education Conference*, pp.1-13, available at: https://eprints.qut.edu.au/63058/16/Paper_187_-_Jia_-_Alcohol_and_Driving.pdf

108   Bradley, K., Rubinsky, A., Lapham, G., Berger, D., Bryson, C., Achtmeyer, C., Hawkins, E., Chavez, L., Williams, E., and Kivlahan, D., 2016, 'Predictive validity of clinical AUDIT-C alcohol screening scores and changes in scores for three objective alcohol-related outcomes in a Veterans Affairs population', *Addiction* 2016 Nov, 111(11), available at: https://pubmed.ncbi.nlm.nih.gov/27349855/

E   Extrapolation of costs to 2020/21

The most recently available cost data for the CDC is up to 30 June 2020. However, much of the analysis undertaken throughout this CBA made use of participant data and benefits up to 30 June 2021.

We have limited the analysis to 30 June 2020 so that it covers the period during which both cost and benefit data is available. However, we estimate the total cost of the program up to financial year 2020/21 for the purpose of sensitivity analysis in Chapter 8.

To estimate the cost, the relationship between the number of participants and the total costs was considered. As shown below, as the number of participants increased over time, the total costs increased (chart E.1).

E.1   Relationship of total costs and number of participants
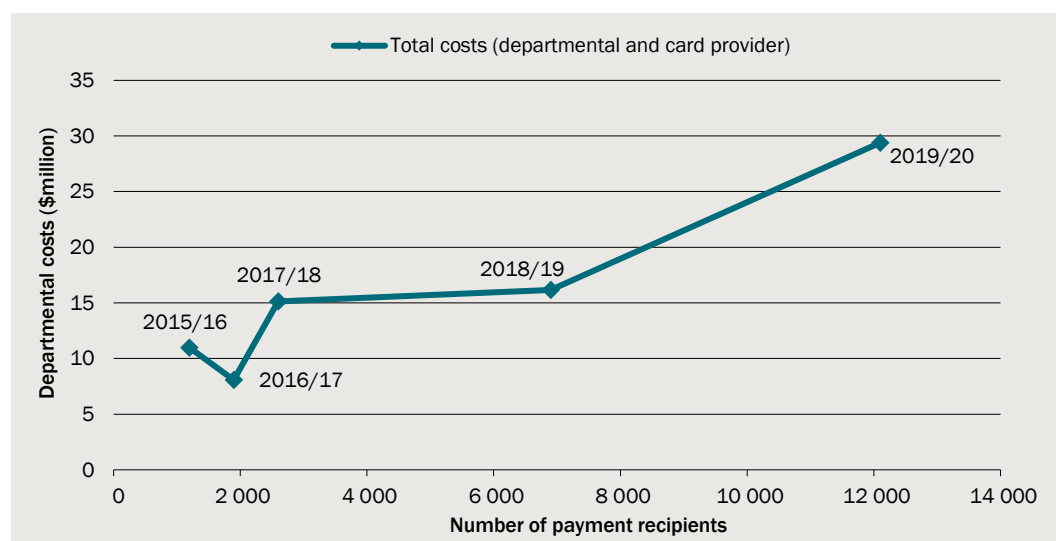
Note: Each data point, including the number of participants, refers to a point in time.
Data source: CDC Program Data, CIE.

When considering the cost per participant, there is a declining trend, as shown below in chart E.2.

The cost data for 2020/21 was not able to be provided by DSS because the data is commercial in confidence and not yet publicly available. To accommodate this, the analysis has estimated the 2020/21 costs.

To estimate the 2020/21 costs, we have applied the cost per participant value in 2019/20 to the number of payment recipients. This approach ensure that the additional year of costs is proportional to the preceding year, rather than attempted to project based off the previous financial years. For instance, when a new program site is being established,

there are a range of additional establishment costs. These establishment costs are generally a one-off expense and are not expected to be ongoing.

However, there are limitations in this approach. For example, the marginal cost has been falling over time since 2015/16 (i.e. the cost of each additional participant). By referring only to the previous year, this approach does not allow for any efficiency improvements that may have been made in 2020/21.

E.2   Cost per participant
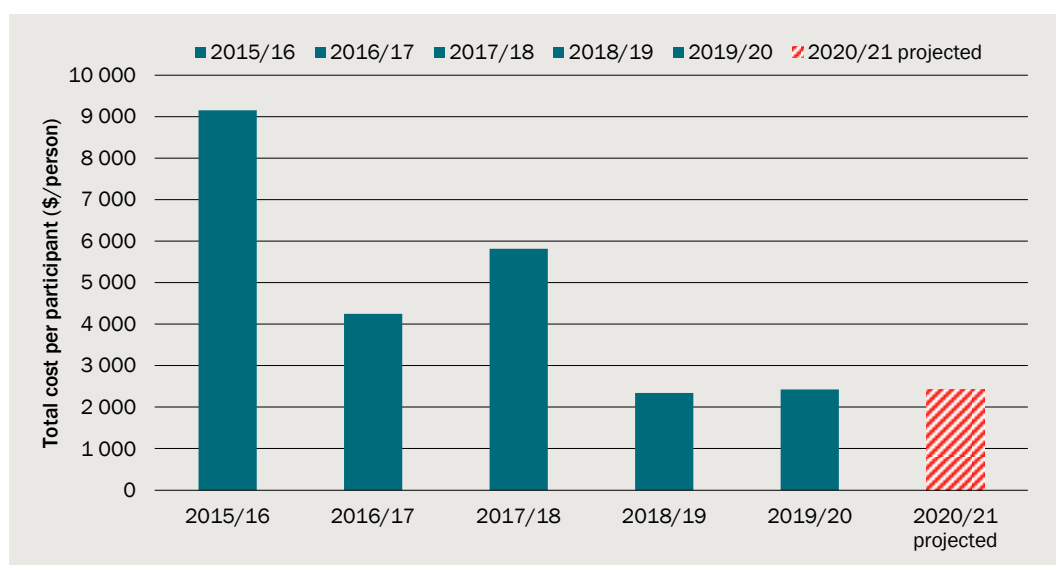
Data source: CIE.

By applying the estimated cost per participant to the number of participants, we estimate that the total cost in 2020/21 is $33.2 million (table E.3).

E.3   Costs of the CDC Program borne by government including projection for 2020/21

Cost item	15/16	16/17	17/18	18/19	19/20	20/21 (proj.)	Total undisc.	Total disc.
	$million	$million	$million	$million	$million	$million	$million	$million
Card provider	5.8	4.0	5.0	9.3	14.9	16.9	55.8	44.9
Evaluation	0.3	1.0	0.5	1.1	1.9	2.1	6.9	5.6
Other (communications, legal, consultancy)	0.6	0.0	0.4	0.9	0.4	0.4	2.7	2.3
Departmental	4.3	3.1	9.1	4.9	12.3	13.9	47.5	38.3

Data source: CIE.

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26 November 2021

Mike Websdane
Cashless Welfare Engagement and Support Services Branch
Department of Social Services
71 Athllon Drive
Greenway ACT 2900

Dear Mr Websdane

RE: NOTED DATA LIMITATIONS IN OUR COST BENEFIT ANALYSIS OF THE CASHLESS DEBIT CARD (CDC)

Thank you again for the opportunity to undertake a cost benefit analysis (CBA) of the first four CDC program regions: Ceduna, East Kimberley, Goldfields, and Bundaberg and Hervey Bay.

This note is provided to assist DSS interpret and communicate the CBA results and qualifications.

During the project, collaboration with the DSS team identified a wide range of benefits and costs for this analysis and potential metrics. This led to a wide range of data sources being identified.

Key inputs were sourced from previous evaluations and reviews of the CDC program. Where evidence gaps existed, we undertook statistical analysis of the Data Over Multiple Individual Occurrences (DOMINO), Data Exchange (DEX) and transactional data sets, and tested modelling assumptions and inputs with service providers within each region.

Although we drew from the most recent data available, there were limitations in the data. For instance:

- existing data collections are not designed to measure economic impacts, and focus on outcomes that are not necessarily mutually exclusive and/or linked to specific individuals. As such, not all of the available evidence was well suited to an economic analysis
- the evidence base was typically limited to 'averages'. This prevented the separate measurement of impacts for those that benefited, and those that did not, and
- previous evidence and evaluations did not include all of the regions considered in the CBA.

We are confident that the analysis contained in the CBA is robust. The depth of analysis and qualifications made reflect the evidence base available. We accept that results may differ if data limitations are addressed in future. We also note that the program has expanded into other regions since this CBA was undertaken, and the applicability of our findings to these other regions is unknown.

We would welcome the opportunity further discuss.

Yours sincerely

Sarina Lacey
Principal, Health Economics and Policy