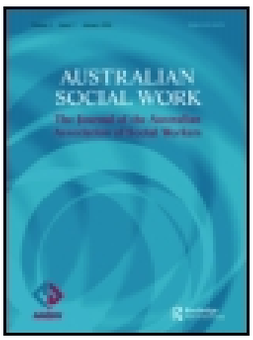

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ISSN: (Print) (Online) Journal homepage: https://www.tandfonline.com/loi/rasw20

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To cite this article: Luke Greenacre , Skye Akbar , Julie Brimblecombe & Emma McMahon (2020): Income Management of Government Payments on Welfare: The Australian Cashless Debit Card, Australian Social Work, DOI: 10.1080/0312407X.2020.1817961

To link to this article: https://doi.org/10.1080/0312407X.2020.1817961

AUSTRALIAN SOCIAL WORK
https://doi.org/10.1080/0312407X.2020.1817961

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Income Management of Government Payments on Welfare: The Australian Cashless Debit Card

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ABSTRACT

A new form of conditional welfare through income management is being trialled in Australia, dubbed the "Cashless Debit Card". It aims to reduce gambling, alcohol and illegal drug use to address social pathologies related to crime and welfare. Routinely collected data from government were used to assess if the targeted reductions arose. Store sales data were also used to evaluate impact on food purchases. No substantive impact on measures of gambling ($p = .175$), and intoxicant abuse ($p = .662$) were found. An increased spend on healthy foods (*95%CI:* 12.0% to 150.0%) was observed, but decreased as a proportion of all foods (*95%CI:* −6.3% to −13.1%). Impacts on crime and Emergency Department presentations were not substantively found. We conclude that targeting individual choices may not be as effective as policies targeting the historical social structures that serve as antecedents to such social pathologies.

IMPLICATIONS

- The Australian Cashless Debit Card is having nominal impact on the targeted behaviours of gambling and intoxicant abuse
- While there was an increase in shopping spend, the biggest increase was in spending on less healthy discretionary foods
- Policies that focus on addressing historical social structure may prove more impactful on welfare outcomes

ARTICLE HISTORY
Received 9 April 2020
Accepted 6 July 2020

KEYWORDS
Conditional Welfare; Social Security; Cash; Unemployment; Income Management; Aboriginal

Conditional welfare is designed to incentivise social security recipients to undertake some positive behaviour or restrict some negative behaviour (Paz-Fuchs, 2008). It is typically implemented through the provision of scrip that is not interchangeable with real cash, such as food stamps, special debit or payment cards, or vouchers. The scrip may be intended to ensure the fair distribution of goods or to regulate purchasing, and addresses failures among individuals to regulate behaviour that can manifest broader social pathologies (Dwyer, 2000). Several countries have implemented conditional welfare with mixed results (Davis, 2018; McCartney et al., 2019) including New Zealand, South Africa, the United Kingdom and the USA (Lucas et al., 2015; Paz-Fuchs, 2008).

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Supplemental data for this article can be accessed https://doi.org/10.1080/0312407X.2020.1817961

The social pathologies often targeted by conditional welfare are criminality and use of intoxicating substances. It is assumed such pathologies are rooted in some combination of individual choice and historical social structures that place an individual into negative social contexts. Such contexts induce or are conducive to the causal triggers of criminal behaviour or intoxicant abuse, and can include factors such as reduced education and work opportunities, intergenerational poverty, and discrimination (Horwitz, 1984; McCartney et al., 2019; McLeod, 2013). Notably, conditional welfare targets only individual choices, and not historical social structures, presenting a weakness of this type of policy (Mendes, 2013).

Income management is one form of conditional welfare policy used in Australia. Introduced in 2007 in remote Aboriginal Australian communities in the Northern Territory (NT) under the NT Emergency Response (Mendes, 2013) it has raised debate regarding the ethics of restricting the right to self-determination (Curchin, 2019; Mendes, 2013; Tilley & Uniting-Communities, 2018). The intention was to restrict the purchase of gambling, pornography, drugs and alcohol, hoping individuals will redirect income toward products that support a healthier lifestyle (Mendes, 2013). The introduction of income management was, at least in part, a component of the Federal Government response to the "Little Children are Sacred" Report. As its initial application violated the Racial Discrimination Act (1975), it was broadened in 2010 to include all NT social security recipients (Mendes, 2013). Half of payments were quarantined to a "Basics Card" that restricts the purchase of the designated goods. This has not become policy in other Australian jurisdictions although four communities in Northern Queensland introduced it at a local level (Mendes, 2013).

In March 2016, a new income management program, the Cashless Debit Card (CDC), was trialled in Ceduna (South Australia) and the East Kimberley (Western Australia). These regions were chosen "based on a range of factors, including community interest and support, levels of welfare dependence, and levels of community harm caused by gambling, alcohol and drug abuse" (DSS, 2020). The CDC quarantines 80% of working age recipients' social security payments on a Visa-branded debit card with an associated bank account from which cash cannot be withdrawn. The CDC prevents release of funds for transactions involving alcohol or gambling products (Minderoo Foundation, 2017). Retailers where the substantive proportion of their business is the sale of such goods (as determined by the program managers within the Department of Social Services) are restricted entirely from accepting the card (Minderoo Foundation, 2017). The stated purpose of the CDC is to reduce the opportunities for self-harm arising from gambling, alcohol and drug abuse (DSS, 2017). One of the potential "spillover benefits" was increased spending on non-harmful goods such as food (ORIMA, 2017b).

The CDC has been evaluated using mostly qualitative or self-report data with mixed conclusions (Hunt, 2018; ORIMA, 2017a, 2017b; Vincent, 2019). ORIMA Research was contracted to evaluate the CDC and it found that an initial evaluation of 34% of the 1850 trial participants reported that they "did not drink alcohol, gamble or take illegal drugs before or after the trial", 22% reported a reduction in at least one of these behaviours and 43% reported no change (ORIMA, 2017a). Notably, trial participants and their family were more likely to indicate that the CDC made their lives worse in both the initial (worse/better: participants 49%/22%; family members 37%/27%) (ORIMA, 2017a) and final (worse/better: participants: 32%/23%; family members not interviewed) (ORIMA,

2017b) evaluations. Non-participant community members, however, were more likely to report it made their lives better (initial worse/better 18%/46%; final 19%/41%) (ORIMA, 2017a, 2017b). Limitations of self-report data are acknowledged by ORIMA, as are selection/response bias, social desirability bias and recall error (ORIMA, 2017a, 2017b). The final evaluation included some objective administrative data and found reductions in gambling, hospital presentations, community patrol pickups and police apprehensions of intoxicated people (ORIMA, 2017b); however, statistical significance was not assessed, nor were underlying trends accounted for.

These evaluations have been criticised for lacking appropriate methodology (Australian National Audit Office, 2018; Gray & Bray, 2019; Hunt, 2018; Tilley & Uniting-Communities, 2018). A 2018 report by the Auditor-General stated "there was a lack of robustness in data collection and the department's evaluation did not make use of all available administrative data to measure the impact of the trial" (Australian National Audit Office, 2018, p. 8). The potential negative impacts associated with the CDC include shame and stigmatisation (Vincent, 2019), reduced autonomy, sense of worth and belonging (Vincent, 2019), making money management more difficult, and increased stealing and "humbugging" (demanding the sharing of resources, used in reference to Aboriginal Communities) (Hunt, 2018; ORIMA, 2017b). Given the potential negative impacts and program cost (estimated at $10,000 per person per annum) (Hunt, 2018; Tilley & Uniting-Communities, 2018), it is important to understand the policy's effectiveness in achieving its intended outcomes.

Method

The aim of this evaluation was to use pre-existing objective data (listed online in Supplementary Table 1) to evaluate the CDC's impact in Ceduna. We evaluate indicators of (1) gambling, alcohol and drug abuse (targeted behaviours), (2) spending (economic mechanism), and (3) associated outcomes (healthiness of purchased food, crime, hospitalisation).

Data Collection

Setting

The CDC launched in the trial area in March 2016, with all social security recipients included in the trial ($N = 737$ of approximately 4200 general population) (ABS, 2018; DSS, 2017). Ceduna is in South Australia and includes a rural town with a population of approximately 3500 (a Local Government Area, LGA) (ABS, 2018), and several remote Aboriginal communities and homelands with populations of 20–350 (based on community websites and unofficial sources). The nearest town with a population over 1000 is approximately 110 km away. The main industries are mining, aquaculture, agriculture and tourism.

Population

Annual data for 2014–2017 on the number of people receiving eligible social security payments in the LGA were obtained to determine if people attempted to evade the CDC by moving out of the trial area. Although the payments continued on the CDC

if people moved outside the trial area, prior to launch people could move and be excluded.

The subsequent data do not cover the same time frames as the population data. The variation is due to differences in data collection and reporting among the authorities from which data were sourced.

Gambling

Data for gambling venues in and near the trial area showing total monthly revenue for January 2014 to December 2016 were obtained. There is a main large gambling venue in the trial area with electronic gaming/slot machines, the most common form of legal gambling in Australia (Armstrong & Carroll, 2017), and revenue is reported to state authorities. We could not collect data for the main venue alone for privacy reasons, so we collected aggregate data for this venue, plus: (1) the four nearest venues outside the trial area, (2) four venues randomly selected from a wider area (the Eyre Peninsula), and (3) nine randomly selected venues from that peninsula. Venues were chosen by the government. From these datasets, we evaluated the best indicators of gambling rates. While only one form of gambling, notably excluding informal gambling, gaming machines are likely the biggest form of gambling in the area (Institute of Family Studies, 2019).

Alcohol and Drug Abuse

No pre-existing dataset shows drug and alcohol consumption during the trial period. The best proxy was data on the monthly police apprehensions under the Public Intoxication Act. These data were obtained from the Department of Human Services, South Australia Government for July 2015 to March 2018. An apprehension is made by Police when a person is considered to be affected by drugs or alcohol and at risk of injuring themselves or others, but where no crime has been committed (SA Parliament, 1984).

Store Sales

Weekly sales data from January 2015 to August 2018 were obtained from the sole store in an Aboriginal community in the trial area, approximately 300 km from any other community. It comprises approximately 100 people, but has substantial fluctuation as people regularly travel to and from surrounding communities (ABS, 2016). The community was selected as it is estimated by community members and leaders during personal communications to have more than 90% of people using the CDC. Sales data were used to check policy implementation (usage of Visa-branded cards) and to assess impacts on purchases of healthy versus unhealthy foods. Food and beverages were categorised as healthy (non-discretionary) or unhealthy (discretionary) using the discretionary flag from the ABS (2014) Discretionary Food List. Discretionary foods should be limited in one's diet as they can be energy-dense and nutrient-poor, displacing nutritious foods and contributing to excess energy, saturated fat, added sugars, added salt and alcohol intake (NHMRC, 2017). Alcohol is prohibited in the community.

Crime and Hospitalisation

Monthly data on crime rates were obtained from the South Australian Police from July 2012 to September 2017. Quarterly data on presentations to the only Emergency

Department in the trial area from September 2013 to June 2018 were obtained from the South Australian Health Department.

Data Analysis

Population data were used to observe any substantive change in the number of people in the trial area at the commencement of the program. Year-on-year percentages were calculated; however, due to data sparsity, statistical testing was not possible.

We examined the impact of the CDC on gambling using the regression:

$$R_t = B_0 + B_1 R_{t-1} + B_2 Y_t + B_{3-13} M_{t,1-11} + B_{14} T_t + B_{15} C_t + B_{16} (T*C)_t \quad (1)$$

Where R is the monthly gaming revenue, M is the calendar month dummy coded with December as the reference, Y is the year in four-digit format, C is whether the card was in use (=1) or not (=0), and T is a continuous time variable that counts the months. Included is a lagged revenue variable to accommodate autocorrelation. This regression measures the impact of the CDC on gaming revenue, while controlling for other factors. The same model was used to assess public intoxication apprehensions.

We evaluated the impact of the CDC on total sales (food and non-foods), sales of healthy (non-discretionary) food, and percentage healthy food to total food sales (as an indicator of healthiness of food purchasing) using the regression:

$$ln(S_t) = B_0 + B_1 (ln(S_{t-1})) + B_2 Y_t + B_{3-13} M_{t,1-11} + B_{14} T_t + B_{15} C_t + B_{16} (T*C)_t \quad (2)$$

S is the sales variable aggregated to 2 week periods, M is month of year dummy coded with December as the reference, Y is the year in four-digit format, C is whether the card was in use (=1) or not (=0), and T is a continuous time variable counting the 2 week periods. A lagged sales variable was included as per previous models. The sales variables ($) were transformed using a natural logarithm to linearise the model.

A Multivariate Analysis of Covariance (MANCOVA) was performed on the crime data. A continuous time factor was included as a random effect to accommodate existing trends, and the binary CDC trial factor was a fixed effect. MANCOVA was used to measure the impact of the CDC on the crime variables, while controlling the joint probability of type 1 error and the impact of other factors. Emergency presentation data were quarterly, so a simplified regression was used:

$$P_t = B_0 + B_1 T_t + B_2 C_t + B_3 (T*C)_t \quad (3)$$

Where P is the number of presentations that quarter, C is whether the Card was in use (=1) or not (= 0), and T is a continuous time variable counting the quarters. This regression measures the impact of the CDC on emergency presentations, with fewer controls for other factors due to the sparsity of the data.

Ethics

This project was approved by Monash University Human Ethics (2019–11498–31113). Findings were provided to store owners regarding the impact of the CDC on sales.

Results

Population

Annual data on the number of people in the LGA receiving a social security payment showed an increase of 4% for the year ending September 2014, −1% in 2015, −7% in 2016 and 0% in 2017. This suggests little social movement in anticipation of the CDC.

Gambling

The three versions of the gambling data were strongly correlated with person product moment coefficients ranging from .953 to .988 (all p's < .001) (see Supplementary Figure 1). To estimate the contribution the target venue made to the aggregated data we calculated the percentage that the two smaller datasets (containing five venues) comprised of the larger dataset (containing ten venues). Higher percentages would suggest the target venue accounts for a greater amount of the revenue. The two datasets containing the five venues were on average 86% (SD=1.68) and 75% (SD=2.39) of the revenue reported of the ten-venue dataset. The majority of the revenue in all datasets is thus likely attributable to (to have come from) the venue in the trial area. Informed by the correlations, the high percentage of revenue is likely attributable to the central venue, and to simplify the analysis, we base our analysis on the dataset containing the target venue, plus the four nearest. There was no significant effect of the introduction of the CDC on gambling revenue (Table 1) once monthly variation was controlled for ($p = .175$).

Alcohol and Drug Consumption

On average 29.9 (SD = 12.7) Public Intoxication apprehensions were made monthly. These may comprise unique persons or particular persons apprehended repeatedly, and only involve observable excess consumption. The regression results (online Supplementary Table 2) were not significant ($F = .809$, $p = .662$, $R^2 = 0.463$). There is no

Table 1 Gambling Revenue Regression

	Coefficients	Standard Error	t	*p*
Intercept	−338716497.259	204117523.202	−1.659	0.113
Revenue (*R*) Lag	0.230	0.245	0.937	0.360
Year (*Y*)	−89841.698	993105.232	−0.090	0.929
January (M_1)	−465802.145	219466.010	−2.122	0.047
February (M_2)	89412.575	234201.075	0.382	0.707
March (M_3)	−73100.329	200771.709	−0.364	0.720
April (M_4)	49622.471	199300.729	0.249	0.806
May (M_5)	−31897.882	192611.667	−0.166	0.870
June (M_6)	622342.647	190512.472	3.267	0.004
July (M_7)	570946.835	234185.623	2.438	0.025
August (M_8)	−119209.257	249640.180	−0.478	0.638
September (M_9)	137109.138	183938.282	0.745	0.465
October (M_{10})	−39637.002	186240.748	−0.213	0.834
November (M_{11})	−12639.148	32843.956	−0.385	0.705
Time (*T*)	169403.594	101566.791	1.668	0.112
Card (*C*)	−346594.087	246084.204	−1.408	0.175
Time(*T*) *Card (*C*)	−338716497.259	204117523.202	−1.659	0.113

pattern in apprehensions, and they were not impacted by the introduction of the CDC. The same conclusions were reached when the analysis was repeated using standardised regression to ensure unspecified interactions or multicollinearity were not impacting findings.

Store Sales

The percentage of transactions using Visa-branded cards increased from 12.3% of transactions to 41.3% after the launch of the CDC in March 2016, while cash transactions decreased (Figure 1). This indicates that the CDC mechanism of controlling transaction types was operating as intended.

There was a marginally significant increase (Table 2) in total dollars spent weekly for all food and non-food products at the store ($B = .397$, $p = .061$), equal to a 48% relative increase (90% CI: 5.4%, 109.8%) that was relatively stable over time ($B = -.013$, $p = .120$). Weekly sales for all *food* before the CDC averaged $4573 (SD=$2364) and $5956 (SD=$2909) after. There was a significant increase (Table 3) in healthy food sales (non-discretionary; $B = .515$, $p = .038$), equivalent to a 67.4% relative increase (95% CI: 12.0% to 150.0%) with this staying moderately stable through time ($B = -.013$, $p = .120$). However there was a reduction in the proportion of healthy (Table 3) to total food sales ($B = -.103$, $p < .001$), equivalent to a 9.79% relative decrease (95% CI: −6.3%to −13.1%). Discretionary (unhealthy) foods sales thus increased more than non-discretionary (healthy) food sales. The T^*C ($B = .004$, $p < .001$) interaction suggests that the negative effect of the immediate increase in discretionary food purchasing due to the introduction of the CDC was decreasing over time, essentially moving back towards original purchasing proportions. But this return to original proportions was extremely slow, and the size of the coefficient suggests that purchasing would never fully return to its original state, and that higher purchasing rates of discretionary foods purchasing will persist in the long term.

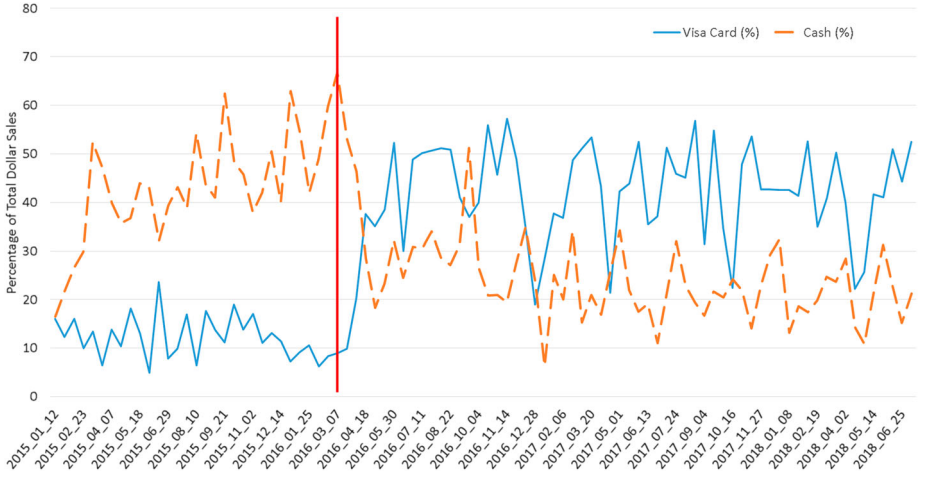

Figure 1 Percentage of total dollar sales through time for Visa Card and Cash transactions. Red line indicates the launch of the Cashless Debit Card

Table 2 Store Sales in Dollars Regression

	Coefficients	Standard Error	*t*	*p*
Intercept	2064.575	511.090	4.040	0.000
ln(Sales (*S*) Lag)	0.385	0.121	3.186	0.002
Year (*Y*)	−1.022	0.254	−4.031	0.000
January (M_1)	0.689	0.288	2.389	0.019
February (M_2)	0.929	0.216	4.299	0.000
March (M_3)	0.848	0.195	4.343	0.000
April (M_4)	0.605	0.182	3.334	0.001
May (M_5)	0.846	0.176	4.814	0.000
June (M_6)	0.674	0.172	3.925	0.000
July (M_7)	0.550	0.168	3.283	0.002
August (M_8)	0.570	0.170	3.361	0.001
September (M_9)	0.299	0.169	1.769	0.081
October (M_{10})	0.335	0.170	1.971	0.052
November (M_{11})	0.305	0.185	1.646	0.104
Time (*T*)	0.050	0.013	3.877	0.000
Card (*C*)	0.397	0.209	1.905	0.061
Time (*T*) *Card (*C*)	−0.013	0.008	−1.575	0.120

Crime

On average 8.08 acts of criminal trespass, 16.94 acts to cause injury and 14.62 acts of theft occurred each month in the LGA, providing low baselines. It is important to note that these data do not distinguish between multiple acts by a single individual and single acts by multiple individuals. The resulting MANCOVA (Supplementary Table 3) have R^{2}'s of 0.096 (serious criminal trespass), 0.006 (acts intended to cause injury), and 0.258 (theft and related offences). Overall, monthly crime rates remained stable ($F = 0.003$, $p = 0.953$; $F = 0.142$, $p = 0.708$; $F = 0.313$, $p = 0.578$), and were not significantly affected by the CDC ($F = .070$, $p = .793$; $F = .032$, $p = .86$; $F = .091$, $p = .764$).

Emergency Department Presentations

The average number of Emergency Department presentations each quarter was 1106 ($SD = 69.78$). These data do not distinguish between types of presentation, or if some

Table 3 Store Sales of Non-Discretionary (Healthy) Foods Regression

	(a) Dollar Sales for Non-Discretionary Foods				(b) Proportion of Sales for Non-Discretionary Foods			
	Coefficients	Standard Error	*t*	*p*	Coefficients	Standard Error	*t*	*p*
Intercept	1934.916	589.435	3.283	0.002	−82.146	48.184	−1.705	0.092
ln(Sales (*S*) Lag)	0.372	0.116	3.207	0.002	−0.085	0.116	−0.732	0.466
Year (*Y*)	−0.958	0.292	−3.276	0.002	0.041	0.024	1.716	0.090
January (M_1)	0.454	0.322	1.411	0.162	0.009	0.026	0.345	0.731
February (M_2)	0.914	0.250	3.661	0.000	0.007	0.022	0.312	0.756
March (M_3)	0.965	0.227	4.251	0.000	−0.009	0.019	−0.483	0.630
April (M_4)	0.566	0.211	2.681	0.009	0.016	0.018	0.866	0.389
May (M_5)	0.967	0.203	4.768	0.000	0.024	0.018	1.361	0.178
June (M_6)	0.586	0.198	2.954	0.004	−0.020	0.017	−1.226	0.224
July (M_7)	0.578	0.192	3.012	0.004	0.006	0.016	0.395	0.694
August (M_8)	0.605	0.195	3.095	0.003	−0.010	0.017	−0.633	0.529
September (M_9)	0.298	0.195	1.527	0.131	−0.004	0.016	−0.270	0.788
October (M_{10})	0.355	0.198	1.795	0.077	−0.001	0.016	−0.091	0.928
November (M_{11})	0.331	0.213	1.553	0.125	−0.003	0.018	−0.151	0.881
Time (*T*)	0.052	0.015	3.457	0.001	−0.004	0.001	−3.296	0.002
Card (*C*)	0.515	0.244	2.109	0.038	−0.103	0.023	−4.478	0.000
Time (*T*) *Card (*C*)	−0.018	0.010	−1.752	0.084	0.004	0.001	3.946	0.000

individuals account for multiple presentations, which must be acknowledged during interpretation. The regression analysis (Supplementary Table 4) for the number of presentations was not-significant ($F = 1.443$, $p = .267$, $R^2 = 0.213$) but this may be due to multi-collinearity (Variance Inflation Factors: Interaction = 31.121; Card = 17.394). The regression was repeated using standardised estimation (normalised independent variables and excluded the intercept) and the model reached significance ($F = 50.404$, $p < 0.001$) and all individual parameters reached significance (p's $< .002$, $R^2 = 0.899$) (supplementary material). In the standardised regression, the sign (i.e., +/-) of all parameters remained the same as the non-standardised. Based on both regressions it may be cautiously interpreted that there were increasing numbers of presentations through time ($B = 175.085$, $SE = 125.083$, $p = 0.183$), and that the introduction of the CDC saw a further short-term increase ($B = 10.667$, $SE = 7.427$, $p = 0.170$), with this increasing effect of the Card decreasing over time ($B = -19.848$, $SE = 10.503$, $p = 0.077$). Results in brackets are from the unstandardised regression. The net effect of the Card could generally be described as nominal, though.

Discussion

There was little evidence that showed that the Cashless Debit Card affected targeted behaviours. Measures of gambling and intoxicant misuse show no significant change after the CDC's introduction. Prior research into grocery expenditure in the trial area found stable spending in a large store in the major town with the CDC (Greenacre & Akbar, 2019), but we detected a significant increase in spending. The increase should be viewed cautiously, as research has found non-food items may be used for barter among CDC users (Vincent, 2019). While healthy (non-discretionary) food sales did see an increase, unfortunately, there was a greater increase in spending on less healthy (discretionary) food items.

The spending result aligns with general consumer spending research. If current income is supporting baseline shopping patterns, increases in income are likely to be used to satisfy hedonic needs (Wood, 2005). Highly palatable and merchandised discretionary foods are more likely to satisfy hedonic needs (Mattes, 1997; Nansel et al., 2016; Velardo & Drummond, 2018). This parallels findings from research into grocery spending in remote communities (Brimblecombe et al., 2017). An increase in the purchase of discretionary foods can be detrimental to health as these are often energy-dense; high in sugar, sodium and saturated fat; poor sources of other nutrients; and can offset the benefits obtained from other non-discretionary food purchases (Brimblecombe et al., 2017). This result is noteworthy as the particular store analysed was located within an Indigenous Community, with Indigenous Australians having a higher rate of diabetes and circulatory disease than the general population (ABS, 2013). Such higher rates are also present across all people of lower socio-economic status, that is, those who would be subject to this CDC policy (Australian Institute of Health and Welfare, 2008; Heart Foundation, 2012).

Outside of the targeted behaviours, positive externalities may have arisen for outcomes associated with the social pathologies of crime and self-harming choices. These were evaluated through crime and Emergency Department presentations. There is no single causal path for how income management and the CDC in particular may

impact crime or Emergency Department attendances; rather, there are two countervailing arguments in the literature and policy discussions. The first is that restricting cash will increase individual and social stress, which leads to increased violence and harm (Grande et al., 2003); and that thefts may increase as addicted persons seek to support their addiction with less cash (Hanlon et al., 1990; Nurco, 1987). The counter argument is that a decrease in cash may disrupt individuals' ability to service their addiction, opening opportunities for them to seek treatment. Increasing treatment would lead to decreased crime and harm (Forrest, 2014; Wright et al., 2017). For either argument to produce change in crime or Emergency Department presentations, there would need to be a substantive number of people experiencing addiction in the trial area.

When investigated, no substantive positive externalities were found for crime or Emergency Department presentations. Crime remained unchanged, and while there is some (tentative) evidence of an increase in Emergency Department presentations, the change is minimal.

In general, social pathologies arise in a community because of (1) historical social structures that place individuals into negative social contexts that can trigger criminal or self-harming behaviours, and to some extent due to (2) the choices individuals make (Horwitz, 1984; McCartney et al., 2019; Rank et al., 2003). The CDC, as a form of income management, only addresses the second of these, and its apparent lack of major effects may be because problems are based more in social structures. Targeting low-income individuals overlooks that these behaviours may be socially-constructed, and not related to income at all, presenting a much more complex policy to formulate.

A difficulty with policy formation is selecting outcome variables and identifying the causal mechanisms that can impact those variables (Gilbert & Terrell, 2005; Peters, 2005; Winship & Rein, 1999). For the CDC, the sought outcomes were diverse, including changes in gambling, drug and alcohol consumption, but no systematic measures of these were designed prior to policy implementation. Without a strong link between the policy intent and the measures of outcomes, policy analysis is difficult (Peters, 2005). The causal mechanisms that takes us from income management to those outcomes were not well articulated, so intermediate measures are difficult to specify and policy success is difficult to predict a-prior (Winship & Rein, 1999).

While we have found the CDC to have some impact, the cost of administering the card has been estimated to be $10,000 per participant per year (Conifer, 2017). The cost may decrease as economies are reached, but even then the cost-to-benefit ratio appears quite low. Dealing with systemic problems rooted in historical social structures may require a more place-based approach, informed by a local social security system, and accommodating of the uniqueness of each region (Neumark & Simpson, 2014). Even with place-based policy there is often a need to support individuals to build the long-term social cohesion needed for social change (Andreotti et al., 2012).

Limitations

As with all observational data there are some limitations. The data capturing apprehensions under the Public Intoxication Act must be interpreted carefully as they depend on interpretations of behaviour by police, and capture only excessive consumption in a location observable by police. The data do not capture private or moderate use of

intoxicants. A limitation of the gambling data is the omission of informal gambling. While this omission must be considered, the use of gaming machines is particularly high in these communities (Institute of Family Studies, 2019). Informal gambling, such as the playing of cards with family and friends, tends to have both benefits and adverse consequences (Fogarty, 2009). Any money lost by an individual is still retained within their social network offsetting wider financial impacts and can reinforce social bonds, but there can still be considerable personal consequences (Institute of Family Studies, 2019). With electronic gambling machines, gambled moneys are lost in private, providing few socialisation benefits, and the money leaves the immediate social network. Therefore, the lack of impact of the CDC on electronic gambling remains an important finding.

The crime and Emergency Department data captured community-level behaviour; hence, it includes both those using the CDC and those not. This may have reduced the ability of the research to detect the effect of the CDC. Having more detailed data about whom is responsible for what crime and about whom is attending the Emergency Department for what purpose would provide further insights.

Conclusion and Recommendations

In this article we investigated the impact of the CDC in one of the longest running trial areas. We have shown the CDC policy to have had no substantive effect on the available measures for the targeted behaviours of gambling or intoxicant abuse. There is evidence for an increase in total store spending. There is also increased spending on healthy foods, but there is an overall shift toward a higher proportion of spending on less healthy foods. These results indicate alternative policies that directly impact the targeted behaviours of gambling; however, alcohol and drug consumption should also be considered. Regarding shopping and food purchasing, it is recommended that policies should focus on assisting people to make the best use of their money, rather than prohibiting certain behaviours. Supporting low income people to pursue the most (health) value from their money rather than seeking to prevent "inappropriate" purchasing may have the desired effect of increased spending on goods and services that reduce social pathologies and improve welfare outcomes. It is further recommended that policy-makers consider the specification of the intended measures of policy outcomes to allow for a clearer approach to policy evaluation. In such a complex area of policy, defining the outcomes, the causal mechanisms proposed and having measures for those mechanisms will better support policy design and analysis.

Disclosure Statement

No potential conflict of interest was reported by the author(s).

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