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SPECIAL ISSUE • Muslim philanthropy

research article

Analysing the donor behaviour of a Muslim diaspora in Australia

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Diaspora communities are an important source of charitable giving to their original homelands. This study explores a Muslim diaspora's motivations behind donation-giving. A two-year donation dataset of an overseas charity organisation registered in Australia was analysed. Findings show that, overall, donations are significantly related to the prevailing consumer confidence levels ($r = 0.4277$). However, there was also a strong, inverse correlation ($r = -0.4376$) during 2020, suggesting that the plummeting consumer sentiment during COVID-19 did not impact donation revenue. As expected, during periods of religious significance (Ramadan) across both years, donations to the charity increased substantially, with the relative effect of Ramadan calculated as over 800%. This study makes a contribution by providing insights to donor behaviour through the examination of a donation dataset. This study also uses 'causal impact analysis' to calculate the effect of Ramadan on donations. Results have implications for the not-for-profit sector in Australia and other countries with Muslim diaspora communities. Limitations and suggestions for future research are also discussed.

Key words diaspora donations • donor behavior • religiosity • consumer confidence • causal impact analysis

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Introduction

Since the start of the 21st century, the number of first-generation immigrants has risen globally, reaching more than 200 million in a decade (Kumar and Steenkamp, 2013). According to an estimate, a third of the total immigrant population now originates from countries of the Organisation of Islamic Cooperation (OIC) (Tausch, 2019). This indicates the emergence of a sizable Muslim diaspora in different parts of the world. These diaspora communities maintain connections in various forms with their country

of origin (Mascitelli and Baker, 2011). One such form of connection is engaging in philanthropy by making financial contributions to causes and organisations based in their original homeland (Johnson, 2007). This article explores two aspects of diaspora giving among Muslim communities: one, which is rationally driven (consumer confidence); the other being religiously influenced. We examine a dataset across two years of donation deposits received in Australia by a popular charity organisation based in Pakistan, which has the second largest Muslim population in the world.

According to traditional consumer behaviour models, all forms of decision making by individuals – including decisions to donate funds – follow a rational process. These models demonstrate donor behaviour as following a sequential knowledge–attitude–behaviour pattern. Economists have been interested in measuring a specific type of consumer attitude, referred to as *consumer confidence*, or *consumer sentiment* (Fuhner, 1993). It has been argued that the level of consumers' optimism (or pessimism) about the economic and financial situation of a region affects the timing of their consumption behaviours. This rationale is supported by the proponents of the theory of planned behaviour and the theory of reasoned action (Ajzen and Fishbein, 1977), who have argued that a person's intentions to undertake a behaviour is impacted by their attitude towards the behaviour. In line with these arguments presented by social scientists, this study argues that the prevailing economic conditions will influence the attitude of a 'rational economic donor' towards making a donation (Sargeant, 1999).

Studies have also shown that religion plays a vital role in an individual's decision to make a charitable donation (for example, Guo et al, 2013). However, much of the work examining religious contributions has focused on charitable giving to religious institutions (Anand, 2004), including donors' involvement with worship places (Ranganathan and Henley, 2008). Despite ongoing debates around its conceptualisation (Kirkpatrick and Hood, 1990), this study refers to the overall idea behind the concept 'intrinsic religiosity' (Allport, 1950) to explain donors' charitable behaviour. It is claimed that while this theory grew out of a Protestant worldview, there is capacity for it to be applied to other contexts, including Islam (Hall et al, 2008).

As opposed to an extrinsically motivated person, 'an intrinsically motivated person lives his religion' (Allport and Ross, 1967: 434). Several studies have found that intrinsically motivated religious individuals adhere to loftier moral standards than their extrinsically motivated counterparts (Vitell et al, 2005; Arli and Tjiptono, 2014). Intrinsic religiosity is the highest form of cognitive dimension (Arli and Lasmono, 2015). Someone with high intrinsic religiosity will consider any personal benefits of religion (such as gaining social approval for donating at a fundraising event) less important compared with their relationship with God.

Like other Abrahamic religions, Islam is based on a belief in God and a life after death. It propagates the idea that a person's conduct in this world can influence their destiny in the Hereafter (Jamal et al, 2019). The concept 'intrinsic religiosity' applies to Islam, given the belief of Muslims in '*raza-e-ilahi*' (that is, pleasing God), which in turn results in rewards in the afterlife (Jamal et al, 2019).

There are several fundamental religious beliefs that impact the giving behaviour of Muslims. First, Islamic teachings emphasise the idea that everything (including wealth) comes from Allah on loan and that individuals do not own worldly goods in their own right (Opoku, 2013). Second, a Muslim must donate in the name of God alone. This refers to the concept of not expecting any worldly returns. Linked to this is the belief that *giving* does not reduce wealth. In fact, a return on charitable donations

is made by Allah, in both this world and the Hereafter (Jamal et al, 2019). Finally, there is a strong focus on accountability before Allah (Padela and Mohiuddin, 2015), which deters believers from ignoring the commandments around charitable giving.

Islam provides its followers with multiple opportunities to make charitable contributions, which can remain inconspicuous: *zakat* or *zakah* (giving a set proportion of one's wealth to charity), *kaffara* (charitable giving when an oath is broken), *waqf* (a donation to build infrastructure to help those in need), *sadaqah* (an offering that seeks blessings or forgiveness from Allah), *fidyah* (a donation made in compensation for not fasting due to illness or old age) and *qard al hassan* (an interest-free loan for welfare purposes) are some of the well-known mechanisms by which Muslims are required to engage in charitable giving. In line with suggestions from previous research (Griffin and Grace, 2005), it is argued that donating funds inconspicuously to a charity (for example, transferring an amount to a charity's bank account as *zakat*) demonstrates the donor's involvement with the activity as being based on inherent needs, values and interests.

A Muslim diaspora in Australia: the Pakistani community

According to the 2016 Australian Census, the number of people who self-identified as 'Muslim' in Australia was 604,200 or 2.6% of the total Australian population. Almost 40% of these Muslims were born overseas in countries such as Bangladesh, India, Iran, Iraq, Lebanon, Pakistan and Turkey (Riaz, 2015). Among the early Muslim migrants to Australia in the 19th century were the cameleers – mostly referred to as Afghans – and the Malay divers who were recruited to work on pearling grounds in Western Australia. However, by the beginning of the 21st century, Muslims from more than 60 countries had settled in Australia. Pakistan is one of the world's top ten countries that contribute towards permanent migration to Australia (Reilly, 2016).

This article focuses on the giving behaviour of the Pakistani diaspora in Australia. The Australian Bureau of Statistics estimates the size of the Pakistani diaspora residing in Australia to be 91,000 people (Haider, 2020). Migrants from Pakistan are predominantly Muslim men aged between 25 and 44 years. More than 70% are married and have children. On average, they pay a weekly rent of A\$358. Meanwhile, the diaspora's median weekly income is a mere A\$470 – well below the average income level (A\$688) of those born in Australia (Australian Bureau of Statistics, 2020). Interestingly, recent figures reveal that Australian-based workers' remittances to Pakistan touched A\$162 million in November 2020 (State Bank of Pakistan, 2020). While this figure could represent regular amounts sent to families for housekeeping expenditures, investment, gifts and the repayment of debts, migrants are known to contribute to community development (Singh et al, 2010) and charity (Mascitelli and Battiston, 2009).

This study contributes to the charitable giving literature by examining two research questions. First, does charitable giving by a diaspora relate to the host country's consumer confidence levels? Second, are the donations made by the diaspora significantly influenced by its religious belief? The article is organised as follows. First, the concept 'consumer confidence index' and its links to charitable giving are discussed. The next section explains the belief around charitable giving during Ramadan, a sacred Islamic month. We then discuss our use of a transaction-level bank dataset, obtained from one of the leading Pakistan-based charities operating in Australia, and present our data analysis and findings. The article concludes with a discussion of the results and recommendations for future research around diaspora philanthropy.

Consumer confidence index

The ‘consumer confidence index’ is an economic indicator representing consumers’ degree of optimism about the state of the economy. First introduced as the ‘index of consumer sentiment’ in 1952 by George Katona, consumer confidence (CC) surveys are widely used to explain and understand consumption patterns across a region. This indicator’s logic is simple: if consumers’ outlook on the economy is positive, this positivity will spill over to increased demand for and expenditure on products and services (Heim, 2010). While consumer spending depends on many factors, including income, taxes and wealth, researchers and policy makers agree that CC also impacts the level of economic activity (Romer, 2009). Thus, CC measurement mirrors aspects of consumer sentiment, which can impact consumers’ propensity to consume (Roos, 2008).

Well established in the economics literature (Katona, 1974; Curtin, 2007), the CC index considers consumers’ subjective evaluations of their household’s finances and their expectations about the economic climate. The use of this concept has been at the forefront during the COVID-19 pandemic. During a year of lockdowns that crippled business activity, the CC index has often been cited to gauge the public’s level of optimism around business and labour market conditions (McKinsey and Company, 2020). Researchers have argued that a measure of CC reports on information about the economy much earlier on than the publicly available economic statistics. Thus, one of the roles of the CC index is to provide information on the current state of the economy that cannot be found in financial market indicators (Fuhrer, 1993). While some (Acemoglu and Scott, 1994) may argue that the CC index attempts to focus more on forward-looking behaviour, seminal papers (see Christopher et al, 1994; Fan and Wong, 1998; Ludvigson, 2004) empirically establish that CC reflects the current state of the economy. Any uncertainty about the future may trigger ‘precautionary saving motives’ that will lower consumer spending in the current period (Ludvigson, 2004). Thus, a low CC metric indicates that consumers are willing to spend less and save more than during periods when CC is high, possibly in preparation for tough economic and financial conditions (Garner, 1991). Moreover, previous research has already demonstrated links between CC and different types of consumer expenditures, including spending on non-durable goods (Heim, 2009), motor vehicles (Bram and Ludvigson, 1998) and retail fashion (Allenby et al, 1996).

Consumer confidence and charitable giving

In this article, we extend the concept of CC to charitable giving. Earlier on, people’s ‘ability to donate’ was considered the primary determinant of giving. However, in line with the general theory of psychological economics (Katona, 1951), it is now acknowledged – and demonstrated – that ‘ability to donate’ does not adequately explain all donation behaviour, and that individuals’ ‘willingness to donate’ also plays an important role. The concept ‘willingness to donate’ (Savary et al, 2015), a measure of donors’ behavioural intention, depends on subjective factors, such as people’s expectations about and attitudes towards donating. A handful of studies have shown that even when donors’ financial situation remains stable, their perceptions about the economic climate impacts their philanthropic behaviour (Meer et al, 2016). Accordingly, confidence-driven optimism among a community reflects people’s

perception of financial stability, motivating donors to give more in the form of cash contributions during periods of strong confidence. Bekkers and Wiepking (2011) found a related dimension – that positive mood states are associated with higher donations and a greater likelihood of giving.

Charitable giving by a household is viewed as part of an Australian household's typical expenditure (ProBono Australia, 2016). The Household Expenditure Survey, which is undertaken every six years, includes questions relating to a household's usual costs: spending on food, beverages, transport, recreation, communication, education, clothing, fuel, personal and medical care, tobacco products and the repayment of loans (Australian Bureau of Statistics, 2017). Thus, the survey measures expenses incurred by households to gain access to a fixed basket of goods and services. As part of this survey, households are also asked to report on the amount of their cash donations, as is also the case in other parts of the world (OECD, 2013). Just as CC is linked to a household's planned expenditures, one should also expect to see a link between CC and household donations.

CC is especially relevant to philanthropic giving as – unlike other household expenses – donations made by individual donors are largely discretionary. For example, individuals can cancel or postpone any donations to charities or reduce their donations' size or frequency. Therefore, the first hypothesis is: *Hypothesis 1a: There is a positive relationship between the CC index and donations received by the charity organisation.*

In view of the recent situation arising due to the COVID-19 pandemic, it was predicted that the financial fallout of the pandemic would affect revenue raised from charitable donations for several years. Wealth management firms estimated that total giving would fall by about 7.1% in 2020 and a further 11.9% in 2021 (Boseley, 2020). As expected, the CC index plunged during 2020 due to the pandemic. In view of the argument provided earlier regarding the CC index and its links with charitable giving, one would expect the following phenomenon: *Hypothesis 1b: The relationship between the CC index and donations would remain positively correlated during the year of the pandemic (2020).*

Charitable giving and the islamic month of Ramadan

Ramadan is the most sacred Islamic month. It is obligatory for the followers of Islam to fast from dawn to dusk. Ramadan is also a time when the Islamic community is very active in charitable giving, making compulsory donation (that is, *zakat*) and voluntary donations (for example, *sadaqah*). Muslims are directed to give 2.5% of their wealth, accumulated over a year, as *zakat*. There is a minimum threshold – *nisab* – to meet or exceed to be eligible to pay *Zakat*. As instructed in the Holy Quran, *zakat* is mainly paid to people in poverty, travellers in need and people in debt among other categories.

Zakat means 'purification of wealth and soul' and is regarded as a form of worship. Some researchers have reported that, through the payment of *zakat*, there is a redistribution of wealth in society (Jehle, 1994). What makes it different from a tax system in the Western world is its religious significance, including punishment threats in an afterlife for non-compliance (Lambarraa and Riener, 2012). The importance of *zakat* in the Islamic community is evident from the fact that if a person dies and owes *zakat*, heirs are instructed to pay it from the deceased's wealth. This must take precedence over the will and inheritance (Lambarraa and Riener, 2012). While

zakat can be paid at any time during the year, most Muslims choose to offer *zakat* in Ramadan in line with the belief that when paid in this sacred month, charitable giving brings greater spiritual rewards (Muslim Aid, 2014).

Given the religious significance of charitable giving during the Holy month of Ramadan, we hypothesise: *Hypothesis 2: Donations during the sacred month are significantly higher than donations given at other times of the year.*

Data source

According to an estimate, approximately 10% of Australia's charities operate overseas (Australian Charities and Not-for-Profits Commission, 2020). This study uses a transaction-level bank dataset obtained from a Pakistan-based charity, Shaukat Khanum Memorial Cancer Hospital and Research Centre (SKMCH&RC), which has been registered in Australia since 2017. The analysed financial dataset covers two years: 2019 and 2020. The charity has a Deductible Gift Recipient (DGR) status from the Australian Taxation Office.

Pakistan has more than 220 million people, which makes it the fifth most populous country in the world (World Population Review, 2020). Both public and private sector organisations provide healthcare to residents. However, a mere 27% of the population – consisting of government employees and members of the armed forces – benefits from full healthcare coverage access. The remaining 73% must endure out-of-pocket payments (Punjani et al, 2014). With an average annual income of US\$420 (A\$ 550), and an estimated 35% of the population below the poverty line (Frontline World, 2004), healthcare remains a top priority for the country's not-for-profit sector.

Cancer is a significant cause of death worldwide. Not only does cancer take an enormous toll on the health of patients and survivors, but it also has a tremendous financial impact. Cancer patients are twice as likely to file for bankruptcy as people without cancer (Ramsey et al, 2013). Cancer patients are more likely to experience financial hardship if they are people of colour, younger, less educated and earning a lower income (American Cancer Society Cancer Action Network, 2020). More than 170,000 new cancer cases are diagnosed in Pakistan every year (World Health Organization, 2020). But with public spending of a mere 2.9% of GDP on health in Pakistan, the state cannot provide the necessary treatment to the burgeoning numbers of cancer patients (Khokhar et al, 2020).

SKMCH&RC started its operations in 1994 in Lahore, Pakistan. Over the past couple of decades, the facility has grown to include three hospitals, multiple outreach screening clinics, diagnostic centres and more than 170 laboratory collection centres. More importantly, the organisation provides financially assisted treatment to more than 75% of its patients. A significant 30% of the hospital's A\$135 million budget is funded via donations made by the global Pakistani diaspora.

The original bank dataset was downloaded in an Excel format by the charity's management. The dataset included all donations received between 1 January 2019 and 31 December 2020 by Shaukat Khanum across its accounts in two different banks in Australia. The researchers were given the approval to analyse the de-identified dataset by the Ethics Committee of Western Sydney University. All donations made to the hospital were through electronic bank transfers or cash deposits. At that stage, the organisation did not accept credit card transfers or PayPal payments. No other forms of cash handling took place. Thus, the research team is confident that the acquired

dataset, based on bank deposits, accurately represents the charity's total donation revenue collected in Australia in the two years under study.

Data cleaning and data transformation

The dataset was initially divided into monthly data. In collaboration with the charity organisation's finance team, the researchers took systematic steps to clean the donation dataset. Data cleaning involved identifying and eliminating any transactions that were not seen as a donation. Each monthly dataset was scanned to remove two types of deposits: (a) interest payments from the bank; and (b) end-of-month merging of bank accounts. The exercise ensured that the resulting dataset did not include any data duplication and only had deposits that could be accurately identified as donations. In addition to the data cleaning, the dataset was reconciled with the bank statement, ensuring all transactions were taken into account.

The data were then organised into weekly segments to permit analysis against the CC index. This improved the reliability of the analysis, as results were inferred from 53 observations (per year), which is regarded as an adequate sample size for a time-series study (Jebb et al, 2015).

Descriptive statistics

During 2019, the charity organisation collected more than A\$878,000 as donations through more than 9,100 transactions. In 2020, donation revenue increased by over 25%, reaching over A\$1.1 million. In Australia, where 65% of charities have revenue collections of less than \$250,000, Shaukat Khanum is now categorised as a large-sized charity organisation. Table 1 provides an overview of the contributions received during the period of analysis.

While the mean donation amounts varied across the two years, the most frequently deposited amount and the median value remained the same – a mere A\$10, suggesting two key points: (a) the charity is supported by many donors providing a small donation amount; and (b) the median donation amount remained the same in 2020 in spite of the pandemic. These descriptive statistics give an insight into the psychology of giving behaviour in Islam. In comparison, the average amount donated by Australians nationwide is estimated to be A\$486, with a median value of A\$143 (Roy Morgan,

Table 1: An overview of donations received by the charity in Australia

Description	2019	2020
Total number of online deposits (in two bank accounts)	9,106	16,447
Donation amounts	A\$	A\$
Total donations	878,104.20	1,111,400.74
Minimum donation amount deposited	0.05	0.02
Maximum donation amount deposited	21,035	11,000
Most frequently deposited (mode) donation amount	10	10
Average (mean) donation amount deposited	96.44	67.57
Median value of donations deposited	10	10

Source: Constructed by the authors

Table 2: Distribution of donation size

Donation size (A\$)	Percentage of transactions	
	2019	2020
0.01 to 4.99	17.28%	21.07%
5 to 9.99	16.58%	17.59%
10 to 19.99	20.62%	24.74%
20 to 49.99	16.31%	14.12%
50 to 99.99	12.30%	9.47%
100 to 499.99	12.51%	10.05%
500 to 999.99	2.14%	1.68%
1,000 to 4,999.99	2.03%	1.07%
5,000 to 9,999.99	0.16%	0.18%
Above 10,000	0.07%	0.02%
Total	100%	100%

Source: Constructed by the authors

2019). This reflects the differences in giving behaviour between mainstream Australians and the Pakistani diaspora, especially around the size of donations. Table 2 further explores the pattern of donations.

More than half of the bank transactions were of amounts less than A\$20. Donations of A\$1,000 or more added up to just a little over 2% of the total deposits made. As is evident from the data presented in Table 2, this charity organisation's primary support group consists of donors who deposit micro-donations. This phenomenon has previously only been reported for political donations (Luo, 2008). It largely hints towards the existence of 'small-scale gifting' (Osella and Widger, 2018: 297) observed in Muslim communities. Individuals of modest means, who themselves might qualify to receive charity, participate as givers of financial assistance as it is viewed as a religious obligation (Osella and Widger, 2018).

Measure of consumer confidence

Two primary surveys in Australia measure consumer sentiment: ANZ-Roy Morgan's survey and the Westpac Melbourne Institute's survey. Both surveys are similar in scope and construction and showcase a high degree of co-movement between the indices (Wang and Berger-Thomson, 2015). The present study utilises the ANZ-Roy Morgan Australian Consumer Confidence Index. This is reported weekly, making it more suitable for analysis compared with the Westpac Melbourne Institute's survey, which reports a monthly and quarterly index.

ANZ-Roy Morgan is a well-established research agency that has mapped CC in Australia since 1973. Its CC index has been compared to other measures (Roberts and Simon, 2001) and is listed as a data source by the Reserve Bank of Australia. The ANZ-Roy Morgan CC index is based on a survey of more than a thousand households. CC is conceptualised as a latent variable, which is typically measured by five questions that reflect consumers' evaluations of: (a) their household's financial situation over the past year; (b) their household's financial situation over the coming year; (c) anticipated economic conditions over the coming year; (d) anticipated economic conditions over

Table 3: Summary statistics – ANZ-Roy Morgan Australian Consumer Confidence Index

	Number of observations in a year	Mean (average – CC index)	Standard deviation	Minimum	Maximum
2019	53	113.86	3.30	106.8	119.5
2020	53	96.53	10.51	65.3	111.2

Source: Constructed by the authors

Table 4: Correlation between the CC index and donations

		Consumer confidence 2019	Consumer confidence 2020
Donations	Spearman's correlation	0.4277*	-0.4376*
	Sig. (2-tailed)	0.001	0.001
	N	53	53

Note: *Correlation is significant at the 0.01 level (2-tailed).

Source: Constructed by the authors

the next five years; and (e) buying conditions for major household items. Responses to questions are categorised as: (i) up or positive; (ii) no change or don't know; or (iii) down or negative (Roberts and Simon, 2001). Responses to all five questions are used to compute the CC index. The overall CC index reflects the balance between positive or optimistic responses and negative or pessimistic responses (Roy Morgan, 2020). The index is calculated by adding the unweighted average of the five questions' net balance to a score of 100. An index value of over 100 denotes optimism among consumers, while a value below 100 represents pessimism.

Table 3 outlines the summary statistics for the data on CC as released by ANZ-Roy Morgan.

As shown in Table 3, the study utilises 53 weekly observations of the ANZ-Roy Morgan CC index for the period of analysis. This was seen as the most significant post-budget bounce in consumer sentiment since 2011. Improved affordability was seen as lifting buyer sentiment (Letts, 2019). The overall average score for 2019 for CC was 113.86. Not surprisingly, the peak CC value for 2020 was only 111.2 in view of the COVID-19 pandemic. The average for the index during the pandemic was also much lower (96.53).

Data analysis

Stage 1

Following Martin et al (2015), data analysis was carried out in two stages. In stage 1, researchers undertook correlation analysis to establish the statistical relationship between the donation dataset (weekly donations received) and CC (as reported weekly by ANZ-Roy Morgan). A Spearman's rank-order correlation technique was seen as appropriate in view of the scale used to measure the variables.

Results (given in Table 4) indicate that the two variables across both years were strongly correlated ($r = 0.4277$; $r = -0.4376$) at the 1% significance level. However, the nature of the relationship across the two years was different. In 2019, the relationship between CC and charitable giving was a direct/positive one (hypothesis 1a – accepted); the higher the CC level, the higher the level of donations received. In contrast, in 2020,

the relationship between the two variables – while remaining strong – was inversely (that is, negatively) related (hypothesis 1b – partially accepted). This demonstrates that while CC in Australia plunged during the pandemic, donors kept supporting the charity with their monetary donations. In fact, as shown in [Table 1](#), there was an increase in both the number of deposits made as well as the amounts deposited during the pandemic year (2020).

One obvious attribution of such behaviour could be made to Muslim donors' adherence to religious commandments, in spite of a crisis situation. However, we also offer an alternative explanation by referring to Durkheim's concept of 'mechanical solidarity' ([Durkheim, 1947](#)). Mechanical solidarity, according to Durkheim, arises from a common consciousness, a sense of likeness with one's fellows. In situations where groups of people are impacted by adverse circumstances (such as a pandemic), the perception of a 'common fate' ([Subašić et al, 2011: 708](#)) develops, which leads to a willingness to come together to achieve a common cause (that is, survive in a pandemic). There is a realisation that 'we' share important goals, values and beliefs – and the need to struggle towards a common cause is prevalent. This psychological mechanism of sensing that 'we are all in this together' ([Subašić et al, 2011: 708](#)) helps develop expressions of solidarity with others, both within and outside one's own group. Reportedly, this phenomenon has been experienced by other (non-Islamic) charities as well. Thrift shops experienced a surge in donations as people stuck at home during the COVID-19 pandemic turned to decluttering ([Steeves, 2021](#)). Australian charities such as the Royal Flying Doctor Service and Lifeline Australia received an overwhelming response to their emergency appeals ([Patty, 2021](#)). Other not-for-profits used online platforms, which resulted in significant increases in their donation pool ([Shadyac, 2021](#)).

This article is possibly one of the first pieces of empirical research that demonstrates a relationship between CC and donor behaviour. The main contribution of the article lies in the evidence provides for the relationship between the two variables as being a positive one – and contrary to expectations, that during a crisis it becomes an inverse relationship while remaining strong.

Stage 2

In stage 2 of data analysis, we undertook causal impact analysis, using the Google CausalImpact framework. Since correlation analysis undertaken in stage 1 only demonstrated the relationship between the two variables – which does not imply causality – causal impact analysis is instrumental in analysing the dataset empirically. It is based on the popular 'state–space models' ([Auger-Méthé et al, 2020](#)) for time-series data. It is used to determine the causal significance of an event by evaluating the post-event changes using observational data. The technique is considered superior when compared with other conventional methods such as difference-in-differences analysis. With the recent interest in and access to big data, researchers ([Brodersen et al, 2015](#)) have identified the need to use the technique for identifying impactful events (or interventions) for strategic decision making.

Traditionally, in the field of social sciences, a causal inference between variables is determined by adopting an experimental research design. Such an approach involves a pre-test/post-test randomised controlled trial, with respondents allocated to experimental and control groups. While the use of an experimental design is seen as a

rigorous research method, this approach comes with its own limitations (Prathvikumar, 2020). First, a typical randomised controlled design is based on a static regression model that assumes independent and identical data, even though the design has a temporal component. It has been pointed out that when fitted to serially correlated data, static models give inaccurate inferences (Hansen 2007a, Hansen 2007b). Second, a typical experimental design in studies usually considers only two time points: before and after the intervention. In reality, a key consideration is to examine how the effect evolves over a given time. Finally, even when experimental designs are based on time series, restrictions have been imposed in how a synthetic control¹ is constructed from a set of predictor variables. Considering such limitations, causal impact analysis is a suitable approach to analyse short-term asymmetry between the observed donations (collected during the Holy month of Ramadan) and the donations that would have been observed had the *impacting event* (Ramadan) not taken place.

Causal impact analysis, which uses Bayesian structural time-series models, generalises the widely used randomised experimental designs (also referred to as a difference-in-differences approach in econometrics) to time-series settings, by explicitly modelling the *counterfactuals* of a time series observed, both before and after the event (Brodersen et al, 2015). Its proponent, David Lewis, has described the concept behind ‘counterfactual analysis’ as follows: ‘We think of a cause as something that makes a difference, and the difference it makes must be a difference from what would have happened without it. Had it been absent, its effects – some of them, at least, and usually all – would have been absent as well’ (Lewis, 1973).

Thus, causal impact analysis improves on existing methods in two respects. First, it provides a fully Bayesian time-series estimate for effect. Researchers acknowledge the benefits in using the full Bayesian approach in inferential statistics due to its ability to fully account for uncertainty in data (Wang et al, 2013). Second, it uses model averaging to construct the most appropriate *synthetic control*¹ for modelling the counterfactual (Brodersen et al, 2015).

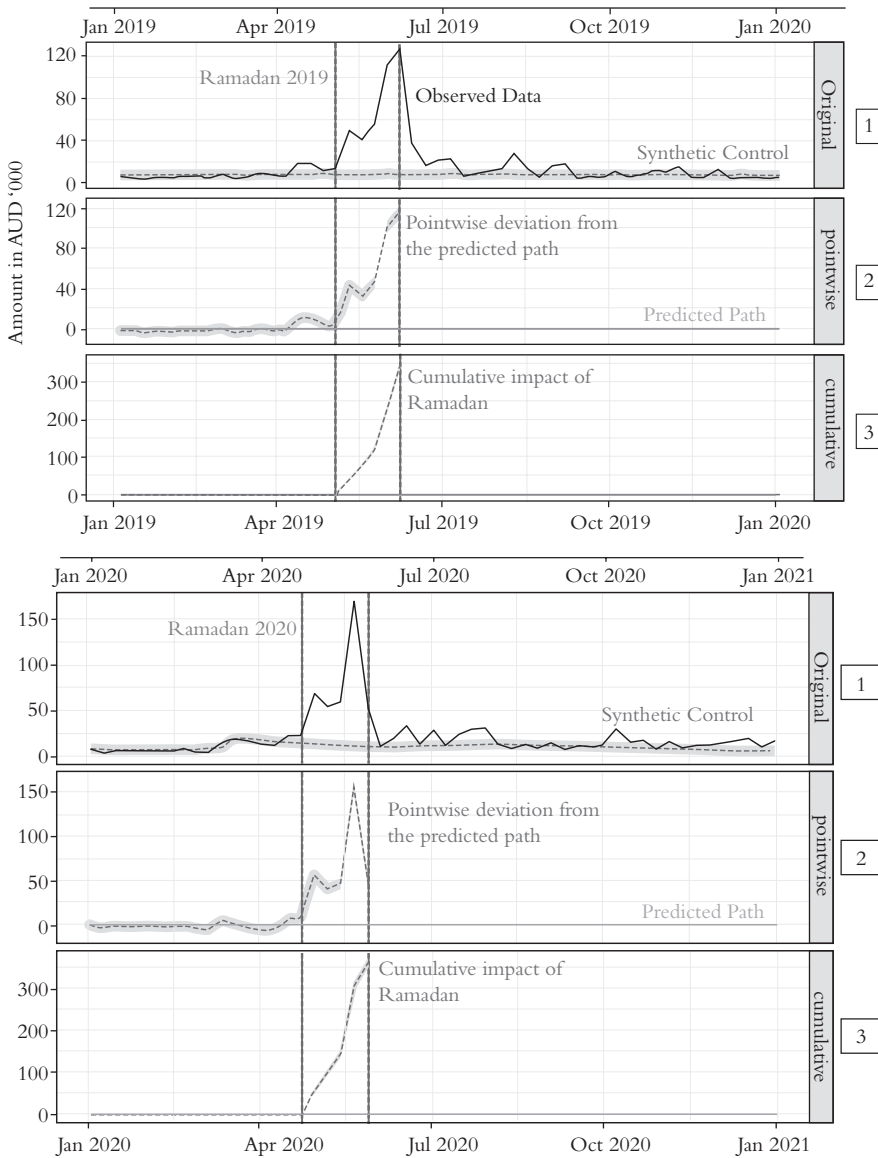
The researchers in this study used the CausalImpact package available in R to infer the impact of Ramadan on donation behaviour. The package is available as open-source software (<http://google.github.io/CausalImpact/>), and besides offering statistical results, the program graphically plots the deviation caused by an event. The authors have sourced the three graphs in Figure 1 from the CausalImpact package’s output in R-studio. The x-axis in Figure 1 denotes the analysis period, while the y-axis indicates the donation amount in A\$(1,000s).

The solid black line in the first graph (original) reflects the charity organisation’s actual donations through 2019. The vertical lines indicate the intervention period (Ramadan), that is, week 19 (ending 11 May 2019) to week 23 (ending 8 June 2019).²

The dotted horizontal line is the synthetic counterfactual simulation, which predicts the value of donations in the absence of the event (Ramadan). The graph highlights a sharp spike in weekly donations collected during Ramadan and a significant deviation from the predicted values. However, post-Ramadan (week 23), we see that the asymmetry between actual and predicted weekly donations disappears instantaneously.

The second graph (pointwise) highlights the differences between the actual and predicted observations. Similar to the first graph, the vertical lines indicate the intervention period (Ramadan). The horizontal line denotes the predicted donation inflow expected in the absence of the event (Ramadan), and the dotted

Figure 1: Output



Source: Constructed by statistical software (R-studio)

line (highlighted) shows the difference between the actual and predicted values in weekly donations.

Finally, the third graph highlights the cumulative effect of the event on our observed variable – weekly donation due to the intervention (Ramadan). Similar to the second graph, the vertical lines indicate the intervention period (Ramadan) and the horizontal line shows the predicted inflow of donations in the absence of Ramadan.

The results from causal impact analysis are summarised in Table 5. The average (actual) donations received during the Ramadan weeks were significantly higher (that is, \$77,000 in 2019 and \$82,823 in 2020) than the predicted contributions (\$8,500 and \$12,068 respectively), as determined by the synthetic counterfactual simulation.

Table 5: Absolute effect of the month of Ramadan – causal impact analysis

	2019		2020	
	Weekly average donations	Cumulative (for the entire period of intervention)	Weekly average donations	Cumulative (for the entire period of intervention)
Actual donations received (during Ramadan) $Y(1)$	A\$77,000	A\$384,000	A\$82,823	A\$414,116
Expected/predicted donations $Y(0)$ (S.D.); [95%CI]	A\$8,500 (1600); [5600, 12000]	A\$42,400 (7800); [28100, 58000]	A\$12,068 (1597); [9024, 15306]	A\$60,339 (7985); [45120, 76528]
Absolute effect of Ramadan (actual donations minus expected donations) (S.D.); [95%CI]	A\$68,000 (1600); [65000, 71000]	A\$342,000 (7800); [326000, 356000]	A\$70,755 (1597); [67518, 73799]	A\$363,777 (7985); [337588, 368996]
Relative effect (S.D.); [95%CI]	805% (18%); [769%, 839%]	805% (18%); [769%, 839%]	586% (13%); [559%, 612%]	586% (13%); [559%, 612%]

Notes: Posterior tail-area probability p : 0.001. Posterior probability of a causal effect: 99.89%.

Source: Constructed by the authors

The results suggest that there is a significant positive impact of the religious event of Ramadan on weekly donations – more than 800% (during the event period) in 2019 and well over 580% in 2020. However, care must be exercised while interpreting these *impact* figures. The two percentages should not be compared across the years. Our model computes the causal impact of Ramadan by predicting a path (that is, a synthetic control) relying on past (or previous months’) data. The overall increased amount of charitable contributions immediately before Ramadan in 2020 – caused by a number of possible factors, such as a natural growth in the charity’s donors, a cumulative response by donors to the pandemic crisis or funds being diverted to donation as savings were realised due to there being no travel – overshadowed the relative effect of Ramadan on donations in our analysis for 2020.

The cumulative effect of Ramadan on the weekly donations indicates that the actual contributions collected during the event stood at \$384,000 (2019) and \$414,116 (2020) as opposed to the predicted \$42,400 (2019) and \$60,339 (2020) (that is, had there been no event during the year). The absolute impact of Ramadan on weekly donations was calculated as \$68,000 in 2019 and \$70,755 during the pandemic year (2020). Hence, the absolute cumulative effect of the event (Ramadan) on contributions collected during the period was \$342,000 in 2019 and \$363,777 in 2020. The probability of obtaining this effect by chance was minuscule (Bayesian one-sided tail-area probability $p = 0.001$). This means the causal effect (occurring as a result of Ramadan) was statistically significant (Hypothesis 2 – accepted).

Discussion

This study aimed to analyse the donation deposits of a charity organisation (SKMCH&RC) to address two key objectives: (a) to determine any relationship between CC and donation behaviour; and (b) to analyse the impact of a religious belief (that is, the importance of donating during Ramadan) on total donations collected. Data analysis demonstrated a positive and statistically significant correlation

between CC and the inflow of donations in the charity's bank accounts (Hypothesis 1a). On the other hand, during the pandemic year (2020), donations to the charity remained stable, showing an inverse relationship with CC (Hypothesis 1b). It is also revealed that during the Ramadan time period (that is, four weeks of Ramadan plus a week before the start of the Islamic Holy month), donations to the charity increased substantially (Hypothesis 2). The relative effect of Ramadan was calculated at a maximum of over 800%.

Findings from our analysis make a number of contributions. First, to the best of our knowledge, no study has empirically tested the link between the consumer confidence (or sentiment) index and donation inflows to charity organisations. While a handful of studies have looked at investor sentiment (Amin and Harris, 2020), and an investor confidence index (Okunade, 1996) in relation to philanthropy, this is the first time that a correlation between a macro-level CC rating and incoming donations has been investigated.

Second, this study provides empirical evidence for the influence of donors' religious belief on charity contributions. The transaction-level two-year data from the charity's bank accounts were analysed to demonstrate the quantitative impact of Ramadan on the size of donations. Previous work in the area has been based on surveys and interviews only.

Finally, researchers have used a relatively less popular yet powerful analytical approach to infer causal impact – causal impact analysis, an open-source program available only in advanced statistical software, has been engaged to infer the causal effect of Ramadan on donation inflows. The CausalImpact tool is particularly useful in simulating an experimental research design. The tool was employed without an experimental design for study and the technique has been adopted to investigate issues across disciplines. Its use in the field of other social science domains is still not common.

Our findings have important implications for both not-for-profits/charities and governments generally. Australia, like many other countries, is home to numerous diasporas. It would be worthwhile to explore the type of charities and charity work a diaspora is interested in supporting. Since each diaspora may have their own specific religious belief systems, other charities could tap into those to connect with these communities.

Limitations and future research

This study makes use of single-source data retrieved from the charity's Australia-based bank accounts. Data triangulation – that is, data collected from different sources (such as donors themselves) – would have provided further insight into the prominent giving trends observed within the Pakistani Muslim diaspora. The researchers did not take into account people's level of trust in the charity organisation. Neither did the researchers measure the impact of a well-recognised celebrity (who is the chair of the charity hospital) on donation outcomes. Future research must measure donors' trust in the organisation and the attractiveness of a celebrity in relation to donation revenue. Finally, researchers in this study only tested for a correlation between CC and the charity's donations. As already mentioned, correlation does not imply causation; thus it is important that one interprets the given results appropriately.

'Consumer confidence' as a concept opens various possibilities for future research. This study made use of transaction-level bank data for one charity organisation only.

Our results demonstrate the promise in using CC information to study outcomes in the philanthropy sector. It will also be useful to compare the relative effect of changes in CC on different types of charities – operating both in and outside of Australia.

Notes

¹ Synthetic control is a statistical method, which is used to evaluate – in the context of this study – the effect of a religious event across other time periods. It involves the construction of a weighted combination of temporal points, used as controls, to which the time period of the religious event is compared. This comparison is undertaken to estimate what would have happened if the event had not occurred.

² The Holy month of Ramadan started on 5 May 2019 and ended 4 June 2019. Our dates correspond to the weekly data.

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Conflict of interest

The first author is the chair and a member of the board of directors of the charity organisation mentioned in this article. This is a voluntary position, and she receives no remuneration for her role.

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