









# The impact of street service care on frontline service utilisation during high-alcohol use hours in one night-time entertainment precinct in Australia

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## Abstract

**Introduction and Aims.** Street service care providers in Queensland, Australia are organisations tasked with assisting vulnerable individuals and aiding intoxicated patrons that are at risk of harm in night-time entertainment precincts (NEP). Members of these organisations patrol NEPs and provide services, such as first aid, to individuals in need. There has been no research conducted on their impact on crime, injuries and on the duties of Australian frontline service resources (e.g. police and ambulance services). This study evaluated the introduction of a single street service care in the Cairns NEP on police-recorded assaults, emergency department injury presentations and ambulance service utilisation during high-alcohol hours. **Design and Methods.** Police-recorded assaults (common and serious), emergency department injury presentations and ambulance attendances for the Cairns suburbs were examined. Autoregressive integrated moving average time series analyses were used to determine the impact of street service care on monthly counts for each dataset. **Results.** Serious assaults during high-alcohol hours significantly declined after the introduction of the support service in Cairns, with a one-month lagged impact ( $B = -1.66$ , 95% confidence interval  $-3.02, -0.30$ ). No other significant impact on common assaults, emergency department injury presentations or ambulance attendances were found. **Discussion and Conclusions.** This study provides preliminary evidence that street service care may help to decrease assaults within a single NEP. However, further research investigating the impact of street services in larger cities, and determining what other roles the service may be able to play in preventing alcohol-related harm, is needed. [Taylor N, Coomber K, Curtis A, Mayshak R, Harries T, Ferris J, Patafio B, Hides L, de Andrade D, Miller P. The impact of street service care on frontline service utilisation during high-alcohol use hours in one night-time entertainment precinct in Australia. *Drug Alcohol Rev* 2020;39:21–28]

**Key words:** alcohol, entertainment precinct, alcohol-related harm, street service care.

## Introduction

Night-time entertainment precincts (NEP) are small geographical areas with a high density of on premise alcohol outlets (e.g. nightclubs and bars [1]). These areas are associated with increased experiences of crime, aggression and intoxication [1,2], however, much of the harm that occurs in NEPs is preventable [3]. In an attempt to decrease levels of alcohol-related harm in NEPs, the Queensland Government implemented a wide variety of policies targeted at

reducing alcohol-fuelled violence in July 2016 [4,5]. Complementing this initiative, the Department of Communities provided funding to street service care providers in 15 key NEPs (also known as Safe Night Precincts) across the state [6].

Street service care providers within Queensland are tasked with assisting vulnerable individuals, and aiding intoxicated patrons that are at risk of, or have experienced harm [6]. They provide a number of services including: providing a safe space for individuals to rest, patrolling NEPs to find individuals that may be in

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distress, deescalating conflict and providing first aid [6–10]. Many of the services also hand out water, in order to help individuals manage their alcohol intake. Better management of intoxication may reduce alcohol-related harm, including aggression, in night-time environments [2]. These services appear to work primarily with a younger and more heavily intoxicated subset of the nightlife population [11]. They achieve this primarily through patrolling the streets of the NEP to identify at-risk individuals who may benefit from their services. Often they will also have a central operating point where services users can be brought back to, or where individuals can approach and request assistance.

Similar services have also been observed in other parts of Australia, the UK, Poland and the USA (e.g. street pastors, alcohol treatment/welfare centres, sobering centres or drunk tanks [12,13]). In addition, centres designed to sober up intoxicated patrons have been implemented ad hoc in many cities [14]. Despite the growth of street services internationally, and the extensive operation of these services in Queensland (see Table 1), there has been limited independent evaluation of their impact on assaults, injuries, and frontline service resources (e.g. police and ambulances; [11,14]). The research available suggests that street service care has an independent impact that reduces alcohol-related harm in NEPs [11–13]; as well as emergency department (ED) attendances and ambulance attendances to EDs for alcohol-related injury and assault [15]. However, the level of impact is difficult to quantify as none of the methodologies used in prior literature examined the introduction of street service care.

Street service care is one of many under-researched initiatives that have been introduced by policy makers within the context of NEPs [14]. In order to best inform policy makers, it is essential that empirical evidence for the effectiveness of interventions aimed at reducing alcohol-related harm is available [16]. Data collected by these services are often used as proxy measures for alcohol-related harm in NEPs [4], therefore it is of particular importance that the impact of these services is established. Additionally, street service care aims to divert individuals experiencing alcohol-related harm from acute health services. While ambulance transport in the state of Queensland is free, paramedics can treat on site and decide whether or not an injury is serious enough to warrant transfer to hospital.

Moreover, evaluation of these services in Queensland is difficult as the introduction of funding for street service care coincided with a large alcohol-related policy change. While seven of these services were introduced in response to funding, eight were in place years prior to the introduction of the policy. These were either run on a volunteer basis and/or through individually obtained funding from various government initiatives (e.g. funding

for the Chill Out Zone in Surfers Paradise was initially part of a response to the Royal Commission into Aboriginal Deaths in Custody). The Cairns Street Chaplains began on a voluntary basis in 2013, independent of any major policy introduction, in one of Queensland's most prominent NEPs. The isolated introduction of the street service care in the Cairns NEP makes it an ideal area to investigate the influence of street service care. This study aims to evaluate whether the introduction of the street service care influenced frontline service use during high-alcohol hours (HAH) in the Cairns NEP. HAH are considered a reliable proxy measure for alcohol-related harm, this is the period when the majority of alcohol attributable harms have been identified and when demand on frontline services is at its greatest [17–20]. While frontline service providers record alcohol involvement, evidence indicates that these records are not consistently or accurately made [21,22]. Trends that rely on these records have been found to be misleading, while trends that relied on HAH have not been impacted by differences in service delivery variables, which result in inconsistent data [23]. As such, the use of HAH has been recommended as a suitable proxy variable when estimating trends and evaluating interventions [23]. It was hypothesised that the introduction of street service care in Cairns would be associated with:

1. A significant reduction in police-recorded assaults in the Cairns NEP during HAH;
2. A significant reduction in ambulance attendances in the Cairns NEP during HAH; and
3. A significant reduction in ED injury presentations in the Cairns NEP during HAH.

## Methods

### *Study site*

On 30 June 2017, Cairns had an estimated population of 164 536 [24] and the Cairns NEP has the third highest amount of licensed venues of all the major Queensland NEPs ( $n = 190$ ). The greater Cairns region has the highest amount of licenced venues in Queensland, outside of Brisbane and the Gold Coast ( $n = 703$  [25]). The Cairns Street Chaplains operate within the Cairns NEP during Friday and Saturday nights.

### *Data*

All data used in this project was collected as a part of the Queensland Alcohol-related violence and Night-Time Economy (QUANTEM) project [4]. Ethics approval was provided by the Human Research Ethics

**Table 1.** Details of street service care in 15 night-time entertainment precincts of Queensland, Australia

NEP serviced	Number of licensed venues <sup>a</sup>	Street service	Associated organisation	Implementation date
Airlie Beach	35	Rest and Recovery Airlie Beach	Anglicare	15 June 2016
Brisbane CBD	225	NightWatch Brisbane	ChaplainWatch	11 September 2011
Broadbeach CBD	82	Chill Out Zone Broadbeach	Gold Coast Youth Service	2 June 2016
Bundaberg CBD	26	Safe Night Medics Bundaberg	Community Solutions	1 September 2017
Cairns CBD	190	Cairns Street Chaplains	Churches of Christ in Queensland	18 October 2013
Fortitude Valley	152	NightWatch Brisbane	ChaplainWatch	11 September 2011
Gladstone CBD	15	Safe Night Medics Gladstone	Community Solutions	1 September 2017
Inner West Brisbane	32	NightWatch Brisbane	ChaplainWatch	11 September 2011
Ipswich CBD	27	Drug ARM Rest and Recovery Ipswich	Drug ARM	15 June 2016
Mackay CBD	54	Mackay Street Chaplaincy	Mackay Street Chaplaincy	7 December 2012
Rockhampton CBD	37	Safe Night Support Services Rockhampton	Community Solutions	15 June 2016
Sunshine Coast	151	Safe Night Support Services Sunshine Coast	Community Solutions	15 June 2016
Surfers Paradise CBD	161	Chill Out Zone Surfers Paradise	Gold Coast Youth Service	31 December 1998
Toowoomba CBD	47	Metro Care Street Crews	Metro Care	23 January 2011
Townsville CBD	90	Rest and Recovery Townsville	Anglicare	5 December 2010

<sup>a</sup>As of 30 June 2017 [25]. CBD, central business district; NEP, night-time entertainment precincts.

Committees of Deakin University, The University of Queensland and James Cook University. De-identified unit records of police-recorded assaults that occurred within the Cairns NEP were obtained from the Queensland Police Service from 1 January 2009 to 31 December 2017. Assaults were distinguished between common (common and minor assaults) and serious assault (assaults resulting in bodily harm; aggravated non-sexual assault; assault that results in bodily fluid entering the victim; serious assault [other]; grievous bodily harm and wounding) categories, as established by the QUANTEM project protocol [4]. All serious assaults included in the study resulted in bodily harm. Cases were split as serious assaults have clearer definitions and lack the ambiguity of common assaults, which are influenced by a higher level of police discretion, making them a less reliable measure over time. This is in line with the World Health Organizations recommendations on using police data as an indicator for alcohol-related harm, which states that serious assaults are less biased by both policing levels and enforcement strategies [26]. This methodology also follows the standard offence classifications for serious and common assault in Australia and New Zealand [27], and replicates the methodology used in a recent analysis of the reliability of Queensland police data [23]. Records categorised as common and serious assault were analysed separately for HAH only (Friday and Saturday, 8 pm–6 am; [19]). Cases that were flagged as domestic assaults were excluded from the analysis.

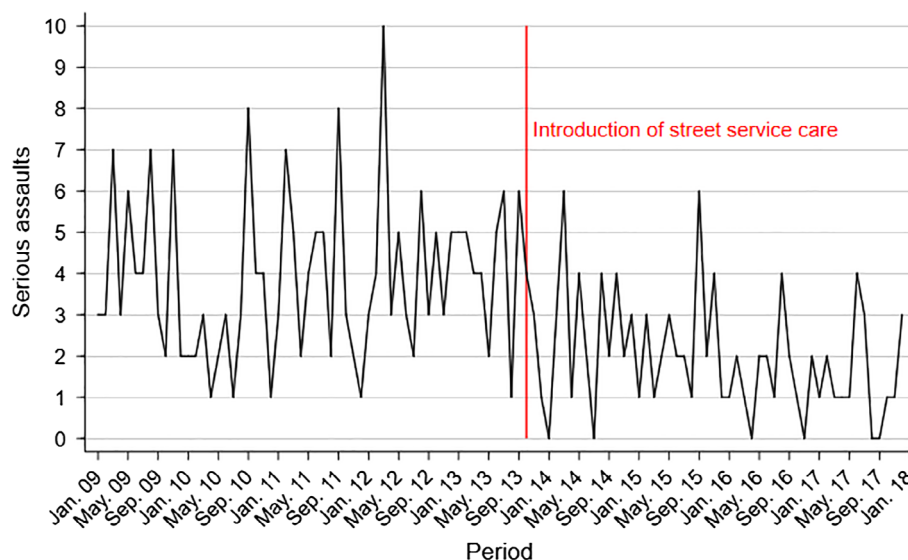
Cairns ambulance attendance data were obtained from the Queensland Ambulance Electronic Ambulance

Report Form database for 1 July 2011 to 31 July 2017. De-identified data that occurred during HAH (Friday and Saturday, 8 pm–6 am [18,20]) in the Cairns, Cairns central and Cairns city suburbs were analysed.

De-identified unit records of ED presentations containing International Classification of Diseases Australian Modification (ICD-AM) injury codes (S00-T98 ICD-10-AM) for the Cairns hospital ED were provided from the Non-Admitted Patient Emergency Department Care database. These data were obtained for 1 January 2009 to 31 December 2017, and only those which occurred during HAH (Friday and Saturday, 8 pm–6 am [17,19]) were examined.

### Analyses

Autoregressive integrated moving average (ARIMA) time series analyses were used to determine the impact of street service care on monthly counts for police assaults, ED injury and ambulance attendance data. The standard modelling strategy for ARIMA analyses were used [28]. Where data exhibited clear upward or downward trends, first-order differencing was used to transform the data into a stationary series. After differencing the data series, seasonality was assessed by examining the autocorrelation plots; where periodic trends were observed (e.g. a spike every 12 months) a seasonal model was fitted [29]. The autoregressive and moving average values were determined by examining the autocorrelation plots and partial autocorrelation plots, respectively, and using reference plots to assign



**Figure 1.** Serious assaults in Cairns night-time entertainment precincts during high-alcohol hours, 2009–2017.

these terms to the ARIMA models [30]. Cross-correlograms were examined to identify the best-fitting transfer function for the intervention variable (specified as lag) [29]. All analyses were conducted using Stata 14.0 [31].

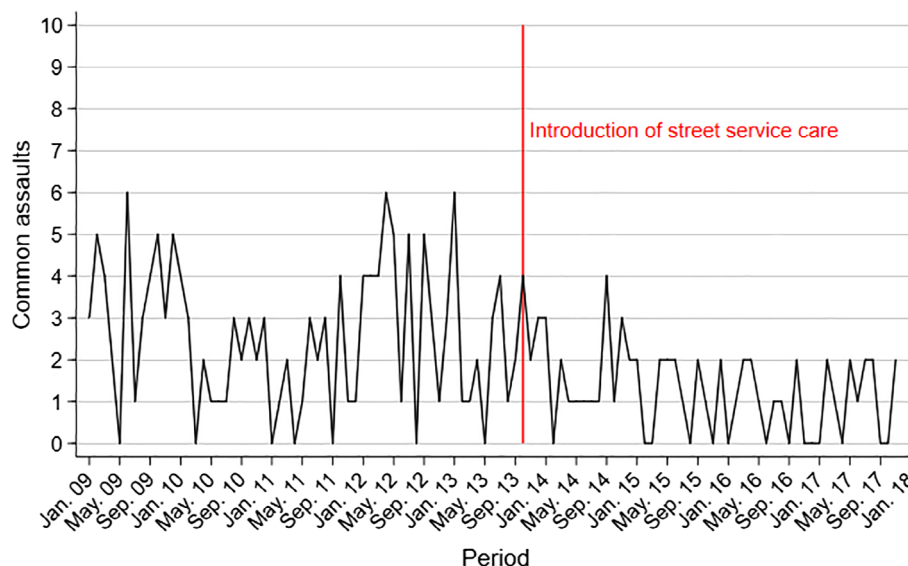
## Results

### *Police-recorded assaults*

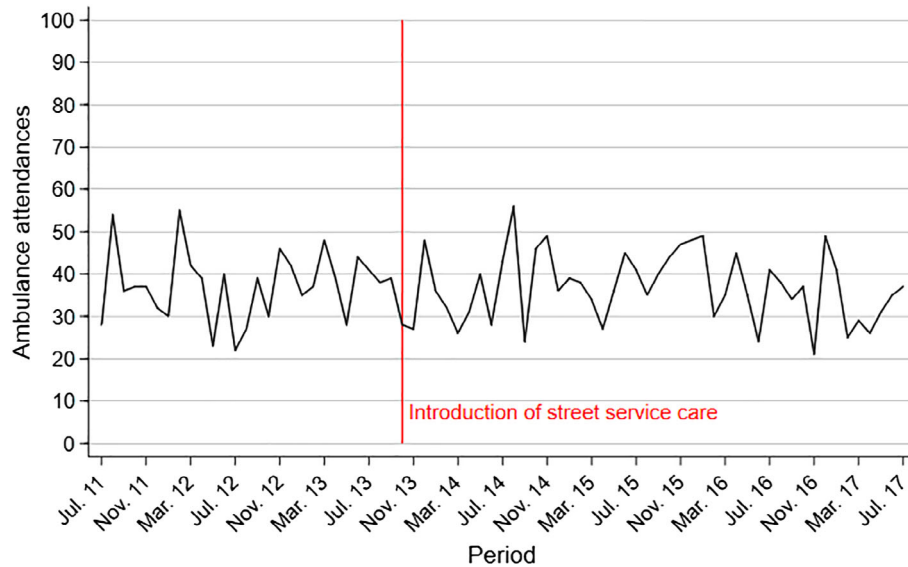
Overall, police-recorded serious assaults declined over the period analysed, no seasonality was found in the

model. Analysis (ARIMA[0,1,1],  $Q = 41.69$ ,  $P = 0.40$ ) indicated that the introduction of the Cairns street service had a significant one month lagged impact on serious assaults in the Cairns NEP during HAH ( $B = -1.66$ ,  $P = 0.02$ , 95% confidence interval [CI]  $-3.02, -0.30$ ; see Figure 1).

Overall, police-recorded common assaults declined over the period analysed, no seasonality was found in the model. Analysis (ARIMA[0,1,1],  $Q = 45.26$ ,  $P = 0.26$ ) indicated that the introduction of the Cairns street service had no significant impact on common assaults in the Cairns NEP during HAH ( $B = -0.73$ ,  $P = 0.22$ , 95% CI  $-1.90, 0.44$ ; see Figure 2).



**Figure 2.** Common assaults in Cairns night-time entertainment precincts during high-alcohol hours, 2009–2017.



**Figure 3.** Ambulance attendances in Cairns during high-alcohol hours, 2011–2017.

#### *Ambulance attendances*

Overall, ambulance attendances declined over the period analysed, no seasonality was found in the model. Analysis (ARIMA[0,0,0],  $Q = 22.15$ ,  $P = 0.94$ ) indicated that the introduction of the Cairns street service had no significant impact on ambulance attendances in Cairns during HAH ( $B = -0.49$ ,  $P = 0.81$ , 95% CI  $-4.39$ ,  $3.01$ ; see Figure 3).

model. Analysis (ARIMA[0,1,5],  $Q = 54.29$ ,  $P = 0.07$ ) indicated that the introduction of the Cairns street service had no significant impact on ED injury presentations in Cairns during HAH ( $B = -6.00$ ,  $P = 0.34$ , 95% CI  $-18.19$ ,  $6.19$ ; see Figure 4).

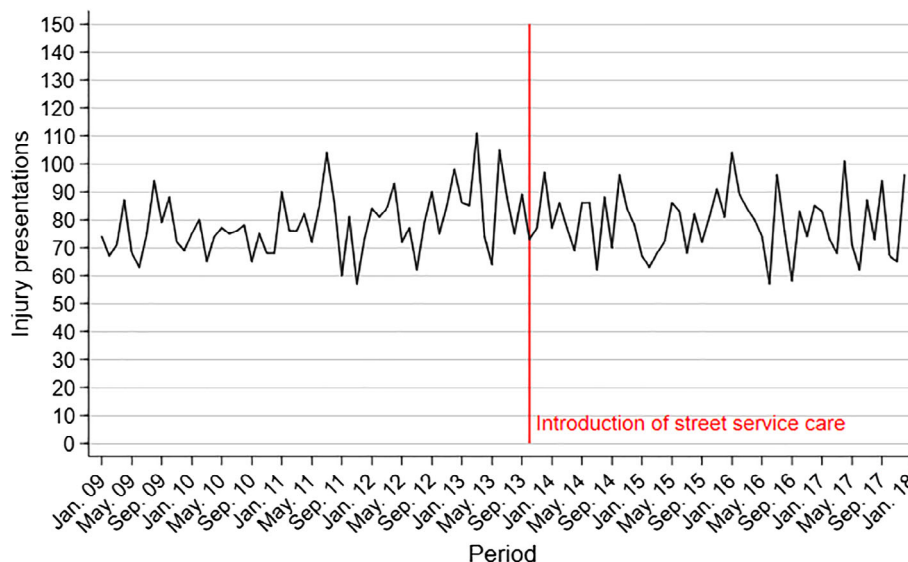
A summary of all analyses can be found in Table S1 (Supporting Information).

#### *Emergency department injury presentations*

Overall, ED injury presentations declined over the period analysed, no seasonality was found in the

#### **Discussion**

This study aimed to investigate the impact of street service care on frontline service utilisation in the Cairns, Queensland NEP by measuring changes in proxy measures for



**Figure 4.** Emergency department injury presentations in Cairns during high-alcohol hours, 2009–2017.

alcohol-related harm. Police-recorded serious assaults during HAH significantly decreased after the introduction of the street service care in Cairns. However, there was no significant change in police-recorded common assaults, ambulance attendances or ED injury presentations during HAH after the implementation of the service.

Street service care aims to reduce the amount of alcohol-related assaults and injuries experienced within NEPs. While an average reduction of 1.6 serious assaults a month was found, there were no indicators that the frequency of injuries had decreased. The reduction in assaults is consistent with findings from previous research [15], indicating the presence of street service care may reduce the amount of violence within a NEP. Street service care also aims to reduce the presentation of minor health concerns on frontline services, thereby improving the efficacy of their services [11]. The significant reduction in police reported assaults indicates that there were less incidents that required police attention, partially supporting this wider aim.

Although it was not evaluated in the current study, there is evidence to suggest that the majority of incidents that require street service care would not have required the attention of frontline services [11]. This is consistent with findings from the evaluation of street pastors in Cardiff, which found that the presence of street pastors resulted in greater numbers of individuals requiring assistance, than what would have been expected if they were only treating individuals that would have otherwise attended an ED [15]. Other types of harm, that could not be measured, may be prevented by the presence of these services, such as anti-social behaviour.

Previous research has focused on how street service care responds to alcohol-related harm [11,15], however the existence of these services creates a unique opportunity for harm prevention that has not yet been utilised. Bars that routinely serve patrons to intoxication are a risk-factor for aggressive behaviours [32]. Identifying the most problematic venues and applying additional restrictions on their operation has been associated with a reduction in alcohol-related violence [14]. It is recommended that the services trial data collection that identifies which venues service users consumed their last drink. This would allow researchers to evaluate whether street services can help to identify problematic venues within a NEP. This could complement police data to help identify problematic venues.

### *Limitations*

The only significant findings were found in police-recorded serious assaults, which can be directly impacted by changes in police practices [33]. As the decline in assaults was quite small, and there was no indication that the occurrence of

injuries had decreased, it is possible that reporting differences confounded the results. Previous research has found that a significant proportion of police in NEPs were required to perform the role of paramedics [13]. This study was not able to determine if police resources were used more efficiently, only that recorded serious assaults had decreased. While HAH were utilised in order to reduce error created by frontline service data collection, alcohol involvement in the police-recorded assault, ambulance attendance and ED injury data were not confirmed. Ambulance records did not indicate whether or not the incident took place within private property in the area of interest, where street service care could not access. As ED data used did not differentiate between cases from NEPs and non-NEP areas, a small effect may have been masked by the large number of non-NEP cases. Subsequent admission was not able to be determined from ED data. Studies using ED ICD-10 injury data are likely to underestimate the extent of alcohol-related injuries, as ED-based interview and survey studies report higher proportions of alcohol-related injury presentations (17–35%; [[34–36]]). Future research utilising emergency department ICD-10 injury data could improve the validity of results by using triage presenting complaint codes or triage text mining to confirm alcohol involvement in injury presentations [37]. This study does not provide evidence for a causal relationship between street service care and front-line service attendances. Additionally, as only one location was analysed the generalisability of the current study is limited.

### **Conclusion**

The introduction of street service care in one NEP within Queensland, Australia was associated with an average decrease of 1.6 serious police-recorded assaults a month. This provides support for the notion that street service care may work to decrease crime and ease the burden on some frontline services. However, there was no indication that the frequency of injuries or activity of ambulance services was significantly reduced by the introduction of street service care. Further research should determine the best methods to evaluate what impact, if any, street service care has on patrons' experiences within NEPs. Altering the data collection practices of street service care to provide further details on the origins of alcohol-related harm within specific NEPs may provide an additional resource to policy makers with important information.

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## Conflict of Interest

KC receives funding from Australian Research Council, and grants from the Queensland government. JF receives funding from the Australian Research Council and Australian National Health and Medical Research Council, both Federal and State Governments, Criminological Research Council and Foundation for Alcohol Research and Education. PM receives funding from Australian Research Council and Australian National Health and Medical Research Council, grants from NSW Government, National Drug Law Enforcement Research Fund, Foundation for Alcohol Research and Education, Cancer Council Victoria, Queensland government, Australian Drug Foundation, Australian Rechabites Foundation and Lives Lived well. He has received travel and related costs from Australasian Drug Strategy Conference, Queensland Office of Liquor and Gaming Regulation, Northern Territory government and the World Congress on Public Health. He has acted as a paid expert witness on behalf of a licensed venue and a security firm. NT is receiving funding through an Australian Government Research Training Program Scholarship.

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## Supporting information

Additional Supporting Information may be found in the online version of this article at the publisher's web-site:

**Table S1.** Summary of all results