Accepted Manuscript

The enemy within: An econometric analysis of injuries caused by self-harm

Vani K. Borooah, John Mangan

PII: S0313-5926(15)00014-4
DOI: http://dx.doi.org/10.1016/j.eap.2015.03.002
Reference: EAP 54

To appear in: *Economic Analysis and Policy*

Received date: 20 January 2015
Revised date: 16 February 2015
Accepted date: 20 March 2015

Please cite this article as: Borooah, V.K., Mangan, J., The enemy within: An econometric analysis of injuries caused by self-harm. *Economic Analysis and Policy* (2015), http://dx.doi.org/10.1016/j.eap.2015.03.002

The Enemy Within:
An Econometric Analysis of Injuries Caused By Self-Harm[+]

Vani K. Borooah[*]
University of Ulster

John Mangan[**]
University of Queensland

February 2015

1. Introduction

Self-harm (hereafter, SH) refers to self-inflicted harm where the intention may or may not have been to die. Thus the concept of SH includes instances of attempted suicide and self-mutilation. SH has been a major health problem in the UK for nearly three decades (Hawton et. al., 1997). In a study of 6,000 school children aged 15 and 16, researchers at the universities of Bath and Oxford found that 7 percent had harmed themselves in the previous year: more than half cut their skin, with girls being more likely to harm themselves.[1] In Australia, there were 22,530 cases of hospitalised self-harm in Australia in 2001-02, which equated to 116.0 cases per 100,000 people in Australia: again, compared to males, more females were likely to be admitted to hospital for SH and most cases of SH involved self-poisoning (Heuvel, 2006).

[+] We are grateful to the Queensland Injuries Surveillance Unit (QISU) for providing the data and to Richard Hockey of the QISU for help and advice. Borooah thanks the Department of Economics, University of Queensland for its hospitality while working on this project. Needless to say, we alone are responsible for the interpretation of the data, for the results reported in the paper and, indeed, for any of its deficiencies.
[*] Newtownabbey, Northern Ireland BT37 0QB. (Email: vk.borooah@ulster.ac.uk).
[**] Corresponding author: John Mangan, Australian Institute for Business and Economics, University of Queensland, Brisbane, Australia (Email: J.Mangan@uq.edu.au).
[1] The Economist, 26 October 2006.

In addition to the gender dimension to SH, about which, as the above discussion indicates, much is known, there is also the issue of race and ethnicity in SH about which less is known. In particular, within an ethnically heterogeneous population, are some ethnic groups more likely to SH than others? A similar question arises with respect to labour markets: do people in different labour market states (students, unemployed, employed) have differing risks of SH? Lastly, there is the question of the severity of injuries caused by SH: are SH injuries comparable in terms of severity to injuries caused by external agents like parents, spouses, and strangers?

Against this background, we use a new set of data to examine the issue of SH. These are data from The Queensland Injuries Surveillance Unit (QISU), which records details of injuries presenting at the Emergency Departments of participating hospitals in the Australian state of Queensland[2] (hereafter simply "injuries"): The data are obtained from participating hospital emergency departments in the Australian state of Queensland using procedures based upon those developed by the US National Electronic Injury Surveillance System. (NEISS)[3] and used by similar to that used by the Victorian Injury Surveillance Unit at Monash University [4] Data items currently collected are;

- Age, sex, postcode
- Country of birth, language
- Time and date of injury event
- Injury text description
- Cause of injury
- Intent of incident (unintentional, assault, etc.)
- Place of injury (e.g. bedroom in boarding house)
- Activity (e.g. playing cricket)
- Nature of injury and body location or ICD-10 code
- Mechanism and major injury factor (e.g. grinder)
- Triage category (indication of severity)
- Admission status

[2] For details of the QISU data see http://www.qisu.qld.gov.au
[3] http://www.cpsc.gov/en/Research--Statistics/NEISS-Injury-Data/

[4] Participating hospitals include; Mater Adult Private, Mater Adult Private, Nanango, Princess Alexandra, Redland, St. Vincent's Toowoomba, Tully, Atherton, Robina, QE11, Bundaberg, Innisfail, Mackay, Maryborough, Mater Children's, Mount Isa, Townsville, Royal Children's Brisbane, Yeppoon, Cherbourg, Claremont, Collinsville, Dysart, Moranbah, Proserpine, Sarina, Hughenden (paper records only) Mater Mackay (paper records only)

The QISU recorded 84,583 injuries between 1 January 2003 and 31 December 2005 of which 48 percent (40,656 injuries), occurred in the home and only 9 percent (7,951 injuries) occurred in the workplace.[5]

Yet, the vast bulk of the literature which analyses personal injuries is concerned with injuries which occur in the workplace (or in the course of performing one's work) There is very little analysis of injuries which occur in the home even though, as noted above, such injuries comprise a large proportion of the total. The purpose of this paper is to provide a partial remedy for this neglect by analysing, using the injuries recorded on the QISU data base between 1 January 2003 and 31 December 2005, injuries which were the result of SH and which occurred mainly – though not exclusively – in the home.

We examine the nature of injuries resulting from SH and compare them to injuries from external causes by asking: who are the persons most vulnerable to SH and is there a gender or ethnic or employment state risk to SH? If so, what is the size of the risks emanating from these sources? Are SH injuries more (or less) severe than injuries from external forms of assault? In answering these questions, our study differs from other studies of SH – which have appeared mainly in medical journals – in three important respects.[6] First, we have a larger sample of SH injuries than most studies. Second, we are able to identify groups who are most at risk from SH and most importantly, to *quantify* the size of this risk. Third, we are able to compare SH injuries with injuries from other forms of assault, both in terms of the type of persons who are likely to SH and in terms of the gravity of their injuries.

[5] 10 percent of all injuries occurred at school or other public institutions; 13 percent occurred in recreation or sports areas; 8 percent occurred in the street; and 12 percent occurred at "other places".
[6] See *inter alia* Fortune (2006), Whitlock *et. al.* (2006), Hawton and James (2005), Sinclair and Green (2005).

2. The Nature of Injuries Due To Self-Harm

The QISU reports the *intention* underlying an injury: 93 percent of the total number of injuries was accidental; 4 percent was the result of assault; 2 percent was due to "other intentions"; and 1 percent was the result of SH. In total, over the three year period 2003-05, the QISU identified 784 cases where the injury was due to SH. Table 1 sets out the salient features of injuries due to three intentions: SH; assault; and accidents.

INSERT TABLE 1

Injuries resulting from SH are mainly - though not exclusively - to women. As Table 1 shows, nearly two out of three injuries from self-harm were to women. By contrast, 68 percent of injuries resulting from assault, and 62 percent of accidental injuries, were to men. The average age of the injured parties in cases of self-harm 25 years, compared to 28 years for assault injuries and 18 years for accidental injuries.

Table 1 also shows that while 50 percent of assault injuries, and 23 percent of accidental injuries, were to the "head" (head, face (excluding eyes), or neck) only 3 percent of self-harm injuries were so located: the vast bulk of self-harm injuries were to systemic locations (66%) and to the upper limbs (26%). Indeed, the main modes for inflicting injuries on oneself were drugs and medicinal substances (56 percent) and cutting and piercing (31 percent). There was a marked difference between men and women in their modes of SH injury: 61 percent of women who harmed themselves, compared to 48 percent of men, did so through drugs and medicinal substances; 11 percent of men harming themselves, compared to only 2 percent of women, did so through collision with an object (usually, a wall or floor).

The overwhelming number of SH injuries were sustained in the home (69 percent: 70 percent for women and 67 percent for men) compared to 34 percent of assault injuries and 49 percent of accidental injuries. Only 4 percent of SH injuries resulted in a superficial wound (compared to 24 percent of assault injuries and 13 percent of accidental injuries). This is reflected in the fact that 74 percent of SH injuries were regarded, by the relevant Emergency Department, as requiring 'very urgent' attention (compared to 22 percent of assault injuries and 30 percent of accidental injuries).

After presentation of the injury to the relevant Emergency Department, 49 percent of persons with SH injuries were admitted to hospital and 47 percent were discharged. By comparison, only 11 percent of assault injuries and 13 percent of accidental injuries were admitted to hospital and 76 percent of assault injuries and 83 percent of accidental injuries were discharged.[7]

The above facts provide a compelling reason why, in terms of health policy, one should take SH seriously. SH represents an assault by oneself on oneself and is, therefore, different from assaults in which the perpetrator and victim are different persons. In the latter form of assault, the victim may take steps to protect herself (or himself) - by, for example, running away or locking herself in a room - so as to reduce the impact of the assault. Furthermore, assault by external agencies may be opportunistic or carried out in a rage and may, therefore, cease when either the opportunity disappears or the anger subsides. By contrast, in SH, the victim collaborates with the aggressor in assaulting the body and does not take defensive measures. Although SH is carried out in response to an inner *angst* – and, perhaps, even to alleviate it – it is often carried out more

[7] However, 12 percent of those with assault injuries left the Emergency Department, *against medical advice*, compared to 5 percent of those with self-harm injuries and 4 percent of those with accidental injuries.

deliberately and with greater preparation. For all, these reasons one could expect that the injuries from SH would be more serious and, consequently, more demanding in terms of medical resources.

3. Model Estimation and Predicted Probabilities

In the econometric work we asked two questions. First, what was the relative strength of the different factors influencing the probability of a person being injured through self-harm? Further, did these probabilities vary systematically by gender? Second, *after controlling for other factors*, were self-harm injuries from more (or less) severe than injuries from assault and accidental injuries?

In order to answer the first question we estimated a logit model, for respondents above 9 years age, in which the dependent variable, *y*, took the value 1 a particular injury *i (i=1,…N)* in the QISU data was the result of self-harm and the value 0 if it was the result of some other cause. The conditioning variables used in the logit model are listed below. These were all categorical variables and, for reasons of collinearity, all the categories could not be included in the equation. So, for each variable, one category had to be excluded from the equation and treated as the 'reference' category.

1. Gender. The reference category was male.
2. Ethnicity: white; Aboriginal or Torres Strait Islander [ATSI]; 'other' ethnicity. The reference category was 'other' ethnicity.
3. Age: 10-15; 16-21; 22-30; 31-65; 65+). The reference category was 65 or older.
4. Australian born. The reference category was foreign born.
5. Employment: student; employed; unemployed; home duties; 'other' employment. The reference category was 'other' employment.

Interaction effects were used to model whether the effect of one conditioning variable varied according to values of another variable. In the context of this study, a natural question to ask is whether the effects of some of the conditioning variables on the decision to SH varied according to whether the person was female: 64% of SH injuries were presented by females. In order to answer this question we estimated a general model in which the conditioning variables were allowed to interact with gender (*GEN=1*, if female, *0* if male). By virtue of this characteristic, this model is referred to in the paper as the *interaction model* (IM).[8]

The 'gender IM' was estimated 48,139 persons presenting injuries at Emergency Departments of Queensland hospitals: these were the number of injuries which had *non-missing values* associated with *all* the conditioning variables. The coefficient estimates, in terms of the odds ratios are not shown but may be obtained by request from the authors. Instead, these estimates are employed to make predictions about the probability of voting under various scenarios relating to the values of the conditioning variables. Following the advice contained in Long and Freese (2014), the method of model interpretation used in this paper is based upon predicted probabilities rather than on the odds-ratios. These probabilities are shown in Table 2 for the estimated the logit model with *GEN* as the interaction variable.

Insert table 2

The upper and lower panels of column 2 in Table 2 show, with respect to the various categories, the probabilities of SH for, respectively, men and women. For example, column 2 of Table 2 shows the predicted probabilities of presenting with SH

[8] Owning to a paucity of observations on SH, an equation incorporating the interaction of both gender and ATSI could not be estimated.

injuries as 1.6% for an ATSI male (upper panel) and 2.9% for an ASTI female (lower panel). This probability was obtained by setting *ATSI=1* for all the 48,139 observations over which the equation was estimated (that is, treating all the 48,139 persons presenting with injuries at Emergency Departments of Queensland hospitals as ATSI) but leaving the values of the other variables for each person unchanged (that is, as observed in the sample). Applying the logit estimates (obtainable on request) - *which include the estimates for the interaction terms with GEN* - to these revised values yielded estimated probabilities of SH for each of the 48,139 persons. The average of these predicted probabilities of SH was 1.6% for men (all of whom were assumed to ASTI) and 2.9% for woman (all of whom were assumed to ASTI). A similar methodology was used to compute the predicted probabilities of SH for the two other ethnic groups – white and 'other' ethnicity.

Similarly, column 2 of Table 2 shows, for persons aged 16-21 years, the predicted probabilities of presenting with SH injuries as 1.3% for a male (upper panel) and 6.0% for a female (lower panel). This probability was obtained by assuming that *all* the 48,139 persons over which the equation was estimated were aged 16-21 years, but leaving the values of the other variables for each person unchanged (that is, as observed in the sample). Applying the logit estimates (obtainable on request) - *which include the estimates for the interaction terms with GEN* - to these revised values yielded estimated probabilities of SH for each of the 48,139 persons. The average of these predicted probabilities of SH was 1.3% for men (all of whom were assumed to be 16-21 years) and 6.0% for woman (all of whom were assumed to be 16-21 years). A similar methodology was used to compute the predicted probabilities of SH for the other age groups and,

indeed to compute the predicted probabilities of SH for the employment and country of birth categories.

Column 3 of Table 2 shows the marginal probabilities of SH for the different categories of persons, with men in the upper panel and women in the lower panel. These probabilities are the *difference*, in their respective probabilities of SH, between persons in a particular category (White, ASTI for the ethnic group) and persons in the *reference* category for that group ('other' ethnicities for the ethnic group). For example, as column 3 of Table 2 shows, the marginal probability of SH for ASTI men was 0.011 = 0.016-0.006 and, for ASTI women, it was 0.021 = 0.029-0.007.

Dividing the marginal probability of column 3 by its standard error, shown in column 4, yields the z value in column 5. The z value associated with the marginal probability indicates whether it is significantly different from zero with the 'p values of column 6 showing the probabilities of observing the z values under the null hypothesis that the marginal probabilities were zero. For White and ASTI men and women, the marginal probabilities of SH were significantly different from zero meaning that, compared to men and women of 'other' ethnicities, the probability of SH was significantly higher for their White and ASTI counterparts.

Similarly, compared to men and women in 'other employment', the probability of SH was significantly greater for students and the unemployed, both male and female. However, for women, the probability of SH for those on 'home duties' was significantly lower than those in 'other employment'.

The vulnerability to SH of students and the unemployed bears some discussion. It could be that life as a student is stressful both in terms of 'coming of age' as a person and

learning to cope with emotional and sexual relationships and in terms of classwork in terms of tests and examinations. The effect of unemployment could be the result of a loss of self-worth after a prolonged period of joblessness.

In respect of age, compared to women aged 65 or more, the probability of SH for women in the age groups 16-21, 22-30, and 31-65 was significantly higher. For men, however, the marginal age effect was significant only for the 31-65 age group: compared to men aged 65 or more, the probability of SH for men in the age group 31-65 was significantly higher. Lastly, in terms of the country of birth, the likelihood of SH was significantly higher for Australian, compared to foreign, born men and women: 3.3% for Australian born women versus 1.5% for foreign born women.

The results shown in Table 2 were concerned with *differences* in the probability of SH between the categories in the various groups (for example, between the ATSI and the reference category of the 'other ethnicity' in the ethnic group) *separately* for men and for women. In contrast, the results shown in Table 3 evaluate *differences* in the probability of SH *between* men and women for the *same* category. More specifically, the results show test outcomes for the null hypothesis that, *for a particular category*, the probability of SH was the same for men and as it was for women.

Insert Table 3

The results in Table 3 show that for, virtually every category, the probability of presenting at Emergency Departments of Queensland hospitals with a SH injury was significantly greater for women than for men. The overall likelihood of a SH injury was 3.1% for women and 0.9% for men. In terms of ethnicity, the likelihood of a SH injury was greater for white women than for white men (3.4% versus 0.9%) and for greater for

ATSI women than for ATSI men (2.9% versus 1.6%). In terms of employment, female students and unemployed had significantly greater likelihoods of presenting with SH injuries than male students and unemployed. In respect of age, women in every age group, except the 65+ group, had significantly greater likelihoods of presenting with SH injuries than men in the corresponding age groups.

4. Ordered Logit Model of the Severity of Injuries by Different Types of Assault

The next question addressed in this paper was if, *after controlling for other factors*, injuries resulting from SH were more (or less) severe than injuries from assault and accidental injuries? This study defined the severity of an injury in terms of its triage assessment and categorization by the Emergency Department to which the injury was presented. The categories used in this paper were: "very urgent" (QISU triage categories: resuscitation; emergency; urgent); fairly urgent (QISU: semi-urgent); and not urgent (QISU: non urgent). Table 4 shows the estimation results from estimating an ordered logit model in which the dependent variable took the values: 3, if the injury needed very urgent treatment; 2, if the injury was fairly urgent; 1, if the injury was not urgent.

INSERT TABLE 4

Column 2 of Table 4 shows that, for women, the probability of a SH injury being viewed as 'very urgent' was 77% in contrast to a corresponding likelihood of 27% for accidents, 21% for parental assaults, 33% for domestic assaults, and 27% for other assaults. Column 6 shows that, for men, the probability of a SH injury being viewed as 'very urgent' was 73% in contrast to a corresponding likelihood of 28% for accidents, 25% for parental assaults, 25% for domestic assaults, and 29% for other assaults. The marginal probabilities of injuries being viewed as very urgent, using the probability of

SH injuries as the reference point, (column 3 for women and column 7 for men) were all significantly different from zero (women: z values in column 4, P values in column 5; men: z values in column 8, P values in column 9) meaning that, compared to the probability of a SH injury being viewed as 'very urgent', the probabilities of injuries due to accidents, parental assaults, domestic assaults, other assaults being viewed as 'very urgent' were significantly lower.

At the other end of the urgency scale, Table 4 shows that, for women, the probability of a SH injury being viewed as 'not urgent' was 2% in contrast to a corresponding likelihood of 15% for accidents, 20% for parental assaults, 12% for domestic assaults, and 15% for other assaults. For men, the probability of a SH injury being viewed as 'not urgent' was 2% in contrast to a corresponding likelihood of 15% for accidents, 17% for parental assaults, 16% for domestic assaults, and 14% for other assaults. The marginal probabilities of injuries being viewed as 'not urgent,' using the probability of SH injuries as the reference point, were all significantly different from zero meaning that, compared to the probability of a SH injury being viewed as 'not urgent', the probabilities of injuries due to accidents, parental assaults, domestic assaults, other assaults, being viewed as 'not urgent' were significantly higher.

Table 5 compared, *for women and men separately*, the probabilities of their injuries, from different causes, being at a particular level of urgency. However, from Table 5 we do not know if the difference between women and men was significantly different from zero. This is remedied in Table 5 which compares women and men directly in terms of the probabilities of their injuries, from different causes, being at a particular level of urgency.

INSERT TABLE 5

So, from Table 5, the probability of a self-harm injury being very urgent was 77% for women and 73% for men (Column 2, panel 'very urgent'). However, dividing this difference by its standard error (shown in column 3) yields a z value (shown in column 5) of 1.24 which the p-value (shown in column 6) indicates is not significantly different from zero at the 5% level of significance. Indeed, as Table 5 suggests, for all the three urgency levels and for all five injury causes, there were hardly any gender differences in the probability of an injury, from that cause, being at that level of urgency,

5. The Economics of Injuries from Assault

Between July 2003 and August 2005, 3,668 injuries from resulting from assault presented themselves at Emergency Departments of Queensland hospitals. Of these: 784 were the result of SH ('self-assault'), 78 were the result of parental assault, 313 were the result of spousal assault, and 2,493 were the result of 'other' assault that is, assault by persons other than self, parents, or spouse. Of these 3,668 injuries, triage values were available for 3,630 injuries and these were, accordingly, classified: 457 (13%) as 'not urgent'; 1,968 (54%) as 'semi-urgent'; and 1,205 (33%) as 'very urgent'.

We now assume that the costs of handling an injury are proportionate to its assessment of urgency with the highest and lowest costs associated with, respectively, 'very urgent' and 'not urgent' injuries. We further assume that, compared to the costs of the costs of dealing with a 'non-urgent' injury, the cost of dealing with a 'very urgent' injury was 10 times higher and that the cost of dealing with a 'semi urgent' injury was five times higher. Suppose that the cost of dealing with a non-urgent injury was $10,000.

Then the total cost of dealing with assault injuries in Queensland during this two-year period was nearly $223,5 million: (100,000×1,205) + (50,000×1,968) +

(10,000×457). Of this total, $67.2 million was the result of the 784 SH injuries presented: ($100,000×578) + ($50,000×184) + ($10,000×20). Consequently, although SH injuries comprised only 21% of the total of assault injuries (for which triage outcomes were available) they comprised 30% of the costs of assault injuries. The reason for this is that, compared to other types of assault, SH injuries were disproportionately judged to be 'very urgent': compared to the 74% of SH injuries that were judged to be very urgent, only 22% of non-SH assaults were so regarded.

4. Conclusions

This study analysed the nature of SH injuries comparing such injuries to assault injuries and accidental injuries. We found that SH injuries were disproportionately concentrated among women and the young and were much more likely to be viewed by hospitals as requiring very urgent treatment than other types of injuries. These show that four factors significantly increased the probability of SH injuries: (i) gender: SH injuries were disproportionately concentrated among women (ii) ethnicity: ASTI men and women had a higher probability of presenting (at Emergency Departments of Queensland hospitals) with SH injuries than non-ASTI men and women; (iii) age: young persons were more likely to present with SH injuries; (iv) labour market status: students and unemployed persons were more likely to present with SH than employed persons.

Our analysis of the cost of injuries showed that the proportionate contribution of SH injuries to the total cost of injuries from assault was likely to be much greater than the proportion of SH injuries in the total number of injuries from assaults.

References

Fortune, S. A. (2006). An examination of cutting and other methods of DSH among children and adolescents presenting to an outpatient psychiatric clinic in New Zealand, *Clinical Child Psychology and Psychiatry* 11: 407-416.

Hawton, K., Fagg, J., Simkin, S., Bale, E., and Bond, A. (1997), Trends in deliberate self-harm in Oxford, 1985-1995. Implications for clinical services and the prevention of suicide. *The British Journal of Psychiatry*, 171: 556-560.

Hawton, K., James, A. (2005). Suicide and deliberate self harm in young people. *British Medical Journal*, 330: 891-894.

Heuvel, A.V. (2006), Self-Harm Statistics – Key Statistics, Australian Network for Promotion, Prevention, and Early Intervention for Mental Health: www.auseinet.com.

Long, J.S. and Freese, J. (2014), *Regression Models for Categorical Dependent Variables using Stata*, Stata Press: College Station, Tx.

Sinclair, J., Green, J. (2005). Understanding resolution of deliberate self harm: qualitative interview study of patients' experiences. *British Medical Journal* 330: 1112-

Whitlock, J., Eckenrode, J., Silverman, D. (2006). Self-injurious behaviors in a college population. *Pediatrics* 117: 1939-1948.

Table 1: Salient Features of Injuries Due to Different Intentions at Emergency Departments of Queensland Hospitals, 2003-2005

	Self-Harm	***Assault***	Accidents
Number of Cases	**784**	**2,884**	**78,639**
Gender			
Male (%)	36	68	62
Female (%)	64	32	37
Total (%)	100	100	100
Average Age (years)	25	28	18
Bodily Location of Injury			
Head (%)	3	49	23
Trunk (%)	2	6	4
Upper limbs (%)	26	15	34
Lower limbs (%)	2	3	21
Systemic location (%)	67	27	18
Total (%)	100	100	100
Place of Injury Occurrence			
Home (%)	69	34	49
School/public institution (%)	4	6	10
Recreation/sports area (%)	1	5	13
Street (%)	3	14	8
Workplace (%)	2	15	9
Other Place (%)	21	26	11
Total (%)	100	100	100
Nature of Injury			
Superficial (%)	4	24	13
Open Wound (%)	27	28	23
Fracture/dislocation (%)	2	18	33
Foreign body (%)	1	0	7
Other injury (%)	66	30	24
Total (%)	100	100	100
Ethnicity of Injured Person			
White (%)	85	65	88
ATSI (%)	11	28	4
Other (%)	4	7	8
Total (%)	100	100	100
Triage Category			
Very urgent (%)	74	22	30
Fairly urgent (%)	23	63	59
Not urgent (%)	3	15	11
Total (%)	100	100	100

Source: QISU data

Table 2: Intra-Gender Predicted and Marginal Probabilities of Self-Harm*

	Men				
1	2	3	4	5	6
Ethnicity	Probability	Marginal Probability	SE	z value	Pr>|z|
White	0.009	0.003	0.001	2.14	0.03
Aboriginal and Torres Strait Islander (ATSI)	0.016	0.011	0.003	3.47	0.00
Other ethnicity [Reference	0.006				
Employment					
Student	0.018	0.013	0.004	3.41	0.00
Employed	0.003	-0.003	0.002	-1.63	0.10
Unemployed	0.018	0.012	0.003	4.88	0.00
Home Duties	0.010	0.004	0.010	0.42	0.68
Other Employment	0.006				
Age in Years					
10-15	0.003	-0.007	0.004	-1.61	0.11
16-21	0.013	0.004	0.004	0.87	0.39
22-30	0.015	0.006	0.004	1.30	0.19
31-65	0.018	0.009	0.004	1.98	0.05
65+ [Reference]	0.010				
Country of Birth					
Australian Born	0.009	0.003	0.001	2.23	0.03
Foreign Born [Reference]	0.006				
	Women				
1	2	3	4	5	6
Ethnicity	Probability	Marginal Probability	SE	z value	Pr>|z|
White	0.034	0.026	0.003	9.61	0.00
Aboriginal and Torres Strait Islander (ATSI)	0.029	0.021	0.005	4.14	0.00
Other ethnicity [Reference	0.007				
Employment					
Student	0.055	0.036	0.007	5.44	0.00
Employed	0.015	-0.003	0.008	-0.40	0.69
Unemployed	0.052	0.033	0.007	5.00	0.00
Home Duties	0.012	-0.007	0.003	-2.25	0.02
Other Employment	0.019				
Age in Years					
10-15	0.018	0.007	0.005	1.47	0.14
16-21	0.060	0.050	0.007	7.53	0.00
22-30	0.052	0.041	0.008	5.35	0.00
31-65	0.038	0.027	0.006	4.63	0.00
65+ [Reference]	0.011				

Country of Birth					
Australian Born	0.033	0.019	0.003	5.90	0.00
Foreign Born [Reference]	0.015				

* Total of 48,139 injuries at Emergency Departments of Queensland hospitals on persons > 10 years of age

Table 3: Inter-Gender Predicted and Marginal Probabilities of Self-Harm *

1	2	3	4	5	6
	Probability (Women)	Probability (Men)	SE of Difference	z value for H_0: Pr(Women) = Pr(Men)	Pr>|z|
Overall	0.031	0.009	0.002	13.81	0.00
Ethnicity					
White	0.034	0.009	0.002	13.91	0.00
Aboriginal and Torres Strait Islander (ATSI)	0.029	0.016	0.006	2.25	0.02
Other ethnicity [Reference	0.007	0.006	0.003	0.70	0.49
Employment					
Student	0.055	0.018	0.007	5.33	0.00
Employed	0.015	0.003	0.008	1.58	0.12
Unemployed	0.052	0.018	0.007	4.86	0.00
Home Duties	0.012	0.010	0.010	0.22	0.82
Other Employment	0.019	0.006	0.002	7.24	0.00
Age in Years					
10-15	0.018	0.003	0.002	8.27	0.00
16-21	0.060	0.013	0.005	8.67	0.00
22-30	0.052	0.015	0.008	4.79	0.00
31-65	0.038	0.018	0.006	3.39	0.00
65+ [Reference]	0.011	0.010	0.006	0.20	0.84
Country of Birth					
Australian Born	0.033	0.009	0.002	13.59	0.00
Foreign Born [Reference]	0.015	0.006	0.003	2.79	0.01

* Total of 48,139 injuries at Emergency Departments of Queensland hospitals on persons > 10 years of age

Table 4: Probabilities and Marginal Probabilities of Urgency of Different Injury Types, By Gender*

	Women				Men			
1	2	3	4	5	6	7	8	9
Degree of Urgency	Prob	MProb	Z value	Pr>|z|	Prob	MProb	Z value	Pr>|z|
Not Urgent								
Accident	0.150	0.131	42.11	0.00	0.145	0.122	33.04	0.00
Self-Harm	0.019				0.024			
Parental assault	0.202	0.183	2.40	0.02	0.165	0.141	1.50	0.13
Domestic Assault	0.120	0.100	7.36	0.00	0.164	0.140	4.16	0.00
Other Assault	0.149	0.129	12.21	0.00	0.142	0.118	17.98	0.00
Semi-Urgent								
Accident	0.580	0.364	0.017	21.41	0.580	0.364	21.41	0.00
Self-Harm	0.216				0.216			
Parental assault	0.593	0.376	0.017	22.15	0.593	0.376	22.15	0.00
Domestic Assault	0.556	0.340	0.022	15.31	0.556	0.340	15.31	0.00
Other Assault	0.579	0.363	0.018	20.26	0.579	0.363	20.26	0.00
Very Urgent								
Accident	0.270	-0.495	-25.87	0.00	0.279	-0.445	-16.92	0.00
Self-Harm	0.765				0.725			
Parental assault	0.205	-0.560	-7.06	0.00	0.251	-0.474	-3.65	0.00
Domestic Assault	0.325	-0.440	-13.10	0.00	0.252	-0.473	-8.96	0.00
Other Assault	0.273	-0.492	-19.84	0.00	0.285	-0.440	-15.83	0.00

*Ordered logit model with 47,530 observations on persons > 10 years of age

Table 5: Comparing the Predicted Probabilities of Injury Severity for Different Types of Injuries, by Sex*

1	2	3	4	5	6
Degree of Urgency:	Probability (Women)	Probability (Men)	SE of Difference	z value for H_0: Pr(Women) = Pr(Men)	Pr>|z|
Not Urgent					
Accident	0.150	0.145	0.003	1.65	0.10
Self-Harm	0.019	0.024	0.004	-1.23	0.22
Parental assault	0.202	0.165	0.121	0.31	0.76
Domestic Assault	0.120	0.164	0.036	-1.23	0.22
Other Assault	0.149	0.142	0.012	0.57	0.57
Semi-Urgent					
Accident	0.580	0.575	0.002	2.69	0.01
Self-Harm	0.216	0.252	0.029	-1.24	0.22
Parental assault	0.593	0.585	0.034	0.24	0.81
Domestic Assault	0.556	0.584	0.019	-1.49	0.14
Other Assault	0.579	0.573	0.007	0.81	0.42
Very Urgent					
Accident	0.270	0.279	0.004	-2.29	0.02
Self-Harm	0.765	0.725	0.032	1.24	0.22
Parental assault	0.205	0.251	0.149	-0.31	0.76
Domestic Assault	0.325	0.252	0.054	1.35	0.18
Other Assault	0.273	0.285	0.019	-0.67	0.51

*Ordered logit model with 47,530 observations on persons > 10 years of age