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'Taser, Taser'! Exploring factors associated with police use of Taser in England and Wales

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ABSTRACT

Police use of Taser in England and Wales has received little academic attention, despite being the topic of much public controversy. Much of our knowledge comes from the United States of America, but these findings are based on a small number of data sets and little testing has been done to see whether such findings apply internationally. This article uses a novel dataset from a police agency in England and Wales, and pilots new covariates, to conduct a multivariate analysis of factors associated with Taser use: the first time such analysis has been conducted outside of North America. This analysis also provides an ideal opportunity to test long-standing theoretical debates about whether police use of force is affected by 'who the citizen is', as the conflict approach would predict, or 'what the citizen does', in keeping with the consensus tradition. Variables from both the former (namely gender and mental health issues) and the latter category (including presence or use of a weapon) were found to be statistically significant after the inclusion of controls. The results highlight limitations to the application of the American based literature internationally and demonstrate stronger support for consensus than conflict theories. They also highlight that, under certain conditions, it may be appropriate for officers to take civilian characteristics into account when making use of force decisions.

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Introduction

The police's unique capacity to use force in all situations where it may be required is at the heart of their mandate (Bittner in Fyfe 1991), but is highly controversial. One of the most controversial options available to the police is the electric-shock weapon the 'Taser' (De Angelis and Wolf 2013), often referred to as a Conducted Energy Weapon (CEW), or Conducted Energy Device (CED).¹ Tasers are often said to belong to a class of technologies termed 'less-lethal', because they are intended to incapacitate a subject without causing death or serious injury (Bozeman and Winslow 2005, for further discussion of this controversial term, see Anais 2015).

The weapon is particularly controversial not just because of debates about its impact of civilian and officer injuries, but because of debates about how Taser is, and should be, used. In the UK, the Independent Police Complaints Commission noted an 'obvious mismatch between the public perception that Taser is a high-level use of force that should only be considered when faced with the most serious threats of violence and ... (the police's rationale) that Taser presents a lower risk' than other options (IPCC 2014, p. 25). Studies from the United States of America have found that the weapon is the police officer's 'response of choice' (Alpert and Dunham 2010, p. 251), and that

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the police are 'substituting this weapon for verbal de-escalation' (Gau *et al.* 2010, p. 42). There is also considerable controversy about who the weapon is used on. Some studies have found that people with mental health issues, those from indigenous and minority groups and those who have consumed drugs or alcohol are more likely to be Tasered (Gau *et al.* 2010, Lin and Jones 2010, Crow and Adrion 2011, O'Brien *et al.* 2011) – findings, again, predominantly based on data from the United States of America.

In England and Wales it is estimated that around 11% of police officers carry the weapon (Laville 2013), and that it is fired, on average, 5 times a day (Home Office 2016) in the jurisdiction. However, there has been little academic work on the weapon in England and Wales (Dymond 2014) and no multivariate analyses looking at factors associated with use of the weapon outside of the United States of America. There is a recognised need for more work in this area by academics (O'Brien *et al.* 2011, Neuscheler and Freidlin 2015) and non-academics alike (London Assembly Police and Crime Committee 2013). The Rt. Hon. Theresa May (when she was Home Secretary) called for 'greater transparency' around factors associated with police use of force, with a particular focus on Taser (Home Secretary, 2015). There is also a need for fresh data sources to help address Taser use, given that the existing studies on Taser are reliant on a small number of data sets (Bolger 2015, Neuscheler and Freidlin 2015) and concerns are often expressed about corporate influence in research around the weapon (Azadani *et al.* 2011).

In answer to this call, this article aims to present novel empirical data on Taser use. It aims to test, for the first time, the extent to which multivariate findings from the United States of America apply internationally. At the same time, the article also aims to make a contribution to broader theoretical debates around police use of force. It aims to contribute to a crucial debate; the extent to which police use of force, in this case Taser, is more strongly associated with *what the citizen does* (i.e. the way in which they behave) or by *who they are* (for example, their gender, ethnicity and mental health characteristics) (see Terrill and Mastrofski, 2002 for a classic statement of these two distinct perspectives and, more recently, Durna 2011). This is not just important in its own right but also speaks to long-standing debates, tracing back to the work of the classic sociologists Durkheim and Weber (Terpestra 2011), about the role of police in modern society.

The paper first reviews the literature on police use of force and Taser. It then discusses the data set and methods used in the next section before presenting the results from the multivariate analysis. These results and their implications for the academic literature and police policy are then discussed, and implications for theory are drawn out. It is argued that the model results highlight some surprising points of commonality between the two approaches and the need to transcend both perspectives, in order to advance our theoretical understanding of Taser and police use of force more generally.

Literature review

What the citizen does and who the citizen is

There are a number of theoretical traditions around the role of the police, and police use of force in particular. For consensus theorists, police can be understood as acting for the public good and protecting social order as a whole (Marenin 1982, Lee *et al.* 2013, Terpestra 2011, Kitossa 2016). Police use of force has been likened to 'a subcontract to collect garbage'; an arrangement which 'leaves the police with dirty hands' but which 'makes our lives infinitely more pleasant' (Sherman 1980, p. 2). This theoretical tradition would thus predict that 'what the citizen does' – factors such as the risk that civilians pose to themselves or others, and the levels of resistance they offer to police officers – would be significantly associated with police use of force and that 'who the citizen is' would be nonsignificant.

In contrast, critical or conflict perspectives – with their roots in Marxist and even Weberian sociology (Terpestra 2011) – understand the police as acting less in the public good, and more for dominant elites. The role of the police is to neutralise population groups considered 'dangerous', including

ethnic minorities and those of lower socio-economic status (Marenin 1982, Petrocelli *et al.* 2003, McMichael 2017), and policing decisions are made on extra-legal considerations, as well as legal factors (Lee *et al.* 2013). For Shantz (2016, p. 18), for example, 'policing is too often regarded as a service in the maintenance of peace' when it is really a 'social war ... related to class, race, gender'. The hypothesis would therefore be that characteristics such as ethnicity, gender, mental health and class – i.e. who the citizen is – would be significantly associated with increased odds of police use of Taser after controlling for other factors.

Sociologists have tried to empirically test consensus and conflict theories of policing in areas as varied as traffic stops, police force strength and size, allocation of police resources and police response time (Petrocelli *et al.* 2003), with varied results. Given the centrality of use of force to the police mandate and to the human rights of citizens and officers alike, use of force and Taser appears a fruitful arena for further testing of these theories. It is also timely to revisit this debate, which has been reignited recently with discussions around police militarisation in general (den Hayer 2014, Shantz 2016, McMichael 2017, this journal) and the use of Taser in particular. For Kitossa (2016, p. 269), it is the 'bodies of poor, immigrant, people "of colour" ... (who are) tased'. For Oriola *et al.* (2012, p. 66) 'Taser is being used essentially to terrorize the downtrodden within a neo-liberal ethos'. They argue that 'a combination of intersecting factors: gender, low socio-economic status, mental illness, drug use, and ethnicity are fundamental to (understanding) who gets Tased by the police'.

As Terril and Mastrofski (2002) note, multivariate studies give us a unique way of testing such theoretical assumptions. This is particularly important as the correlates of use of force decisions are 'much less well established' than other areas of use of force research (Bolger 2015, p. 468), and multivariate models are few and far between. Indeed, many of these previous studies have used little empirical evidence or, in the case of Oriola *et al.* (2012), have looked only at deaths involving Taser without controlling for confounding factors, or comparing Taser to other use of force options.

Use of force literature

The multivariate studies that do exist tend to focus on factors associated with use of force as a whole, and don't look at Taser use specifically. Bolger's (2015) meta-analysis found some evidence to support the importance of citizen behaviour in use of force decisions. He found demeanour, intoxication, offense seriousness, suspect resistance and citizen conflict to be statistically significant. He also noted that 'unfortunately, who the suspect is ... appears to play a role in use of force decisions', with suspect race, sex and class being statistically significant predictors of use of force (Bolger 2015, p. 484).

Other studies have also provided some support for both citizen characteristics and attributes being important, and have highlighted the importance of other variables, too. Employing multilevel modelling techniques, Lee *et al.* (2010) found both civilian resistance and their age to be a significant predictor of police use of force. The violent crime rate and unemployment rate of the neighbourhood in question and the length of in-service training provided by the police force were also statistically significant. Hine *et al.* (2018a) looked at the relative amount of force used by officers, and found gender and subject behaviour to be statistically significant. The study did not look at Taser specifically, but the authors noted 'in encounters where officers confronted suspects with a weapon, officers were most often presenting ... or deploying the Taser (2018a, p. 598)'.

Taser literature

Most of the literature on Taser has been focused on its association with officer and civilians injuries (Ba and Grogger 2018, Hine *et al.* 2018b, this journal), and not on the issue of when the weapon is used. There are some exceptions, however. Sousa *et al.*'s (2010) randomised control trial (RCT) focused on the impact that incident type had on use of force, particularly whether the presence of Taser altered how officers approached different training scenarios. They found that the presence of the weapon did not impact how officers handled non-aggressive resistance but that, when

faced with a subject showing aggressive physical resistance, officers with the weapon were more likely to favour its use over the use of pepper spray and baton. Similarly, when confronted with a situation that was 'potentially lethal', the evidence suggested that officers were using Taser as an alternative to a firearm – even though such a decision was potentially in contravention of force policy. While this study was able to speak to citizen behaviour, it said little about citizen characteristics.

Crow and Adrion (2010) used logistic regression to compare Taser use to other forms of force, with a dataset drawn from an anonymised municipal police department. They found that who the citizen is – specifically their race and gender – were significantly associated with the odds of Taser use. Males were more likely to be Tasered than females, and non-white suspects nearly twice as likely to have Taser used on them than white suspects. In terms of citizen behaviour, resistance was significant – but not in the way that Hine *et al.*'s work might lead us to believe. Instead, they found that officers were 'considerably *less likely* to use the Taser when faced with physical resistance or when faced with a suspect wielding a weapon' (emphasis added) leading them to express concerns about officers using 'Tasers in response to lower levels of resistance ... (including) verbal resistance' (Crow and Adrion 2011, p. 380). Ba and Grogger (2018, p. 22) looked at use of force data from the Chicago Police Department and found 'marginally significant evidence that the introduction of Tasers led patrol officers to substitute away from lesser types of force', although they did not look at correlates of Taser use specifically.

Gau *et al.* (2010) used logistic regression techniques to analyse use of force records collected by state patrol officers. They found that 'suspects who actively resisted or who attempted to assault police officers were less likely than passive resisters to be Tasered' and expressed concern that police are 'substituting this weapon for verbal de-escalation' (2010, p. 452). They found other statistically significant correlates of Taser use to include gender, with women less likely to be Tasered. Civilian ethnicity was not significantly associated with the odds of Taser being used at all during the encounter but was associated with the odds that Taser would be the first form of force used. Those with Hispanic ethnicity faced twice the odds that Whites faced of having the first force attempt be a Taser, and findings for Blacks were not significant.

Lin and Jones (2010) analysed use of force records from Washington State Patrol troopers. They similarly found that 'citizens displaying higher levels of resistance were less likely to be party to the ECD-involved cases than the other levels of resistance', and also found that citizen characteristics played a role, with 'non-white male citizens' more likely to be subject to Taser. Terill and Paoline (2017) looked at Taser use in cases where civilians were defensively resisting and found that less restrictive policies, male civilians and non-white suspects were associated with increased odds of Taser use. O'Brien *et al.* (2011, p. 39) used descriptive statistics to analyse a pilot of Taser use in New Zealand and found that 'the introduction of Tasers into policing in New Zealand will disproportionately impact on people with mental illness'.

Three themes emerge from this review. First, the existing literature, such as it is, indicates some support both for who the civilian is and what the civilian does being significantly associated with use of force decisions. Second, civilian behaviour is often associated with increased odds of Taser use not because it is used on those displaying high levels of resistance, or weapon use but rather because it is often used in response to relatively low levels of resistance. Third, the literature on this topic is 'patchy and incomplete', contains few multivariate studies and is heavily focused on the United States of America, leading several authors to call for more work on topic (Ba and Grogger 2018, Bolger 2015).

Methods

Data collection and research site

Data for this study came from officer reported use of force records collected by an anonymous police agency in England and Wales. The data set comprised all uses of force recorded by officers on an

internal use of force database between 1st January 2007 and 1st January 2015. It was initially gathered and analysed through an ESRC funded PhD programme between 2013 and 2017.

Analytical strategy

Each individual record represented a case in which an individual officer used one or more types of force in a particular incident. As this requirement meant that an individual incident involving multiple officers would be represented in the data set multiple times, the dataset was restructured according to incident. Records were aggregated according to station, date and time (down to the minute).²

Chi square analysis and binary logistic regression were used to analyse the resultant data set, which comprised 23,556 incidents. Due to the small relative and absolute number of Taser firings in the data ($N = 263$), rare events regression was considered. However, running the rare event regression models revealed no meaningful differences in results from the logistic regression model, so for simplicity the latter is reported here.³ The degree of multi-collinearity in the model was assessed and did not exceed accepted parameters.

Firing of Taser

The dependent variable was whether Taser was fired in probe-firing, drive-stun and/or angled drive-stun modes, as the dataset did not differentiate between these modes of firing. The reference group was use of force incidents where Taser was not fired ($N = 23,293$). In this dataset, use of force included the drawing and use of weapons (specifically firearms, kinetic energy device, Taser, baton and irritant spray), empty hand techniques, non-compliant handcuffing, limb restraints, shield use, canine and 'other'.

Independent variables: 'Who the citizen is'

The following variables were coded under this heading; ethnicity (white or non-white, with the former as the reference group), gender (male or females, with male as the reference group) and mental health issues.⁴ Officers were asked to indicate whether a person had a 'disability – mental health' and were also asked, separately, to indicate whether the person had mental health issues. These variables were combined to produce one measure of mental illness, with no reference to mental illness as the reference group.

Independent variables: 'What the citizen does'

Several covariates were used to assess the association between citizen behaviour and Taser firing. The first and second covariates were drug consumption and alcohol consumption (the reference category was no consumption). The third was a measure of the citizen's resistance and behaviour towards the officer, coded into three categories; possession or use of a weapon, general struggle or unarmed aggression (which comprised head-butting, kicking, punching or biting), passive resistance or other⁵ (the reference category).

The fourth covariate was a measure of the risk that the citizen posed to the officer, to other members of the public, or to themselves. While it is commonplace for researchers to incorporate into their models the level of resistance offered by a suspect, this does not always capture the level of violence that the individual may present to themselves or to other members of the public. Data limitations mean that this variable has been missing from previous models even though, in such a situation, officers may be responding to 'what the citizen does' – for example, responding to an imminent threat of injury to others – rather than who the citizen is (see also Hines *et al.* 2018b, this journal).

This omission might not be too much of a problem if the risks of attending such an incident were equally distributed across the data set. But in England and Wales, specially trained officers equipped with Taser may be much more likely than their non-Taser trained counterparts to be sent to incidents

that are likely to involve violence or the threat of violence. This new covariate may thus potentially be relevant not just for theory testing, but for understanding empirical patterns associated with Taser firings in England and Wales, and in other jurisdictions internationally.

The dataset asked officers to record why they used force, with ten responses at their disposal. This variable was then divided into responses that referenced the need to use force to safeguard a person or persons (be they the officer, the civilian themselves, or other members of the public) and incidents where that was not the case (the reference category).

Control variables

A number of variables were included as controls. These included the number of officers present, the number of individuals involved, the year of the incident, officer experience (five years or less being the reference category, compared to 6–10 years and over 10 years) and the length of time since officers had received a refresher in Personal Safety Training (training in empty hand techniques, baton, irritant spray and handcuffing). This latter measure is rarely studied in the literature, due to data limitations, but may plausibly influence use of force decisions.

Other controls included whether firearms officers were present, whether traffic officers were present, and whether response officers were present (with the reference category being no such officers present). It was considered important to include these measures as firearms and traffic officers were more likely to have Taser at their disposal than response (patrol) officers. Firearms officers also receive additional intensive training which may equip them with additional skills to manage potentially violent incidents. This also acts as another measure of incident seriousness, as firearms officers are more likely to attend more serious incidents.

Results

Taser was fired in around 1% of use of force incidents ($N = 263$). The most common use of force featured in this data set was open-handed techniques, which were used in around 70% of incidents ($N = 16,637$). In half of incidents where Taser was fired, another weapon or use of force technique was also physically used. The number of Taser firings increased from 11 firings in 2007 to 34 firings in 2014/2015. Of the 23, 293 cases where Taser was not fired, the following force type featured: open hand tactics (71.1%), handcuffs (33.2%), other (13.2%), limb restraint (7.1%), irritant used (7.2%) and irritant drawn (4.1%), canines (5.5%), Taser drawn (2.7%), baton used (2.6%) and baton drawn (2.5%), shields (.5%), kinetic energy device drawn (0.2%) and kinetic energy device fired (0.0%, $N < 10$), firearms drawn (.9%) and firearms fired (0.0%, $N < 10$).⁶

Who the citizen is

There was a significant association between mental health status and Taser firing, $\chi^2(1, N = 23, 556) = 76.11, p < .001$, with 44% of incidents where Taser was fired involving someone with mental health issues, compared to 28% of cases where Taser was not fired. Gender was significant, $\chi^2(1, N = 23, 556) = 28.25, p < .001$, with 3% of incidents where Taser was fired involving women, compared to 15% of incidents where Taser was not fired. The association between ethnicity and Taser firing was not significant.

What the citizen does

Citizen conduct [$\chi^2(2, 23, 556) = 518.791, p < .001$] was statistically significant, with officers reporting that the citizen had, or used, a weapon in 45% of cases in which Taser was fired, compared to 7% of cases where Taser was not fired. Drug consumption was also statistically significant [$\chi^2(1, 23, 556) = 21.92, p < .001$] with 32% of cases where Taser was fired involving drug consumption, compared to 20% in cases where Taser was not fired. The risk posed by the individual to themselves or others [χ^2

(1, 23, 556) = 98.50, $p < .001$] was also statistically significant. In 77% of cases involving Taser firing, officers stated that force was necessary to protect themselves or others, compared to 46% of cases involving other forms of force. There were no significant association between alcohol consumption and Taser firing.

Controls

Year was significant [$\chi^2(7, 23, 556) = 14.36, p = 0.45$]. Examination of the residuals found that this association was mainly driven by Taser being used less than expected in 2007 (standardised residual = -2.45 , corresponding to an alpha of .05) and more than expected in 2009 (standardised residual = 2.8 , corresponding to an alpha of .05). Length of service [$\chi^2(2, 23, 556) = 48.51, p < .001$] was significant, mainly driven by lower Taser use than expected in incidents with relatively inexperienced officers (those who had five years or less (standardised residual = -5.4 , corresponding to an alpha of .05)). Time since PST [$\chi^2(1, 23, 556) = 12.64, p < .001$] was also significant, mainly driven by a higher than expected count in cases where involving Taser use and officer(s) who had had PST training over a year ago (standardised residual = -2.45 , corresponding to an alpha of .05).

Attendance by at least one traffic officer [$\chi^2(1, 23, 556) = 539.19, p < .001$], firearms officer [$\chi^2(1, 23, 556) = 506.12, p < .001$] or response officer [$\chi^2(1, 23, 556) = 158.67, p < .001$] was significantly associated with Taser firing. Looking at cases where Taser was fired, 43% involved traffic officers, compared to 4% of cases where other force was used. 22% of cases where Taser was fired involved a firearms officer, compared to 2% of incidents where Taser was not fired. Looking again at cases where Taser was fired, 43% involved a response officer, compared to 76% of incidents where other force was used.⁷ The number of officers present was not significant, nor was the number of citizens present (Table 1).

Binary logistic regression results

Binary logistic regression was conducted and variables from both groupings (i.e. 'who the citizen is') and from the citizen behaviour grouping (i.e. 'what the citizen does') were statistically significant after the inclusion of controls. Being female was statistically significant and associated with an 80% reduction in the odds of Taser firing, while having mental health issues was also significant and associated with an 80% increase in the odds of Taser firing. Ethnicity was not significant.

Turning to what the citizen does, drug consumption was statistically significant and associated with a 40% increase in the odds of Taser being fired. Using or having a weapon was significant and associated with a five-fold increase in the odds of Taser being fired, as was the individual posing a risk to themselves or others (which was associated with a three-fold increase in odds of Taser firing). Alcohol consumption remained non-significant.

In terms of controls, length of service was statistically significant. The odds of Taser being fired were increased 67% if the incident involved officer(s) with between 6 and 10 years' experience. Incidents where an officer had received their Personal Safety Training more than a year ago were also significantly associated with increased odds of the weapon being fired, by around 60%. The years 2009 and 2010 were statistically significant, and associated with more than two-fold increases in the odds of Taser firing. Presence of a firearms officer and traffic officer were respectively associated with a fourfold and fivefold approximate increase in odds of Taser firing. Presence of response officer was associated with a 40% decrease in odds of Taser firing. Neither the number of officers or civilians present was statistically significant (Table 2).

Discussion and conclusion

The aim of this paper was two-fold. Firstly, it aimed to explore the factors associated with Taser firing in England and Wales and, in so doing, to test how far findings from the United States of America held

Table 1. Descriptive statistics.

	Incidents where Taser is fired. N = 263	Total. N = 23, 556
<i>Independent variables</i>		
<i>Ethnicity</i>		
White	245 93.2%	22,236 94.4%
Non-White	18 6.8%	1320 5.6%
<i>Gender</i>		
Male	255 97.0%	20,115 85.4%
Female	8 3.0%	3441 14.6%
<i>Mental Health Status</i>		
No mental health issues recorded	146 55.5%	18,317 77.8%
Mental health issues recorded	117 44.5%	5239 22.2%
<i>Subject Resistance</i>		
Non-violent resistance	39 14.8%	5906 25.1%
General struggle and unarmed aggression	106 40.3%	15,841 67.2%
Subject uses or has weapon	118 44.9%	1809 7.7%
<i>Reason for force</i>		
To protect self or others	203 77.2%	11,029 46.8%
Force used for other reasons	60 22.8%	12,527 53.2%
<i>Drug consumption</i>		
No consumption reported	179 68.1%	18,756 79.6%
Substance consumed	84 31.9%	4800 20.4%
<i>Alcohol consumption</i>		
No consumption reported	92 35.0%	7805 33.1%
Substance consumed	171 65.0%	15,751 66.9%
<i>Officer Personal Safety Training</i>		
A year or less since training	214 81.4%	20,814 88.4%
Over a year since training	49 18.6%	2742 11.6%
<i>Year of incident</i>		
2007	11 4.2%	2016 8.6%
2008	21 8.0%	1983 8.4%
2009	39 14.8%	2252 9.6%
2010	46 17.5%	3789 16.1%
2011	34 12.9%	3237 13.7%
2012	36 13.7%	3375 14.3%
2013	41 15.6%	3612 15.3%
2014	35 13.3%	3292 14.0%
<i>No. of officers present</i>		
One officer present	17 6.5%	2027 8.6%

(Continued)

Table 1. Continued.

	Incidents where Taser is fired. <i>N</i> = 263	Total. <i>N</i> = 23, 556
Two officers present	90 34.2%	7405 31.4%
More than two officers	156 59.3%	14,124 60.0%
<i>No. of citizens present</i>		
One citizen	205 77.9%	18,275 77.6%
Two citizens	31 11.8%	2291 9.7%
More than two citizens	27 10.3%	2990 12.7%
<i>Firearms officer present</i>		
None present	205 77.9%	23,054 97.9%
Firearms officer present	58 22.1%	502 2.1%
<i>Traffic officer present</i>		
None present	177 67.3%	22,570 95.8
Traffic officer present	86 32.7%	986 4.2%
<i>Response officer present</i>		
None present	151 57.4%	5722 24.3%
Response officer present	112 42.6%	17,834 75.7%
<i>Length of service</i>		
Less than 6 years	51 19.4%	9503 40.3%
6–10 years	120 45.6%	7926 33.6%
More than 10 years	92 35.0%	6127 26.0%

true internationally, and in other contexts. Secondly, it aimed to use Taser firing as a case study to assess the extent to which police use of force is correlated with ‘what the citizen does’ (as consensus theory would predict) and/or ‘who the citizen is’ (the conflict theory hypothesis).

The model presented above showed some support for an association between ‘who the citizen is’ and Taser firing, with a statistically significant association between mental health, gender and Taser firing but no significant relationship between ethnicity and Taser firing. The support for a correlation between citizen behaviour and Taser firing was even stronger, with civilian weapons possession and risk to self or others being associated with large (three and five fold) increases in the odds of Taser being fired, thus indicating that ‘what the citizen does’ is strongly associated with Taser use. The association between civilian resistance and Taser use is the opposite to what one might expect from previous American studies, as higher levels of resistance (in this case, weapon possession) are associated with increased odds of Taser use. The finding that ethnicity was not statistically significant is also at odds with some of the American literature.

Before discussing the implications of these findings, it is important to be aware of the study’s limitations. One such limitation is the reliance on data from only one force. Further research nationally is required that includes multiple police sites. The data are also reliant on officer reports, which are inherently problematic (Rojek *et al.* 2012, Root *et al.* 2013). The dataset that was available did not allow for an assessment of socio-economic class, and did not contain sufficient cases to be able to directly compare the use of Taser to particular force techniques, such as batons, that are often seen as alternative force options. Future work, with a larger sample size, could also look to disaggregate the variable of harm posed to self or others, and to explore the use of Taser on individuals self-

Table 2. Logistic regression model results.

Independent variables	B	S.E.	Exp(B)
Constant	-6.783 **	.459	.001
Who the citizen is			
<i>Ethnicity</i> ^a			
Non-White	.118	.269	1.125
<i>Gender</i> ^b			
Female	-1.645 **	.367	.193
<i>Mental Health Condition</i> ^c			
Mental Health Condition indicated	.591**	.146	1.805
What the citizen does			
<i>Subject resistance</i> ^d			
General Struggle and Unarmed Aggression	.162	.194	1.176
Subject uses or has Weapon	1.617**	.202	5.038
<i>Reason for force</i> ^e			
Force Used to Protect Self or Others	1.109**	.156	3.031
<i>Drug consumption</i> ^f			
Substance consumed	.351*	.147	1.421
<i>Alcohol consumption</i> ^g			
Substance consumed	.050	.144	1.051
Controls			
<i>Officer training</i> ^h			
Over a year since last training	.491**	.179	1.634
<i>Year of incident</i> ⁱ			
2008	.619	.388	1.858
2009	1.038**	.358	2.824
2010	.698*	.350	2.009
2011	.539	.361	1.714
2012	.312	.362	1.367
2013	.231	.359	1.260
2014/2015	.079	.368	1.082
<i>Number of officers present</i> ^j			
Two Officers	.306	.279	1.358
More than Two Officers	-.067	.272	.936
<i>Number of subjects present</i> ^k			
Two Subjects Present	.401	.210	1.494
More Than Two Subjects Present	-.062	.222	.940
<i>Firearms officer present at the incident</i> ^l			
Firearms Officer present	1.443**	.193	4.231
<i>Traffic Officer present at the incident</i> ^m			
Traffic Officer present	1.689**	.172	5.413
<i>Response Officer present at the incident</i> ⁿ			
Response Officer present	-.525 **	.161	.591
<i>Length of service</i> ^o			
Most experienced officer has served between 6–10 years	.513*	.181	1.671
Most experienced officer has more than 10 years service	.352	.198	1.421
Nagelkerke R2	.251		
N = 23, 556			

* $p < .05$. ** $p < .01$.

a) Reference category: white ethnicity; b) Reference category: male; c) Reference category: no mental health condition reported; d) Reference category; Passive resistance or other e) Reference category: force used for reasons other than for protection of human beings; f) Reference category: no drug use reported; g) Reference category: no alcohol use reported; h) Reference category: officer safety training attended a year ago, or less; i) Reference category; 2007; j) Reference category; one officer present; k) Reference category; one civilian present; l) Reference category: no firearms officer present; m) Reference category: no traffic officer present; n) Reference category: no response officer present; j) Reference category: most experienced officer has less than six years' experience.

harming or posing a risk of self-harm, given the controversy around this issue (Jenkins in Whitehead 2012).

It is also important to recognise the difficulties officers face when applying ambiguous labels around mental health, drug consumption and other variables to fast moving, complex incidents. Such concerns are heightened when dealing with civilian characteristics, as subjective interpretations may be involved. Relatedly, data interpretation is not always clear cut. It may be, for example, that

officers are more likely to record additional details of the incident and the individuals involved – for example, details about mental health status, citizen conduct, weapon possession, and drug intoxication – in instances where Taser was fired, as they perceive its use to need additional justification. This points to the need for qualitative and mixed methods research to further explore issues around police decision making (Hine *et al.* 2018b), as well as to explore the processes that officers use to translate complex real-life events into binary data categories.

Despite these limitations, there are points of methodological, practical and theoretical interest emerging from this analysis. Methodologically, the findings point to the importance of controlling for an additional variable seldom found in previous models – that is, whether the citizen poses a risk to themselves or others. This variable may be particularly worth considering when analysing data from countries that, like England and Wales, permit the use of the weapon outside of firearms scenarios but have not made the weapon standard issue to all officers.

The findings also highlight the need to be cautious when making claims on the basis of model results. For example, the finding that ethnicity is not significant is at first glance a noteworthy finding, and one which is in contrast both to the conflict hypothesis that it is ‘immigrant, people “of colour”’ (Kitossa 2016) who are Tasered, and to much previous work on the issue (Gau *et al.* 2010, Lin and Jones 2010, Crow and Adrion 2011).

Yet this finding needs to be interpreted with some caution, for several reasons. First, the police service from which the data was drawn covered an area with less diverse communities than may be found elsewhere. While some forces in England and Wales serve areas where 30–40% of the population come from a Black or Ethnic Minority background, less than 4% of the population served by the police force were from a Black or Ethnic Minority background in question (House of Commons Home Affairs Committee 2016).

Second, the model compared incidents where Taser was fired to incidents where other forms of force were used. As such, this finding provides evidence to support the claim that police firing of Taser is in keeping with broader patterns around how police use force on ethnic minority groups – but tells us little about what these broader patterns might be. Hence if use of force is deployed ‘disproportionately’ against ethnic minorities (Dearden 2017), and the use of Taser is in keeping with this general pattern, then ethnicity clearly would be a relevant factor but would not show up as significant in this current model. This highlights the importance of further work on this topic – something underscored by recent national findings, which indicate that Black people were subject to 12% of reported Taser uses between 2010–2015 at a time when they constituted 4% of the population (Gayle 2015). In the dataset in use here, too, BME groups constituted less than 4% of the population, while 5.6% of all use of force incidents, and 6.8% of incidents where Taser was fired, involved individuals from these groups.

There is need for further work to unpack such issues, and to explore differences between black and ethnic minority groups in more detail than has been possible here. The new national use of force data collection system, which includes details about the officer assessed ethnicity of individuals involved in use of force encounters, should provide an opportunity to start to conduct further analysis in this area.

Further policy considerations also emerge from this analysis. First, the findings provide some confirmation of the need to investigate concerns that those suffering from mental health issues are more likely to be subjected to Taser. This is worthy of further study given medical statements which suggest that ‘some drugs used in the treatment of certain mental health conditions ... may predispose [a person] to an adverse cardiac event’ (DOMILL 2012, p. 24): and that ‘the longer-term psychological implications ... (of Taser firing) remain unexplored’ (DOMILL 2012, p. 5). It is also important given concerns identified in the broader policing literature that police officers may too frequently arrest people with mental illness, and believe that they are more likely to engage in violent behaviour (Morabito 2007).

Second, the finding that reported drug use was associated with increased odds of Taser firing may be of concern given medical advice that ‘the threshold for development of cardiac adverse outcomes

in drug-intoxicated individuals subjected to Taser discharge or other types of force may be lowered' (DOMILL 2012, p. 25: see also Zipes 2013 c.f. Kroll *et al.* 2014). The current College of Policing Taser guidance (College of Policing 2014) refers only to vulnerable groups and does not specifically mention these factors as enhancing the risk associated with the weapon, but previous ACPO Guidance (2008, p. 11) explicitly mentioned 'mental disorder and illness' and drug consumption as 'specific risk factors. This might be a useful addition to current guidance on the use of the weapon.

Third, Taser firing counted for around 1% of all reported use of force incidents, and the presence of a weapon at the incident was also associated with increased odds of Taser firing. Such factors may contradict findings from research in the United States of America that the weapon is the police officer's 'response of choice' (Alpert and Dunham 2010, p. 215) and challenge assumptions about the applicability of American research more broadly.

At the same time, however, over half of cases of Taser firings involved use on individuals reported as being unarmed, painting a more complex picture. For some, this may not give cause for concern, particularly in light of much of the academic literature suggesting that Taser reduces the odds of injuries to officers and subjects (Neuscheler and Freidlin, 2015; Kaminski *et al.* 2013). Yet for others this will raise concerns about necessity and proportionality and reinforce the IPPC's observation, mentioned earlier, of divergences between the 'public perception that Taser is a high-level use of force that should only be considered when faced with the most serious threats of violence and ... (the police's rationale) that Taser presents a lower risk' (IPCC 2014, p. 25).

These differences of opinion suggest the need for national and international discussions about whether the current threshold – that Taser is an option that can be used in situations where there is 'conflict or the potential for conflict' (College of Policing 2014) – is sufficient. Indeed, the UN Committee Against Torture, on its 2013 visit to the UK, recommended that the UK revise its regulations around Taser, 'with a view to establishing a high threshold for use' of the weapon – specifically to state that they 'are used exclusively in extreme and limited situations where there is a real and immediate threat to life or risk of serious injury, as a substitute for lethal weapons' (UNCAT 2013, p. 9). At a time when Taser is in use in over 100 countries worldwide, questions about appropriate use of force policies for this controversial weapon remain of critical importance.

Fourth, it is important to look at the weapon in context and consider how force *as a whole* is being used, for several reasons. The results of the statistical analysis noted above – that Taser firing is significantly associated with civilian weapon possession and is *also* fired at unarmed people in the majority of instances in which it is used – can be explained given that other forms of force are used much more frequently on unarmed people than is Taser. Hence policy deliberations around the weapon – such as debates around the appropriate threshold for use – should take care not to look at the weapon in isolation, given that half of all instances where Taser is fired also involve other force.

Turning to theoretical implications, some evidence can be found in support of both the consensus and the conflict hypotheses, with stronger support for the former than the latter. The model results thus highlight that these theoretical perspectives may not be as mutually exclusive as they first appear.

The findings also highlight some shared assumptions that both theoretical perspectives have in common – assumptions that can and should be questioned. Specifically, scholars from both perspectives have tended to agree that, if force is to be legitimate, 'what the citizen does' should be a primary concern, and police officers should not take into account individual characteristics. For Terril and Mastroski (2002, p. 423) officers should not 'treat certain individuals differently from others simply on the basis of who they are'. For Durna, 'the behaviour of police officers should not be affected by the characteristics of citizens such as race, gender, age or social class' (Durna 2011, p. 5) – to do so is to rely on 'extra-legal factors' rather than legal considerations (Lee *et al.* 2013, p. 157). For Bolger (2015, p. 484) it is unfortunate that officers 'who the suspect is ... appears to play a role in use of force decisions'.

Yet, in some cases, it may be legitimate and appropriate for assessments of ‘who the individual is’ to come into calculations around use of force. Specifically, it may be appropriate for officers to take particular individual vulnerabilities into account when deciding how to engage with citizens. Treating individuals differently based on their characteristics may be appropriate if consideration of citizen vulnerabilities results in less force being used than would otherwise be the case. It is not necessarily ‘extra-legal’ to take subject characteristics into account. To the contrary, legal assessments of necessity and proportionality may be bound up with such considerations. Indeed, the IPCC has stressed that ‘all decisions on the use of Taser should take into account any specific vulnerability of an individual, whether due to their mental health, age or other factors’ (IPCC 2014, p. 4).

It follows, then, that if multivariate analysis suggests that citizen characteristics are significantly associated with Taser firing, this is not necessarily evidence in support of the conflict hypothesis, or repressive policing, but may be evidence of police taking (real or perceived) vulnerabilities seriously. For example, multiple studies (White and Ready 2007, Gau *et al.* 2010, Crow and Adrion 2011) including this one, have shown that women are less likely to be Tasered than men. Oriola *et al.* (2012, p. 65) have argued that this is evidence of Taser being used to ‘terrorise the down-trodden’; males with ‘low socio-economic status, mental illness, drug use, and ethnicity’ – and, as the procedural justice literature highlights (Sunshine and Taylor 2003), how the police engage with these groups, and others, is highly important. But the significance of the gender measure might mean not that men are being disproportionately targeted, but that officers are responding to (real or perceived) vulnerability – in this case, gendered assumptions about the vulnerability of women – and hence that women are less likely to be subject to Taser than other forms of force. Treating individuals differently is not always a problem, or vindication of conflict theories of policing; in some circumstances it is treating individuals the same, regardless of the individual vulnerabilities, that may be problematic.

Ultimately, going forward, it would seem less important to determine which theory is ‘correct’ – particularly if, as Marenin (1982) has argued, the police can fulfil multiple functions, engaging both in ‘class repression’ and in the execution of ‘parking tickets’ simultaneously – than to continue to conduct empirical work capable both of putting Taser findings from the United States of America into an international context and of shedding light on the empirical and theoretical debates around the role of Taser specifically and police use of force more broadly.

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Data access statement

Further information on the dataset used and findings of this study may available on request from the corresponding author, A.D. The data are not publicly available due to their containing information that could compromise the privacy of research participants.

Notes

1. The term Taser, Taser X26 and Taser X2 are trademarks of Axon (previously TASER International, Inc.), some of which are registered in the US and in other countries. All rights reserved.
2. The data aggregation methods used were as follows. Force options were coded as being used if this had been stated by at least one officer. Citizen characteristics (e.g. whether the citizen had taken drugs) were similarly considered to be present if this had been stated by at least one officer in the incident. Where different values were given for incident characteristics, values were selected that reflected the extent of the danger faced by officers, citizens and bystanders. Thus the most aggressive interpretation of the citizen's conduct was recorded. Force was recorded as having been used to protect officers, the citizen or others (as opposed to other reasons) if at least one officer had so indicated. The longest duration of time since an officer had received PST was included. In terms of officer characteristics, in cases where multiple officers were attending, the longest length of service was captured, in order to be able to reflect the expertise available at the scene. Where different values were given for the number of officers and citizens present, the largest numbers given were used. Response officers, firearm-trained officers (ARVs) and traffic officers were coded as being present if one officer with this role description was present.
3. Assessed using the penalised maximum likelihood estimation, via the application of *firthlogit* in STATA. As an additional check, the *relogit* routines in STATA was also used.
4. It is recognised that (officer assessed) citizen mental health could arguably be included in either category (i.e. in 'what the citizen is' or 'what the citizen does'). Previous work (Johnson 2011, Terril and Mastrofski 2002) has tended to put mental health in the former category, and that decision is replicated here. Yet it is acknowledged that mental health may vary between different incidents in ways that gender and ethnicity often do not. Moreover, while officer determinants of gender and ethnicity may remain fixed throughout an incident, the decision whether or not to label someone as having mental health issues may change as an incident unfolds.
5. Namely attempting escape, making threats or spitting.
6. Percentages add up to more than 100% as some incidents involve the use of multiple force techniques.
7. Percentages are higher than 100 as different officers can be present at the same incident.

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