COMPLETE MANUSCRIPT

Theorizing hit-and-run: A Study of Driver Decision Making Processes after a Road Traffic Collision.

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Abstract

Explanations for driver decisions to hit-and-run have largely been based around a rational choice perspective that suggests drivers consider the expected costs of reporting a collision against the benefits of leaving the scene (see Tay et al., 2008; Fujita et al., 2014). Although such an explanation appears plausible, previous research has largely focused upon identifying contributory or contextual factors through analysis of quantitative datasets rather than engage with drivers in order to understand how they make the decision to 'run'. This paper explores the application of the rational

choice perspective to hit-and-run driving. First, it develops an analytical framework based upon the rational choice decision making process put forward by Tay et al. (2008). Second, through analysis of 52 interviews with offenders, it examines how drivers structure the decision to leave the scene. Third, a typology of drivers is developed that illustrates that hit-and-run is not always based upon rational decision making. Finally, the paper concludes with some implications for further research and the prevention of hit-and-run collisions.

Introduction

A hit-and-run collision is a road traffic crash in which a driver of a striking vehicle flees the scene without aiding the victim or offering information (Roshandeh et al., 2016: 22). In the UK, the number of collisions involving a hit-and-driver in which an injury was sustained increased from 15,390 in 2013 to 17,122 in 2015. Over the same period of time, the proportion of accidents involving a hit-and-run driver (where any injury was sustained to a pedestrian, driver or passenger) also increased from 11.1% in 2013 to 12.2% in 2015 (DfT, 2016)[1]. Previous research has recognised that the proportion of collisions involving a hit-and-run driver varies internationally and according to the collision type. For example, MacLeod et al. (2012) observed that in the USA between 1998 and 2007, a hit-and-run driver was involved in 18.1% of collisions where there was a pedestrian fatality compared to 9.6% of similar collisions in Ghana between 2004-2010 (Aidoo et al., 2013). Tay et al. (2008) also observed a rate of 1.8% in all hit-and-run collisions in Singapore between 1992 and 2002, whereas Jiang et al. (2016) observed a rate of 4.45% for non-pedestrian hit-and-run collisions in thirteen urban river-crossing tunnels in Shanghai (China) between 2011 and 2012. It is widely accepted that hit-and-run collisions increase the risk of death for the victim as leaving the scene can increase the time it takes for emergency services to arrive (see Tay et al., 2008; Roshandeh, 2016). Other consequences include financial complications if insurance claims need to be made for damages to vehicles or compensation

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[1] In the UK, data are only published on hit-and-run collisions involving some form of injury. A limitation with the national statistics is that data are not available on collisions that are damage only.

paid to victims (Tay et al., 2008), as well as the potential emotional trauma caused to victims (Mayou & Bryant, 2003).

Although a body of previous research has identified a number of contributory factors associated with hit-and-run collisions (see below), two main criticisms can be levelled. While there has been some development of explanatory theory – largely based around a rational choice perspective – there has been little reflection on this or development of the approach. In addition, no known research has engaged with offenders to garner their accounts about the decision to leave the scene. Indeed, it has been commented that research should attempt to better understand 'motivating factors for the decision to flee' (MacLeod et al., 2012:371), though the previous research has commonly identified the odds ratios of particular contributory factors being present in hit-and-run collisions, rather than engage with drivers about decision making. Therefore, this paper aims to build upon the existing research in four stages. First, consideration is given to the previous research on offender decisions to leave the scene of a collision. Second, using an analytical framework developed from rational choice perspectives on hit-and-run driving, the findings from a study of 52 hit-and-run drivers are outlined. Third, the findings are used to develop topology of hit-and-run drivers. Finally, we consider the implications for the prevention of hit-and-run and possibilities for future research.

Previous research on hit-and-run

A body of research has explored the reasons for hit-and-run in countries such as China (Zhang et al.., 2014), the USA (MacLeod et al., 2012), Japan (Fujita et al., 2014), Singapore (Tay et al., 2008) and Ghana (Aidoo et al., 2013). The majority of these studies have developed logistical regression models from large accident datasets in order to identify the odds of particular factors being present (or not) at the crash scene. Usefully, such studies have identified a number of contributory factors, including:

- *Crash types*: Zhang et al. (2014) in Ghana and Tay et al. (2008, 2009) in Singapore and the USA respectively, found that collisions involving pedestrians were more likely to involve a hit-and-run driver. However, in their analysis of drivers in Illinois, USA, Zhou et al. (2016) found that

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drivers are more likely to stay at the scene when somebody is injured and leave after damage-only collisions.

- **Human factors:** Most studies suggest that offenders are likely to be male (Zhang et al., 2014; Tay et al., 2010), have previous convictions for motoring related offences (MacLeod et al., 2012; Solnick & Henenway, 1995) and not have a valid licence (MacLeod et al., 2012; Zhang et al., 2016). Drivers are less likely to leave the scene if a victim is either very young or old (MacLeod et al., 2012) and alcohol consumption is a common contributory factor in hit-and-run collisions both involving pedestrians (MacLeod et al., 2012) and in damage-only cases (Jiang et al., 2016).

- **Vehicle characteristics:** Zhang et al. (2014) identified drivers of newer cars as being less likely to flee from crashes; drivers involved in collisions with buses are also less likely to hit-and-run as are drivers of commercial vehicles.

- **Road factors:** Tay et al. (2009) observed a greater likelihood of hit-and-run on flat, level roads or those with lower speed limits (45 mph or less), while Zhang et al. (2014) observed high rates of hit-and-run on elevated roads, those with merging lanes and at tunnels.

- **Environment:** A number of studies have suggested hit-and-run collisions tend to occur at weekends (MacLeod et al., 2012; Solnick & Henenway, 1995; Tay et al., 2010) and when visibility/ light conditions are poor (Tay et al., 2008, 2009; MacLeod et al., 2012). Some studies have suggested drivers are more likely to run in poor weather (Tay et al., 2008) while others such as Zhang et al. (2014) observed no effect.

- **Driver distraction:** A growing body of research has also begun to consider how driver distraction factors - such as operating an electronic communication device (a cell phone, DVD player or navigation system); distraction from outside the vehicle (such as dangerous overtaking); and distraction from inside (such as chatting with passengers) - can influence driver decisions to leave the scene. Roshandeh et al., (2016) identified that the presence of a

distraction factor most significantly increases the odds of a driver leaving the scene when they hit a parked vehicle.

The evidence above shows that contributory factors can be identified, though these are not always consistent from study to study. Other methodologies have been used to explore hit-and-run, but these are also limited. For example, Dalby & Nesca (2008) used a case study approach (based upon only three cases) and identified behavioural characteristics of drivers. It was posited that mental illness (such as dementia) can play a role in drivers leaving the scene who do not necessarily actively attempt to evade detection. They also note that a previous history of driving offences and irresponsible behaviour can be indicative of a personality that can be callous and fails to consider consequences. Thus they concur with Solnick & Hemenway (1994) who suggested that personality can be critical in post-accident behaviours.

While a number of potential reasons why drivers 'hit-and-run' can be identified in the literature, the most commonly used explanatory framework for hit-and-run is based around what Fujita et al. (2014:285) referred to as a 'classic economic cost-benefit approach'. This approach 'has much in common with rational choice theories of criminal behaviour' (see Fujita, 2014: 277) and the most illuminating application to hit-and-run driving is provided by Tay et al. (2008). Here the authors refer to a 'standard decision analysis framework' (Tay et al., 2008: 1331) where the expected costs and benefits that shape drivers' decisions to leave the scene are presented. The starting point for such decisions are the *certainties* or costs of knowing what the likely outcomes of reporting a crash are for drivers – such as increased insurance premiums if the driver is at fault and legal penalties. However, it is argued that the likelihood of reporting is also dependent upon the *severity* of the crash. Key to this is the expected cost of the crash and it is thought that as the severity increases it is less likely that a driver will report. Connected to *severity* is the concept of *blame* as 'factors that reduce the likelihood

of blame' (Tay et al., 2008: 1331) increase the likelihood of reporting. Such mitigating factors can include wet weather, the actions of other drivers and difficult road layout – such as blind corners.

Therefore, the decision to 'run' is largely based upon a simple calculation of the expected cost of not reporting (taking the run option) against the potentially higher costs of reporting. However, Tay et al. (2008) go on to argue that the relationship between the *risk taking propensity* of drivers and *perceived likelihood* of capture (rather than the actual *probability* of capture) is also important in shaping decisions. Thus, for drivers who are *risk adverse* the 'uncertainties involved in hit-and-run is not likely to be an attractive option' (Tay et al. 2008: 1331), whereas for those who are *risk neutral* the perceived likelihood of capture is thought to be crucial in influencing choices. Therefore, for risk neutral drivers, factors that reduce the likelihood of apprehension - in particular where the presence of witnesses or being seen is low (for example, in low visibility because of poor weather or where there is poor lighting or darkness) – will increase the likelihood of running. Tay et al. (2008) also identified a further category of drivers – the *high risk taking* drivers – and note that hit-and-run might be a more attractive option for this group than for other types of drivers (particularly the risk adverse). Presumably such high risk taking drivers are the most likely to leave the scene when the perceived likelihood of capture is high.

The classic decision analysis framework appears to be a plausible one for explaining driver decision making. However, to date, the framework has been subject to little critical analysis. Indeed, previous studies of hit-and-run driving have often identified a number of contributory factors without discussing their relationship to the decision analysis framework and the previous research has developed the framework in the absence of any data collected from offenders. While Tay et al. (2008) highlighted the problems encountered in attempting to do fieldwork with hit-and-run offenders, it should be noted that criminological research has often engaged with convicted criminals in order to gain a better understanding of their offending decisions (see for example, Lasky et al., 2015).

The current study: methodology and analytical framework

The primary data presented in this paper were collected in the United Kingdom between September 2015 and June 2016. The main aim was to develop a better understanding of why drivers leave the site of a collision by conducting a number of interviews with convicted hit-and-run drivers involved in a range of collision types. The major challenge was in accessing a sample of drivers convicted for such offences. By their nature, hit-and-run cases involve drivers who have left the scene and are often not traced[2]. Therefore, the sample group was formed of drivers who had left the scene of a collision but were later traced and charged by the police. All of the drivers had been convicted of the offences of failure to stop after an accident and failing to give particulars (code AC10) or to report an accident within 24 hours (code AC20) (offences colloquially referred to as 'hit-and-run'). Drivers were initially contacted via the Driver and Vehicle Licensing Agency (DVLA)[3], who hold records of all drivers convicted for such offences. At the point of sampling, a total of 19,071 drivers were identified on the DVLA database. These drivers were contacted by DVLA and initially asked to complete an online survey which asked about the circumstances of the collision and their reason for leaving the scene. A total of 695 drivers responded to the survey of which 52 were then interviewed in-depth (all of the interviews were tape recorded and transcribed verbatim)[4].

The in-depth interviews used a semi-structured interview schedule based around a conceptual framework that aimed both to capture the process of collisions and also the factors that might shape decision making. The importance of sequences of events in both road collisions and criminal decision making has previously been demonstrated by Haddon (1980) and Cornish (1994) respectively. Indeed, Haddon (1980) recognised that in order to prevent road collisions, an understanding was required of pre-events (such as driving skills, driving behaviours); the event itself (what happens during the accident) and factors post-event (emergency vehicle response etc.). In relation to crime, the concept

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[2] Data are not publicly available in the UK in relation to how many drivers are later traced.
[3] The DVLA maintain the registration and licensing of drivers in Great Britain and the registration and licensing of vehicles.
[4] Ethical approval for the research was received from the University of Leicester ethics committee and complies with the University code of practice.

of crime scripts has been used to identify sequences of events in relation to offending. Crime scripts moves away from the notion that crimes are discrete events (Price et al., 2016:136) and conceptualises them as a sequence of processes that involve a number of offender decision points. The approach has been applied to several crime types (see LeClerc & Wortley, 2014) and although Price et al. (2016) noted that there is no agreed method or data source for producing a crime script, Sacco and Kennedy (2008) usefully suggested that most crime events can be separated into three distinct phases – precursors, transactions and aftermaths. While this framework has been applied to crime events where offenders intentionally seek to engage in criminal behaviour, its basic principles can act as a heuristic device to understand the potential complexity of a hit-and-run collision through identifying (a) the procedural or sequential requirements for collisions, (b) offender decision points and (c) the roles of different actors. These sequences were considered as follows:

1. *Collision precursors/* **pre event:** background details to the collision (where drivers were, who they were with, where they were going);

2. *The collision itself/* **the event:** how the collision occurred and how the driver came to hit another vehicle, road furniture or pedestrian;

3. *Immediate aftermath:* what happened immediately after the collision and what motivated the driver to leave the scene (what rational or irrational decisions were made at this stage);

Driver decisions to leave the scene were then analysed using a framework developed from the decision making framework as used by Tay et al. (2008) that considered:

1. **The expected costs of reporting:** whether drivers knew what the likely outcomes and costs of reporting a crash are – such as increased insurance premiums if the driver is at fault and potential legal penalties.

2. **Severity of the accident**: how serious the collision was and how this affected the decision to leave.

3. **Blame:** the extent to which drivers thought they were to blame for the accident. How the presence of 'blame' factors identified in previous research - such as distraction factors, poor driving and road factors – impacted on their decisions.

4. **Perceived likelihood of capture:** whether drivers thought they were likely to be captured for leaving the scene.

Of the 52 drivers who were interviewed, 78% (n=41) were male and 19% (n=10) under the age of 34. A total of 75% (n=39) also had previous motoring convictions (prior to the hit-and-run), with 46% (n=24) being convicted of careless/ reckless/ dangerous driving in relation to the hit-and-run offence and 10% (n=5) of drink driving offences. The demographic characteristics of the interview group were broadly similar to the sample frame (81% of these were male and a quarter aged 34 or under). Of the sample frame, 75% also had a current endorsement on their record for motoring offences. A lower proportion of interviewees had a conviction on their record for careless/reckless/dangerous driving (32%) with a higher proportion for drink driving offences (20%). The group were involved in collisions that resulted in damage of a wide ranging extent and subsequent criminal penalties. In total:

1. 13 were involved in collisions (25%) in which there was extensive damage to a vehicle. In such cases at least one vehicle was either written off or there were questions over whether a vehicle could be driven away from the collision;

2. In 15 (29%) there was some damage to a vehicle or road furniture: in such cases there were clearly visible dents to body work;

3. In 19 collisions (36%) there was minor damage to a vehicle such as paintwork scratches;

4. In 12 collisions (23%), a pedestrian or cyclist was injured. In one case a pedestrian sustained life threatening injuries[5].

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[5] This totals 64 collisions as there is double counting in relation to the collisions where pedestrians were involved.

Drivers received a combination of up to four different penalties for their part in the collision with many drivers convicted of combinations of offences such as failure to stop at the scene, dangerous/careless driving or drink driving. As indicated in Table 1, the most severe penalties tended to be incurred in the collision types with the most extensive damage.

Table 1: Penalty type received by drivers for leaving the scene by type of damage (n=52)

	Penalty types			
Type of damage	**Points on licence**	**Fine**	**Driving ban/ disqualification**	**Prison/suspended sentence**
Extensive damage (n=13)	4	8	7	3
Some damage (n=15)	10	14	2	2

Minor damage (n=19)	16	16	1	1
Collisions involving pedestrians (n=12)	8	7	4	1

Base: In-depth interviews with drivers, 2016

There were some limitations with the methodology which means that one has to interpret the findings with care. First, while the DVLA hold records for drivers convicted of AC10/20 offences, the complexity of hit-and-run cases means that offenders can often be convicted for a variety of offences including failure to stop/report, drink driving, dangerous driving and careless driving. The specific act of hit-and-run is recorded as an AC10/20 offence and this was the flag for searching the DVLA records. However, it may not be possible to identify all hit-and-run drivers from these offences as occasionally, courts will only report the highest sentence tariff offence to the DVLA. For example, if a driver is convicted of careless driving as well as failure to stop/report, the court sentencing the driver may only notify the DVLA of the most serious tariff offence, which potentially omits some hit-and-run drivers from the AC10/20 records. Second, care also has to be taken because of social desirability bias (Davis & Silver, 2003). Indeed, it was possible that interviewees might have given a version of events that distanced themselves from blame or wrongdoing. However, it should be noted that all drivers were already convicted and sentenced for the offence, so had little to gain (in a legal sense) from giving a false account of events. Also, to mitigate for this, where possible, factual information was checked with DVLA records, however there was no way to validate the detailed accounts that offenders gave of their decisions to leave as no other records of this were available to the research team. Third, the sample population was not representative of the total hit-and-run population as (for example) no crashes involved a pedestrian fatality. However, as outlined above, a range of collision types were included which involved both damage-only and pedestrian injury. Fourth, when considered against the total number of hit-and-runs in the UK per year, a sample of 52 interviews is low. However, the

purpose of the interviews was not to obtain a statistically representative sample, but to capture in-depth accounts of decision making to complement existing large quantitative studies. Finally, the charge could also be made that the sample is biased as the decision making processes of who are convicted could be different from those who are not traced. This might be true; however, it was not possible to recruit untraced drivers to the research. Indeed, previous studies of offender decision making have tended to sample those have been caught and convicted rather than those who are not (see Lasky et al., 2015).

Findings: rational decision making and hit-and-run collisions

Initial analysis revealed that in 44 of the 52 interviews the factors that structured driver decisions to leave the scene could been identified. In eight cases drivers claimed to be *oblivious* about being in a collision at all. As Dalby & Nesca (2008:53) stated, a 'lack of knowledge that an accident occurred' has been used as a defence in hit-and-run cases and this might have been the case here. The reasons cited for being oblivious ranged from being under stress (n=2), age/confusion (n=2), poor weather (n=1), size of the vehicle (n=1) and mistaken identity (n=2). As these drivers were unable to explain their decision making process, they are not included in the analysis below.

The expected costs of reporting

Many participants in the study were aware that they would have to face potential legal or financial costs if they reported the collision. Indeed, in the online survey 23% of respondents said they were scared about what might happen to them if they reported the collision, and 20 of the drivers subsequently interviewed spoke about how the fear of consequences influenced their decision to run. These drivers tended to be involved in collisions where they knew that, if reported, they would 'be in trouble' (interview 50). Although none of these drivers were really aware of what the actual

punishment they might face would be, but it was often a combination of the certainty that some sort of punishment would be inflicted and the fear of the punishment that shaped the decision to leave the scene. Indeed, driving illegally was an obvious reason why drivers did not want to report. For example, the following driver was concerned about the possibility of a prison sentence as he was disqualified from driving at the time of the offence. His car slid into another on ice which caused the air bags to go off:

I had a chance of going back to prison if I was there, whereas if I ran off I thought it would have been harder for them to trace that I was driving. (Interview 37)

Two other drivers said that as they had previously been in prison they felt that any further convictions would automatically land them back in prison. Indeed, the fear of punishment was often mentioned when drivers had previous convictions for motoring offences or were driving illegally. Indeed, a high proportion of the interview group had previous driving convictions and 1 in 20 (5%) respondents to the online survey said they were not insured to drive. This not only corroborates previous research that identifies hit-and-run drivers as being likely to have previous motoring-related convictions (see for example, Zhang et al., 2014), but it also suggests that many take risks as they are motivated to leave the scene due to fear of the potential costs. Even drivers involved in some relatively minor accidents were fearful of the costs if driving illegally. For example, one driver who was driving without valid insurance said:

I think in the back of my mind my biggest worry was, it's going to make it even harder to get insurance. I knew it was wrong at the time, I just drove off. (Interview 44)

Severity of the collision

A body of previous research has made a clear link between the severity of an accident and the likelihood of a driver leaving the scene (see Zhang et al., 2014). Generally, the research has considered severity as the level of injury sustained by pedestrians (fatal/non-fatal) rather than the extent of

property damage. The choice model suggests that when accidents are more serious, drivers will be more likely to drive off (see Tay et al., 2008). Our analysis suggests that driver judgement on the severity of the accident was important in both making a decision to run and shaping (on some occasions) their moral justifications for running. Indeed, in the online survey 9% of drivers said they left the scene as a driver or pedestrian was hurt.

In interview several drivers linked the severity of damage to the potential costs of reporting. Where severity was a factor in the decision to run, drivers spoke of making quick assessments of the extent of damage whilst stopping for a short time or barely stopping at all. In the following example, a driver collided with another vehicle when pulling out of a junction and after quickly assessing the damage left the scene:

The other vehicle had loads of damage. The side near to the curb had big dents. It swerved to avoid me and also hit the curb which seemed to damage the wheels. Because he swerved to miss me, my car wasn't so bad. I hardly stopped at all. Because I could drive and saw how bad his damage was I left. (Interview 35).

Whereas the sense of severity and perception of the seriousness of the incident was often a clear factor in the decision to run, a number of cases emerged in which drivers downplayed the extent of damage. In 16 collisions, the decision to leave the scene was clearly related to a driver's judgement that the collision was trivial and that little damage had been done (rather than consideration of potential costs). This often led to the mistaken view that there would be no requirement to report. In seven cases, minor damage was done to a stationary vehicle and interviewees rarely viewed their actions as a hit-and-run collision. It is unclear, however, whether the extent of damage reported by drivers in the interview was reflective of the real damage or if drivers were using this as a neutralisation technique (Sykes & Matza, 1957) in order to provide moral justification for leaving the

scene. Indeed, some said they were surprised at the extent of damage they were eventually accused of causing when they were interviewed by the police:

Only when I was interviewed I saw the pictures, but obviously I was shocked that I did that, but then, and I was more shocked that I was unaware of it. (Interview 3)

In six cases that respondents said were 'trivial' the damage sustained was actually more serious than the driver had assessed (these were all cases classified as 'some damage'). It was also interesting to note that, in three of the collisions where the subsequent damage was more considerable than what the driver first thought, a van or HGV was being driven. In such cases it was apparent that drivers of such vehicles could easily underestimate the extent of damage that could be caused at relatively low speeds.

Blame for the collision

Blame for the collision has often been cited as a key reason for hit-and-run with Zhang et al. (2014:117) stating that 'drivers tend to flee when they are the offending parties'**.** Culpability for the collision can also, of course, lead to significant financial and legal costs for drivers and influence the decision to leave the scene.   Jiang et al. (2016:374) suggested that blame can be conceptualised as a balance of subjective and objective factors related to the crash. Subjective factors are those that relate to driver violation (poor driving, speeding, fatigued driving). Objective factors relate to contexts out of the control of drivers, such as the road type and environmental factors. For Jiang et al., (2016:374) a driver's subjective deficiencies 'can lead to failure to promptly perceive a hazard and to take appropriate evasive action' which can then increase what is referred to as the 'subjective-responsibility-ratio' for the crash. This ratio is the balance between the extent to which drivers perceive themselves as being to blame for the collision (due to subjective driver failings) and the extent to which objective factors can mitigate the blame. These objective factors, thus, effectively become excuses in that they mitigate blame.

In over half of cases, drivers accepted that they were to blame for the collision. This was most likely where extensive damage was caused (77% of cases – 10 out of 13) and in incidents where there was minor damage (81% of cases – 15 out of 19). Where drivers admitted blame, the types of subjective factors - careless driving and speeding– as identified by Jiang et al., (2016) were commonly mentioned as were distraction factors such as mobile phone use (see Roshandeh et al., 2016). Interestingly, it was rare in such cases for drivers to mention objective factors. However, when drivers admitted blame for the collision one of two other factors was often related to the decision to run. In several of the most serious collisions, blame was linked to 'to the potential costs' and drivers believing they would be in trouble: 'I knew it was my fault, I was going to be in serious trouble' (Interview 37); 'I thought, Jesus I've just caused an accident, they will take my licence away' (Interview 11) . A second group emerged in which, although drivers admitted 'blame', consideration of the potential costs was not so important in the decision to leave the scene. In these cases drivers did not report due to the perceived triviality of the collision and they questioned (a) whether it was even a legal requirement to report the collision or (b) worth reporting at all.

Although there is a clear connection between blame, the potential costs to drivers and why drivers decide to run, further questions arise about why drivers do not stop or report if they are not to blame for the accident (and presumably would not face legal or financial costs). In several interviews, drivers referred to either being uncertain about who was to blame for the collision or not being to blame, but still leaving the scene. Interestingly, where pedestrians were involved, drivers commonly blamed pedestrian fault or error for the collision. Indeed, the following excerpt illustrates how a driver blamed a pedestrian for a collision:

He [the pedestrian] walked out into the road. To my utter surprise, he stopped in the middle of the road and turned to face me. There was nothing I could do about it. I slammed the brakes on, he fell onto the bonnet of the car. (Interview 18)

In these cases, although drivers said they were not to blame, they did not report as they were still concerned about the potential consequences of hitting a pedestrian. Indeed, many drivers generally also confused the connection between 'blame' and the legal requirement to stop and/or report the collision, thinking that where there is no blame, then there is no legal obligation to report. Several of these drivers then expressed anger at being convicted for a hit-and-run offence as they misunderstood the distinction between the 'hit/ accident' and 'run' element of the process.

Perceived likelihood of capture

Offender perceptions of the likelihood of capture have been widely studied in relation to offender decision making (see Lasky et al., 2015). Such research emphasises how risk of capture is amplified through the presence of capable guardians, bystanders or various forms of technology (such as CCTV) that can increase the visibility of offenders and their offences. Hit-and-run research has commonly suggested that offenders may perceive there is less risk of capture in conditions of reduced visibility, darkness or poor lighting (see MacLeod et al., 2012).

In the current study, the interviews fell into three broad groups in relation to their perceptions on the likelihood of capture. In 47 of the 52 interviews, collisions occurred on roads that were well-known to the drivers. Some suggested that this knowledge influenced their perceived likelihood of capture as they were aware of the road layout and where CCTV cameras or speed cameras might be. These drivers had been in collisions where there they did not think there had been any formal surveillance (such as CCTV) or guardians present and that they 'had not been seen' (Interview 44). A second group emerged who were looking to buy time. These were people who had been drinking or suggested they had panicked at the scene. This group accepted they were likely to be caught, but needed time to 'sober up' (Interview 34) or 'cool off and think it through' (Interview 12). A third group emerged, who thought it was highly likely that they would be caught. This group often had direct contact with other people at the scene and knew that their vehicle details would have been taken. Indeed, four drivers mentioned that they had left the scene because they had felt intimidated by the aggressive actions of

victims or bystanders. Indeed, one driver described a collision in which a pedestrian was hit (for which the driver received a fine and penalty points on his licence) and he thought he was about to be attacked (Interview 18). This driver knew that members of public at the scene would had taken his details and therefore there would eventually be 'a knock on the door' from the police (Interview 18).

Developing a typology of 'hit-and-run' drivers

The rational decision making framework allows us to begin to understand how some drivers structure their decisions to leave the scene of a collision. However, the analysis shows that rather than being simple 'a rational decision' based upon a calculation of the costs of reporting, decisions are confounded as many collisions are complex and stressful events, often involving a range of actors, where quick decisions have to be made. Where decisions appear to be 'rational' they are based upon a bounded form of rationality where not all the facts needed to make a wise decision are available (Cornish & Clarke, 1986). At the time of the collision, a driver is unlikely to know what the *actual* consequences are going to be or the *exact* costs of damage/extent of injuries to the victims. Thus, the findings of this study suggest that in many cases drivers rationalise their decisions to leave, but the decision making process is more complex than presented in previous research.

A further limitation of the rational decision making framework is that it does not allow us to account for all of the cases in this study. In order to do this, we develop a typology of five 'hit-and-run' offender categories that were identified across the sample group (see Table 2). Some of these types frame the decision to run in more rational ways than others. The first two groups – those labelled 'rational escapists' and 'uncertain departers' were able to explain their decision making with the most clarity. The rational escapists fit most closely with the rational decision making framework. This group are most likely to be driving illegally and it was the fear of costs of reporting that primarily shaped the decision to leave. The uncertain departers often felt collisions were not severe enough to merit reporting, though they often admitted they were to blame for the collision. Indeed, this group

commonly used techniques of neutralisation (denial of harm) to justify their decision to leave the scene.

Table 2: Hit-and-run driver typologies[6]

Offender typologies	Key factors structuring decisions to leave the scene
Rational escapists	Drivers who make a rational decision to leave the scene as they are most fearful of the costs of reporting. This group are the most likely to be driving illegally (they might not have insurance/no licence etc.), though the group also commonly consider themselves as to blame for the collision. They leave the scene to avoid costs.

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[6] What is apparent in all of the observed cases is that the collisions were accidental. Therefore the typology does not include cases where there was deliberate intent to damage a vehicle or pedestrian.

Uncertain departers	Drivers who state that the severity of the collision is minor or trivial. They commonly deny they have acted illegally by not stopping/ reporting. Often this group admit they are to blame for the collision but claim to be unsure about whether the collision should be reported at all.
Panickers	This group are least able to deal with the shock of the collision and cite 'panic' as a reason for leaving the scene. This panic can also be a product of being to blame for the collision or being fearful of costs of reporting/ potential punishment.
The intimidated	Drivers who stop after a collision, but face aggression from other drivers or pedestrians and as a result leave the scene.
Impaired or 'non compos mentis'	Drivers whose decision making is affected by drink/drugs or are too drunk/drugged or mentally unwell at the time of the collision to make a rational decision whether to stay or leave the scene.

Note: Based upon 44 interviews: 8 cases where drivers said they were 'oblivious' to being in a collision are excluded.

However, three other groups emerged for whom the reasons for leaving the scene could not entirely be accounted for by the rational decision making model. The first group were those labelled as 'panickers'. The panickers often suggested they felt shocked as a consequence of the collision or overwhelmed by the situation and they left to scene due to 'panic' rather than as a result of any rational decision making process. As one driver who was disqualified from driving for 12 months stated, 'I didn't really look at the damage, I knew it was bad, so I panicked' (Interview 31) and another who did £6,000 of damage to a vehicle stated, 'I was in shock, I panicked and drove off' (Interview 34).

In many cases this was coupled with the sense that, for some drivers, it was not only the sense of severity of the collision but the feeling of a 'seriousness of a chain of events' that not only included the initial collision but the immediate aftermath. As one driver who knocked a pedestrian over stated:

Anyway [I] panicked … started driving off ……. seen a police car come in behind me and I decided I wasn't going to stop and I escaped from the police. I then dumped my car around a side road … they did a trace on my name and they tracked me down. (Interview 13)

Indeed, previous research suggests that, when making decisions in stressful situations associated with uncertain outcomes, some people may become 'non-rational' or start to rely on emotional intuition rather than rationality (Stracke & Brand, 2012:1228). Indeed this may be further exacerbated in situations where there might be a high degree of sensitivity around a potential consequence or punishment (Stracke & Brand, 2012). Indeed, 'panic' has previously been postulated as a potential reason for hit-and-run (See Dalby & Nesca, 2008; Fujita et al., 2014) with Dalby & Nesca (2008: 52) stating 'those who panic are thought to leave without reflection on their decisions'. However, there is little empirical evidence in the literature about how panic can affect driver decisions to hit-and-run, though our evidence suggests this can affect rational decision making.

Another group emerged who claimed to be victims of intimation at the scene of the collision (the intimidated). Indeed, this group stopped at the scene, but it was interaction with victims or bystanders that led to them feeling threatened, intimidated and leaving the scene. Of course, questions might be asked as to why these drivers did not later report the collision. In such circumstances it is possible some drivers could be using this as an excuse for leaving the scene. Indeed, Dalby & Nasca (2008:53) claimed that drivers have used 'dangerousness of the neighbourhood' as a defence for not stopping at the scene, but little known research has identified victim or bystander aggression as a reason for leaving the scene.

Finally, a group of cases emerged in which the driver was either under the influence of alcohol or considered to be unable to make a rational decision (*the impaired or non compos mentis*). In these cases, it was the presence of alcohol or mental illness that appeared to limit the decision making capability. The association between drinking and traffic offences is well recognised (see Solnick & Hemenway, 1994; Beirness et al., 2008) and thus it was unsurprising that alcohol consumption

emerged as a key reason for drivers leaving the scene in seven interviews. From the interview, six of these could be described as acting rationally in that they were aware that (as a result of drinking) if they reported the collision they could be prosecuted for drink driving. However, the fact they had been drinking impaired their judgement and made them take risks they possibly would not have taken otherwise. Indeed, in one case a driver was so drunk that she had no recollection of being involved in a collision at all: 'it wasn't that I was deliberately driving away from the accident and hoping I'd get away with, it was I had no idea' (Interview 8). This driver was disqualified as she hit a cyclist (who sustained multiple broken bones and later received over £80K for an injury claim), attempted to drive away and eventually lost consciousness. In another case where serious damage had been done to two cars, a driver left the scene of the collision on foot. He said his car was 'my pride and joy but was smashed to pieces', but knowing he was over the limit he said, 'I done a runner' (Interview 43).

Our interviews also identified mental illness as a reason why drivers could not make a rational decision or could be considered *impaired* or *non compos mentis*. Indeed, previous research has cited mental illness as a potential reason for hit-and-run (see Dalby & Nasca, 2008 for example) and the case below illustrates how a serious medical condition was the key reason for leaving the scene:

I've had a head injury that has affected the right central lobe of my brain, so that impairs my decision making and everything….. I didn't know what to do so I ran. (Interview 31)

Discussion and conclusion

Developing a better understanding of offender decisions to hit-and-run is necessary due to the potential consequences of this crime type. As this paper illustrates, there has been some development of theoretical understanding for hit-and-run principally based upon a rational choice framework. However, the previous application of the approach has largely been based upon analysis of large quantitative datasets that identify contributory factors, but fail to understand decision making processes from the perspective of offenders. As Tay et al (2008:1330) suggest, engaging in more

qualitative or 'in-depth field investigations' could yield much about the decision making process of the hit-and-run driver. This study has begun to do this by engaging in qualitative research with offenders, developing a deeper understanding of offender decision making and also by developing a plausible typology of hit-and-run drivers.

Of course, the findings of this paper have to be treated with caution due to the relatively small sample size. However, our typology represents the first attempt to develop such an understanding of different types of hit-and-run drivers and it is envisaged that it could (a) be further refined by researchers and (b) potentially useful in informing prevention strategies. As Fujita (2014:285) noted, as hit-and-run is subject to driver decision making behaviour preventative 'measures effecting choice of hit-and-run are needed'. Indeed, such measures might first aim to limit the likelihood of drivers becoming involved in situations where a choice about whether to 'run' is to be made – through targeting antecedents or precursors to collisions. Indeed, much previous work has been conducted to tackle the direct antecedents of collisions and to reduce the likelihood of illegal driving, such as driving over the drink or drugs limit (see Bjorgo, 2016). Here approaches might be best targeted towards potential rational escapists or the impaired/non compos mentis. Such approaches would aim to increasing the effort for potential offenders to drive illegally (for example, through the use of Alcolocks[7] to prevent vehicle use after drinking or clamping vehicles that have been identified as uninsured) and remove the rewards/benefits of illegal driving (for example, through encouraging drivers who have been drinking to use public transport/ provide regular and cheap night time public transport). Second, strategies might also focus on situational factors that then affect the choice of hit-and-run and thus help shape driver decisions to stay at the scene. As Fujita et al (2014: 286) suggest that the most important measure for 'preventing a driver fleeing the scene is to make the driver perceive they might be witnessed'. Thus measures that increase the likelihood of drivers being witnessed and make the 'risk neutral' or 'high risk taking' drivers (see Tay et al., 2008) less inclined to leave the scene – through the

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[7] Alcolocks are breathalyser immobilizers that prevent an individual from driving while over the legally allowed alcohol limit.

utilisation of CCTV in public/private spaces to capture drivers leaving the scene, encouraging bystanders to be active in logging vehicle details and promoting the use of dashboard cameras and personal cameras - would all increase risk perception for drivers. In addition, our study suggests that measures to remove excuses for non-reporting of collisions would also help prevent some hit-and-runs (especially for the *uncertain departers*). Indeed, greater efforts to clarify the legal requirements on the reporting of collisions to drivers through (for example) the distribution of 'collision' information cards (through insurance companies or DVLA) might be beneficial here.[8] Allowing alternative means of reporting collisions that utilise modern mobile technology - such as reporting via a mobile device – might also encourage further reporting[9].

Although future research might develop and refine the typology set out in this paper, there are a number of other avenues for future research that might also be explored. In particular, such research might further explore driver attitudes towards punishment and how this shapes decisions to run. As Fujita et al. (2014) have illustrated in relation to Japan, harsher legal punishment appears to have lowered the number of hit-and-run pedestrian accidents, but increased the proportion involving a hit-and-run driver. A similar trend is observed in the UK where the proportion of hit-and-runs (involving an injury) increased between 2013 and 2015. Furthermore, the reasons for the variation in the proportion of collisions that involve a hit-and-run driver internationally is worthy of future study. Indeed, Tay et al., (2009: 1334) suggested that 'socio-cultural environment may effect risk taking behaviour'. In relation to Singapore, the authors identified a higher likelihood of hit-and-run when vehicles from neighbouring countries were being driven and also when cars were driven by ethnic minority groups. They suggest that this might be because of naivety over the legal requirements or perceptions that capture is unlikely. Indeed, previous research in the USA has postulated that cultural factors influence lower rates of hit-and-run in southern states compared to the north (see Solnick &

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[8] Some insurance companies do currently have such literature, but not in a standardised format.
[9] Currently legislation stipulates that if someone fails to stop at the scene and exchange details they must report in person at a police station or to a police officer within 24 hours.

Hemenway, 1995). Therefore, further examination of socio-cultural factors, particularly in countries such as the UK where no similar research exits, might reveal much in relation to driver decisions to leave the scene.

In summary, this paper has explored the application of the rational decision making framework to hit-and-run driving. It is observed that while some decisions to leave the scene can be explained by this perspective, other reasons for leaving the scene emerge that are not so easily explained. This allowed for a novel typology of hit-and-run drivers to be developed, which identifies that some drivers are 'rational escapists' in that the costs of reporting the collision shaped their decision to leave, but for others, the 'uncertainty over legal requirements of reporting', 'panic', 'intimidation' and being 'impaired/ non compos mentis' are key reasons for leaving the scene. Although the findings of this paper are tentative, typologies of hit-and-run drivers could be useful in helping to direct future thinking and developing preventative approaches. While previous research has been successful at identifying a number of contributory correlates of hit-and-run driving, our study suggests in-depth interviews with drivers might yield rich findings in relation to understanding why drivers hit-and-run.

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