Understanding Mental Health Demand within Lancashire Constabulary

Dr Nathan Birdsall

School of Forensic and Applied Sciences

University of Central Lancashire

February 2019

Table of Contents

INTRODUCTION

Identifying and measuring mental health demand within policing has become an important issue in the debate around resources and an effective policing response. This report aims to provide a transparent examination as to the levels of mental health demand within the Lancashire Constabulary during 2018.

The identification of mental health demand continues to be fraught with difficulty, largely because the data on which cases relate to mental health illness is not readily available (Adebowale, 2013). One of the main reasons for the lack of data is because the concept covers such a broad range of human experiences (Cummins & Edmonson, 2015). Whilst a national definition for police mental health demand is nearing formation, this is currently extremely broad:

"Any incident involving those of us with mental health problems where that vulnerability is at the centre of the incident or where the police have had to do something additionally or differently."

(Email: Chief Inspection Michael Brown (NPCC Mental Health Coordinator), 2018).

Consequently, key words to use in a search for mental health cases are diverse. Furthermore, policing demand can range from a call taker providing advice and welfare checks, to a police officer responding to aggressive and volatile behaviour involving drugs and alcohol (Angiolini, 2017). Arguably, this leaves the police with a unique role of deciding which individuals with mental health problems are processed through the healthcare system or are dealt with through the criminal justice system (Senior *et al.*, 2014).

Previous research into police mental health demand has shown a variety of figures. Within London, the Metropolitan Police Service examined approximately 4 million calls between September 2011 and August 2012 and found that 1.5% (n = 60,306) were flagged as being mental health (Stanko, 2012; in Adebowale, 2013). Greater Manchester Police examined mental health demand using an algorithm developed by Manchester Metropolitan University. Their research found that there was a total 10% of cases, which was an increase on the 2% recorded by police staff (Ellison *et al.*, 2018). Within the Lancashire Constabulary, previous research also examined mental health demand using a key word search function (Kirby *et al.*, 2017; Crorken, 2017). This found that mental health demand made up

approximately 8% of all incidents that had officer deployment (Grade 1-3 response). However, what is unclear within the previous studies is what exactly was searched for in determining 'mental health incidents'. Therefore, the current report provides and overview of the context of mental health within the Lancashire Constabulary, before conducting a transparent search of mental health demand.

Counting Mental Health Incidents

Irrespective of the definitional difficulties in identifying cases of mental health problems, any search will also suffer from contextual difficulties. This is due to any search function having to cover both the key words related to mental health problems, and those behaviours that may potentially indicate mental health problems. Subsequently, searches can occur in various ways, such as: counting mental health tags; counting cases involving diagnosed mental health issues; searching for mental health key words; searching for mental health key words and phrases surrounding certain behaviour; and the development of a complex algorithm that searches key words and phrases as well as examines contextual factors and behaviours potentially indicating mental health.

The various methods may explain the large variation in demand within previous studies (Ellison *et al*., 2018; Kirby *et al*., 2017; Crorken, 2017; Stanko, 2012 in Adebowale, 2013). A further issue that also appears unaddressed is the issue of 'false positive' results. There will be instances where cases are marked as containing mental health problems, but this may not have any bearing on the police handling of the case. As such, it is important to identify mental health as well as the potential rate of false positives within the sample.

Contextual Understanding of Mental Health Demand

Due to the definitional ambiguity and contextual difficulties in examining mental health police demand, the report initially conducted several small background studies to gain an understanding of how mental health appeared through calls and incident logs. In this instance, context was gathered from three main areas: 1) a visit to the Lancashire Constabulary Contact Centre to listen to mental health calls and speak with contact centre staff; 2) a basic search of mental health websites to examine simple lists of 'mental health issues'; and 3) a breakdown

of all words used in the incident logs within a single day of policing in the Lancashire Constabulary (1st November 2018). These are now described in further detail.

1) Visit to the Lancashire Constabulary Contact Centre

A team of researchers attended the Lancashire Constabulary Contact Centre to gain insight from frontline call staff. Observation and discussion with the call handlers led to several insights into mental health related calls:

- Inconsistency in the application of the mental health tag. (Some use the tag as a prompt to ask in every case, whereas others leave the tag as neutral unless they can fully confirm yes/no.)
- Call takers (especially on the 101 line) appear to engage in a social work capacity providing advise to those with mental health issues. This may also refer to the call takers welfare (e.g., when they are required to have dialogue with an individual attempting suicide or is undergoing self-harm).
- Some demand is hidden (especially on the 101 line), as call takers advise the caller it is not a police matter and no official response is made. However, this caller is often provided with advice and guidance.

The contact centre staff also had a view as to the trends underpinning mental health demand. It was stated: 1) MH call demand is greater in the early hours of the morning; 2) MH call demand increases on weekends; and 3) MH call demand is greater on holidays (including Mother's Day and Father's Day). This view will be tested further in this document.

2) Website Lists

The first page of results for a Google search of 'mental health issues' was examined to identify simplistic lists of recognised issues. In this search seven websites were examined, including: mind.org.uk; psychguides.com; mentalhealth.org.uk; time-to-change.org.uk; nice.org.uk; rethink.org.uk; and childline.org.uk (accessed 20th November 2018). The websites often provided a list of recognised mental health issues, from which useful key words were extracted. These are tested later in the document.

3) Breakdown of Incident Logs

There was a total of 1598 incident logs recorded on the 1st November 2018. All words within these logs were extracted and organised alphabetically alongside their frequency ($n = 4,424$).

Analysis of the context in which they appeared was completed to determine whether the word was indicative of mental health related cases. The study found that there is a distinct difficulty in isolating mental health incidents, as there are behavioural cues that illustrated mental health issues without the presence of standard key words. For example, consider the log

"…*female saying she has cut her wrists with a razor blade which she still has with her. She says she can't be bothered living anymore and was feeling violent. She has serious bleeding from her wrists.*"

This would not be identified by a key word search of 'suicide' or 'self-harm'. To capture such cases, a search function would need to search for a combination of behavioural cues, such as:

'kill (my/him/her/them/their)self/selves' and '(slit/cut) (my/his/her/their) wrist(s)'.

There may also be an issue concerning false positive results. This would still occur when using a conservative search function (e.g., 'Autistic') may return "female was taking her autistic son to school but found her car window has been smashed". In this instance the case would not meet the definition of a mental health incident, as it is likely the police would handle the case in a similar way to other damage cases with similar circumstances.

Searching for Mental Health Cases in the Lancashire Constabulary

Due to the complexity in forming a comprehensive algorithm that would need to consider behaviour and context, the project in this instance focused on isolating a sample of mental health cases. This used a conservative list to minimise false positives. This method aligned closely to previous studies in Lancashire Constabulary (Kirby *et al*., 2017; Crorken, 2017), but using contextual studies, several key words were further added. Therefore, this current study isolated the following key terms:

MENTAL; MENTAL HEALTH (both disassociated from "environ'mental' health"); MH; MENTALLY ILL; MENTAL CAPACITY; AUTISM; AUTISTIC; ASPERGER; ALZHEIMER; DEMENTIA; ATTENTION DEFICIT HYPERACTIVITY DISORDER; ADHD; ANXIETY DISORDER; BIPOLAR; DEPRESSION; SUICIDE; OVERDOSE; SELF HARM; OBSESSIVE COMPULSIVE DISORDER; OCD; PARANOIA;

PARANOID; PERSONALITY DISORDER; POST TRAUMATIC STRESS DISORDER; PTSD; PSYCHOSIS; SCHIZOPHRENIA; SCHIZOPRENIC; S135; S136.

METHOD

Design

The study used a secondary source design, accessing the police WebStorm database to isolate a sample of 'mental health related incidents' based upon a key word search of incident logs.

Data Processing

A comprehensive search of the police system was conducted. First, the key word search was conducted on all WebStorm incident logs from 1st January-31st December 2018. From a total of 577,076 incidents that occurred within the year, 52,937 (9.17%) cases were returned as containing at least one of the mental health key words.

From the key word dataset, it was possible to follow up data collection using the log numbers. This allowed for the collection of information surrounding the processing of the case and the location of calls/referrals, as well as the frequency of the key words in each case. It is important to note, however, that consistent data collection pertaining to the individual that had, or was suspected to have mental health problems, was not possible. This was because the demographic information recorded within the logs was more often the person reporting rather than the individual with mental health problems.

Analysis

To understand the rate of false positives, a convenience sample of 108 cases from the beginning of the sample date were manually reviewed. Focusing on the context surrounding the identified key word, the case was then reviewed to understand whether the mental health problem was "at the centre of the incident" or the police had done something "additionally or differently" due to the identified mental health problem. It identified that 4 cases found with the key word function did not meet the definitional and contextual understanding of a 'mental health incident' and were considered false positives. This included cases where: MH was a person's initials; someone was described as "going mental"; someone was collecting money for a false autism charity; and a call where someone was complaining a person was 'talking rubbish about them' including mental health slurs. This meant that an estimated 3.7% of the

total sample could be false positives in the key word search, meaning a potential total of 1959 cases across the sample.

The next stage of this document provides an overview of mental health demand within the Lancashire Constabulary. Descriptive statistics are used to provide a concise explanation of the data, including a heatmap analysis of call origin. The study also included inferential analysis on the BCUs, examining any significantly associated response grade and likelihoods of certain types of mental health. In addition, the dataset was transformed into a daily count of mental health related cases, to conduct regression analysis into the 'count' of mental health cases per day. This analysis considered the day of the week, season and day of holiday/celebration using a negative binomial regression to determine whether there were any patterns in demand across the year.

RESULTS

Mental Health Demand across Lancashire Constabulary

From a total of 577,076 incidents that occurred within 2018, 52,937 (9.17%) cases contained at least one mental health key word. The mental health key words were grouped and coded to provide frequencies of their occurrence across the 52,937 cases. Table 1 below provides an overview of the total count of each mental health theme.

Table 1: Mental health themes in order of frequency. Each key word was limited to one appearance per case, however multiple key words could appear within the same case. This meant that the frequency count of each key word was not mutually exclusive.

Mental Health Theme	Frequency	%
Mental Health	34,558	65.28
Overdose, Self-harm, and Suicide	14,431	27.26
Depression	5,028	9.50
Alzheimer's/Dementia	3,746	7.08
Autism	2,795	5.28
Paranoia	2,784	5.26
Schizophrenia	1,676	3.16
S135/6	1,279	2.42
PTSD	939	1.77
Personality Disorder	837	1.58
Psychosis	716	1.35
OCD	164	0.31
Anxiety Disorder	27	0.05

As can be seen from the table, the descriptions used most often are those that are generic (i.e., mental health) or are observable (i.e., self-harm). To provide more context, the mental health related calls of 2018 were mapped geographically based upon the location data provided by the caller. Some calls did not originate within the Lancashire area, as some callers (often friends, family or other police forces) called to request welfare checks on residents within the Lancashire Constabulary force area. For the clear majority occurring within the Lancashire Constabulary force area, the heatmap (Figure 1) illustrates geographic concentration.

Figure 1: Heatmap of the 52,937 calls involving the mental health key words. Please note, some calls occurred outside of the Lancashire Constabulary force area

LANASHIRE CONSTABULARY MENTAL HEALTH CALL ORIGIN
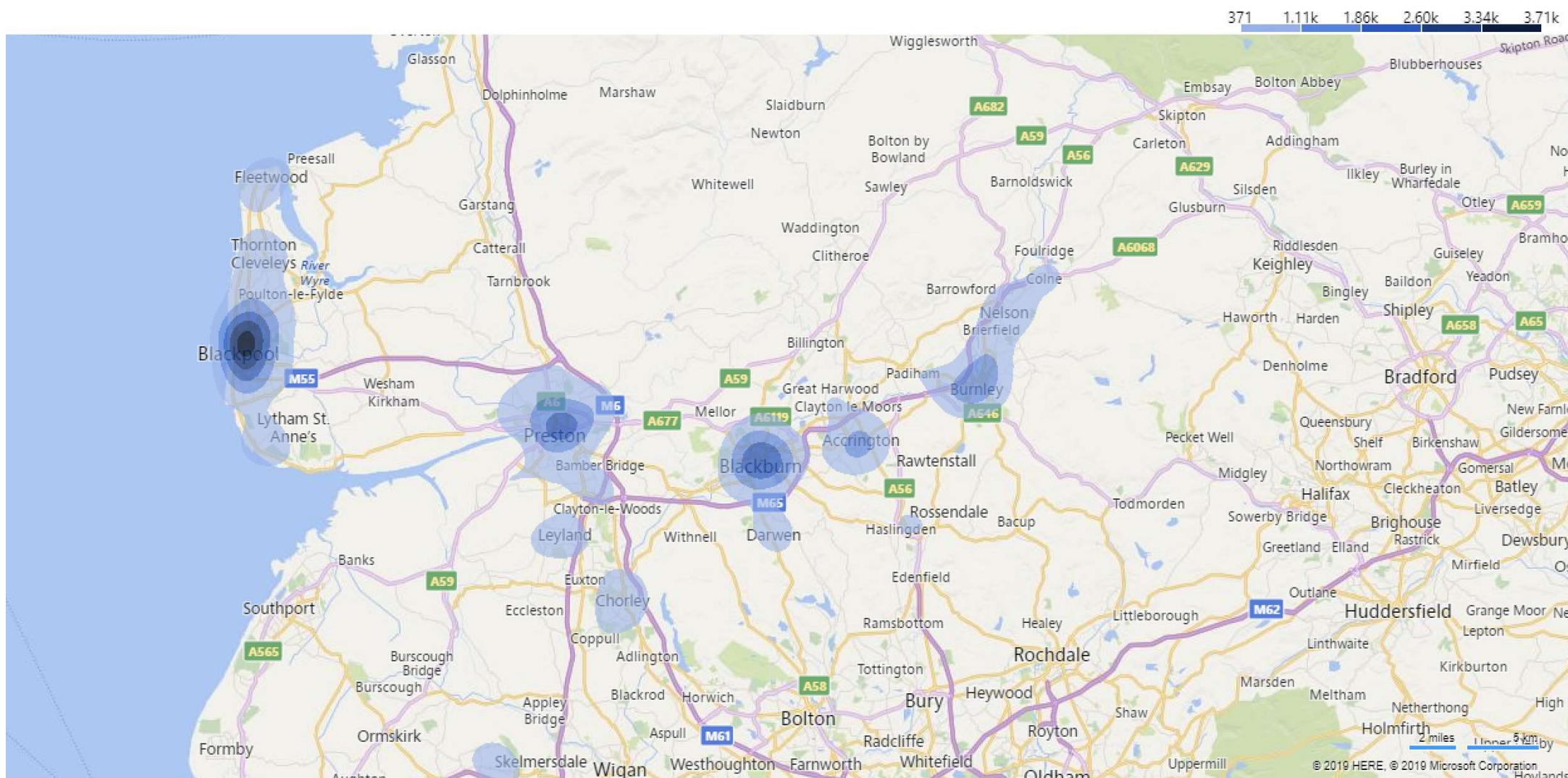
The clustering of calls appeared to occur around cities and towns, with a very heavy concentration of calls occurring in Blackpool (up to 3,710 annual calls). Preston, Blackburn, Lancaster (off map), Burnley and Accrington also appeared to have a concentration of calls within their centres (371-2,600 annual calls). There here were also smaller hotspots (371-1,110 annual calls) that occurred in Morecambe (off map), Fleetwood, Lytham St. Anne's, Leyland, Chorley, Darwen, Nelson and Colne.

As several calls from outside of the constabulary concerned welfare checks, the grade of responses used for all 52,937 cases were coded to understand type of demand. The grade of responses and their frequencies are outlined in Table 2 below.

Table 2: Grades of response used to respond to all incidents with identified mental health key words.

		Grade of Response			
Immediate Response (Grade 1)	High Priority Response (Grade 2)	Standard Priority Response (Grade 3)	Scheduled Response (Grade 4)	Resolution without Deployment (Grade 5)	**Total**
9341	13,334	13,456	14,582	2224	**52,937**
17.6%	*25.2%*	*25.4%*	*27.5%*	*4.3%*	*100%*

The incident log data was then plotted throughout the year to examine the daily demand (Figure 2 shows the daily counts of mental health incidents).

Figure 2: Total mental health related incidents plotted per day throughout 2018.
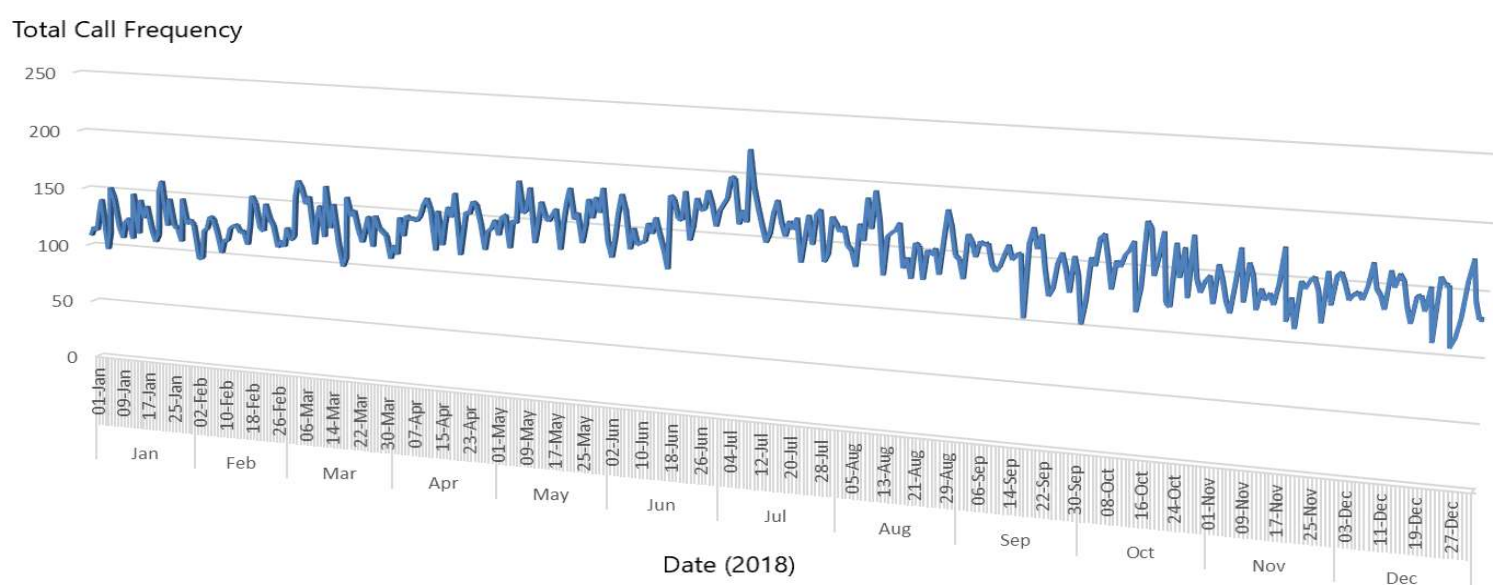
From the plot, there appears to be a slight rise in the number of mental health related incidents occurring within the summer, which then falls again in autumn and winter. Examining the trends in more depth, inferential testing was conducted on the daily count of mental health related incidents per day to determine whether MH demand increased on the weekend, in winter and when there was a national holiday (including Mother's and Father's Day). A Poisson model was first fitted to the observed daily counts of MH related incidents. However, the model failed to fit the data due to overdispersion and a negative binomial regression was instead used.

The results are presented in Table 3 below, whereby the odds ratio explains the likelihood of mental health cases occurring in comparison to the chosen comparator. An odds ratio of 1 would represent the same likelihood as the comparator. In essence, a score less than 1 would represent a lower likelihood than the comparator and a score greater than 1 would represent a greater likelihood than the comparator.

Table 3: Negative binomial regression on the daily count of MH related incidents using day of week, season and national holiday as predictors.

Factor	Odds Ratio (<1 is less likely; >1 is more likely)	95% CI Lower	95% CI Upper
Day of Week (Comparator: Friday)			
Saturday	.884***	.841	.930
Sunday	.884***	.840	.929
Monday	.983	.936	1.034
Tuesday	1.002	.954	1.053
Wednesday	.996	.947	1.046
Thursday	.989	.941	1.039
Season (Comparator: Autumn)			
Winter	.896***	.862	.931
Spring	.991	.954	1.029
Summer	1.091***	1.051	1.132
National Holiday	.915*	.840	.996

*Note: Deviance value/df = .766. Model χ^2 (10) = 170.483 p <.001. *p <.05, **p <.01, ***p <.001.*

Day of Week:

Contrary to contact centre staff expectations, the weekend was less likely to result in MH related incidents in 2018, with both Saturday and Sunday having 88.4% as many incidents in comparison to Friday.

Season:

Winter was less likely to involve mental health related incidents (93.1%), whereas Summer was 1.13 times more likely to involve mental health related incidents.

National Holiday:

Mental health related incidents were a tenth less likely (91.5%) to occur on national holidays, in comparison to days that were not considered national holidays.

To fully understand the chronological trend in mental health related calls, and the difference in demand across weekends and weekdays, the study plotted the times of the initial call by day of the week.

Figure 3: Annual total of mental health calls broken down by the time of day and day of the week.
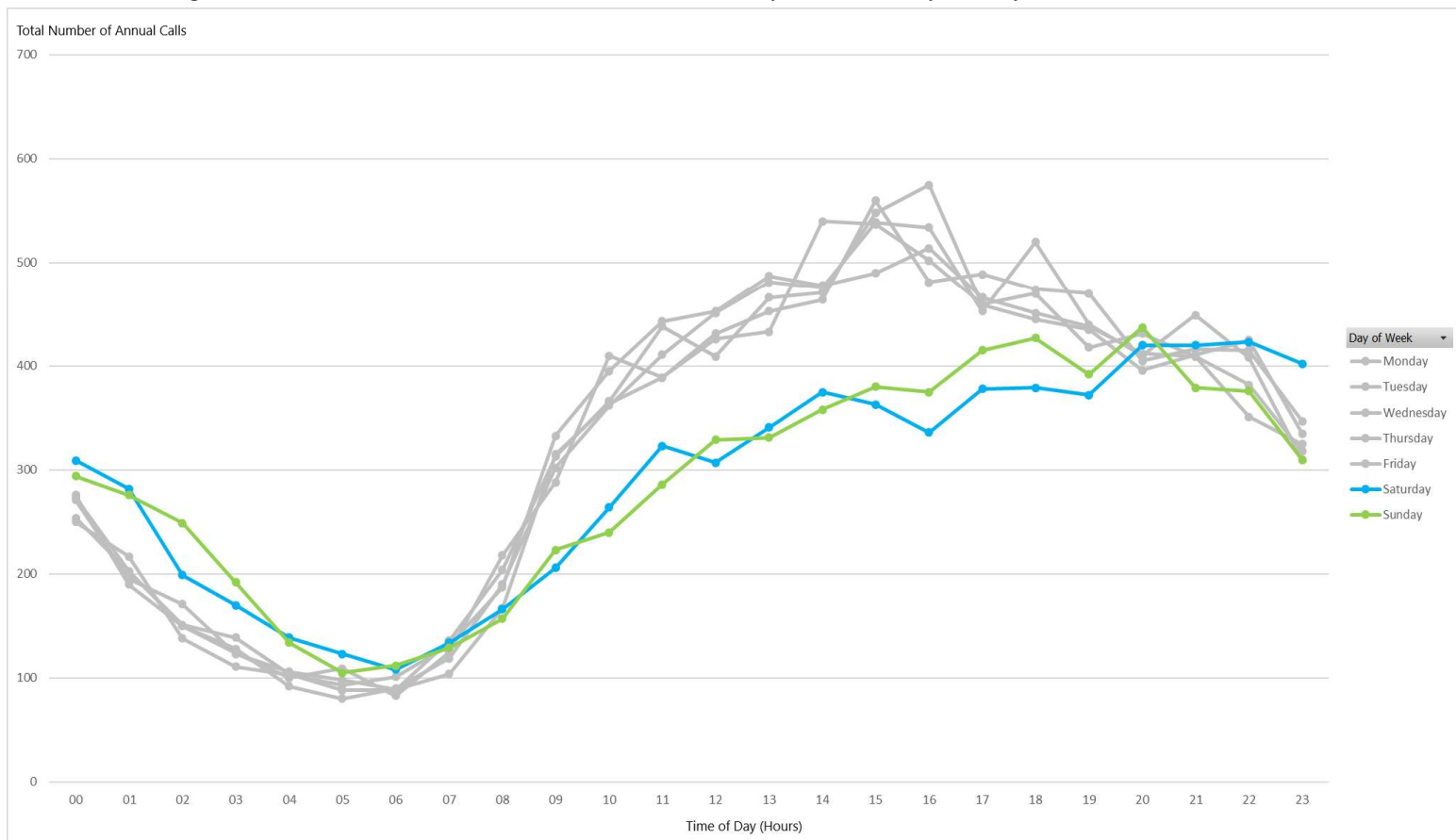
The data illustrated peak mental health call times occurred at 3pm, with high rates of annual calls between 1pm-7pm. The lowest level of mental health related calls appeared to occur in the early hours of the morning (please see Figure 3).

Chi square analysis found immediate and high priority responses were significantly more likely to occur in the evening (18:00-23:59) and early hours (00:00-05:59hrs), with standard priority responses significantly more likely to occur during late morning (06:00-11:59hrs) and afternoon (12:00-17:59hrs). Scheduled deployment and resolution without deployment fell within expected counts across the different time categories, (χ^2 (6, n = 52,937) = 1315.876, p <.001).

As the weekend appeared to have a different trend, Chi square analysis was used to examine whether early hour calls were more likely to occur on weekends. Across the Constabulary the calls on weekends were significantly more likely to occur during the early hours of the morning (00:00-05:59 hrs), with weekday calls significantly more likely to occur during afternoon hours (12:00-17:59 hrs), χ^2 (3, n = 52,937) = 421.422, p <.001. This together with the previous finding that immediate and high priority responses are more likely to occur in the late evening and early hours, highlights that weekend calls present a consistent and intense early hour demand on the Constabulary.

To determine the difference in this demand a binary logistic regression examined whether certain mental health keys words were more likely to occur in the daytime (6am-5.59pm) or the night time (6pm-5.59am) (please see Figure 4).

Figure 4: Proportion of significant key words from regression analysis occurring in the daytime and nighttime hours.
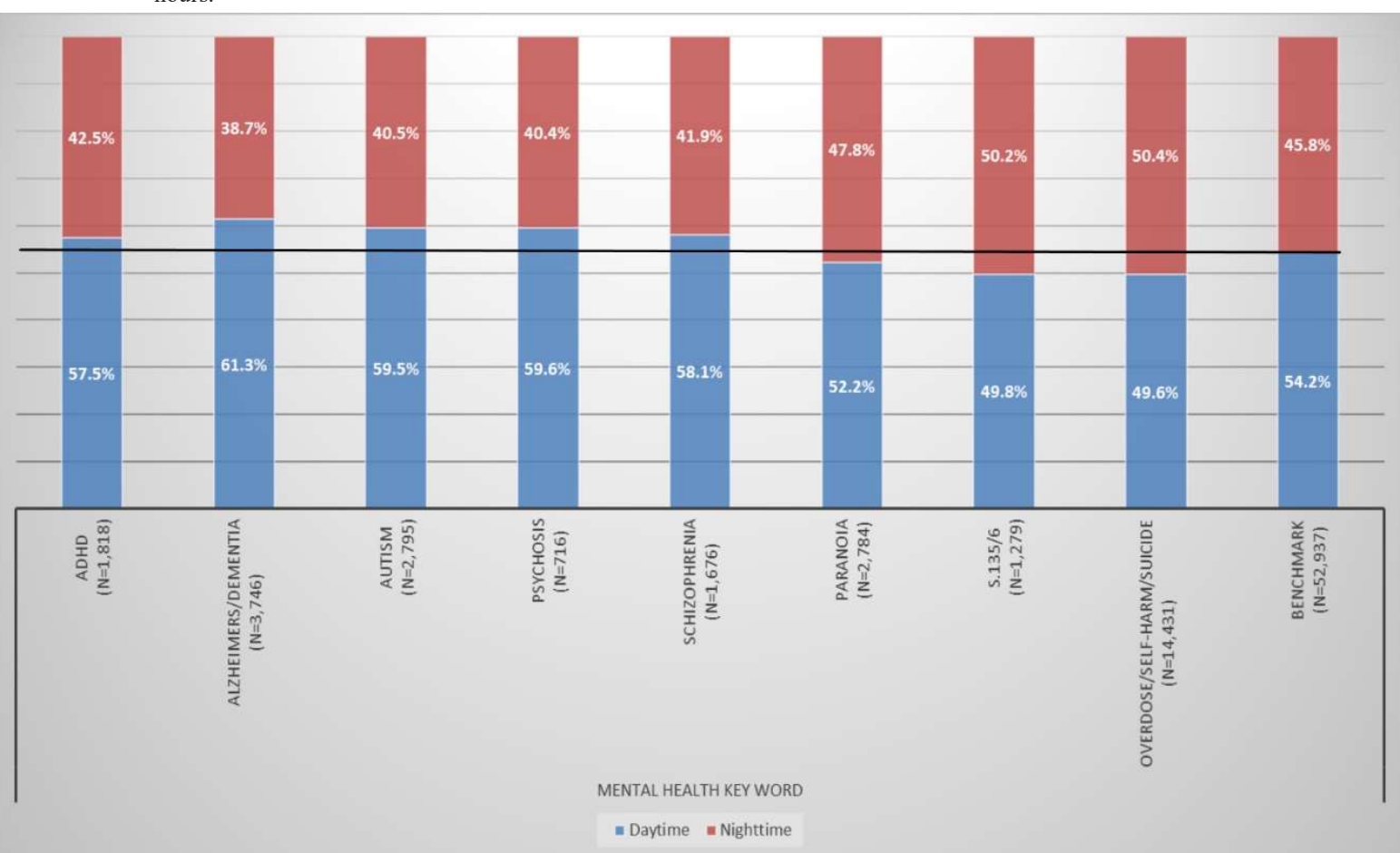
The results illustrated how cases involving ADHD, Alzheimer's/dementia, autism, psychosis, and Schizophrenia key words were significantly more likely to be reported during daytime hours. This was in comparison to paranoia, s.135/6, and overdose/self-harm/suicide, which were significantly more likely to occur in the nighttime hours.

Understanding Mental Health Demand Across each BCU

The mental health calls were broken down into BCU for inferential analysis, including: West (n = 19,421, 36.7%), South (n = 14,509, 27.4%), East (n = 18,414, 34.8%), and outside of Lancashire Constabulary (n = 593, 1.1%). From visualising the data, many of the cases outside of Lancashire Constabulary resulted in a scheduled response or resolution without deployment (n = 523, 88.2%), which would indicate that majority of these calls were concerned with welfare checks. As this would have adversely affected the test, the researcher examined whether there was a difference in response grades across each BCU while

excluding cases outside of the Lancashire Constabulary. The test found a statistically significant association between the BCUs and their response gradings, χ^2 (4, n = 52,344) = 117.356, p <.001. The results found that the West and East BCUs were significantly more likely to use immediate (Grade 1) and high priority (Grade 2) responses in comparison to South, whereas South was significantly more likely to use scheduled responses (Grade 4) and resolutions without deployment (Grade 5) in comparison to West and East. The results and the proportion of responses are illustrated in Figure 5.

Figure 5: Proportion of responses across West, South and East BCUs (n = 52,344).
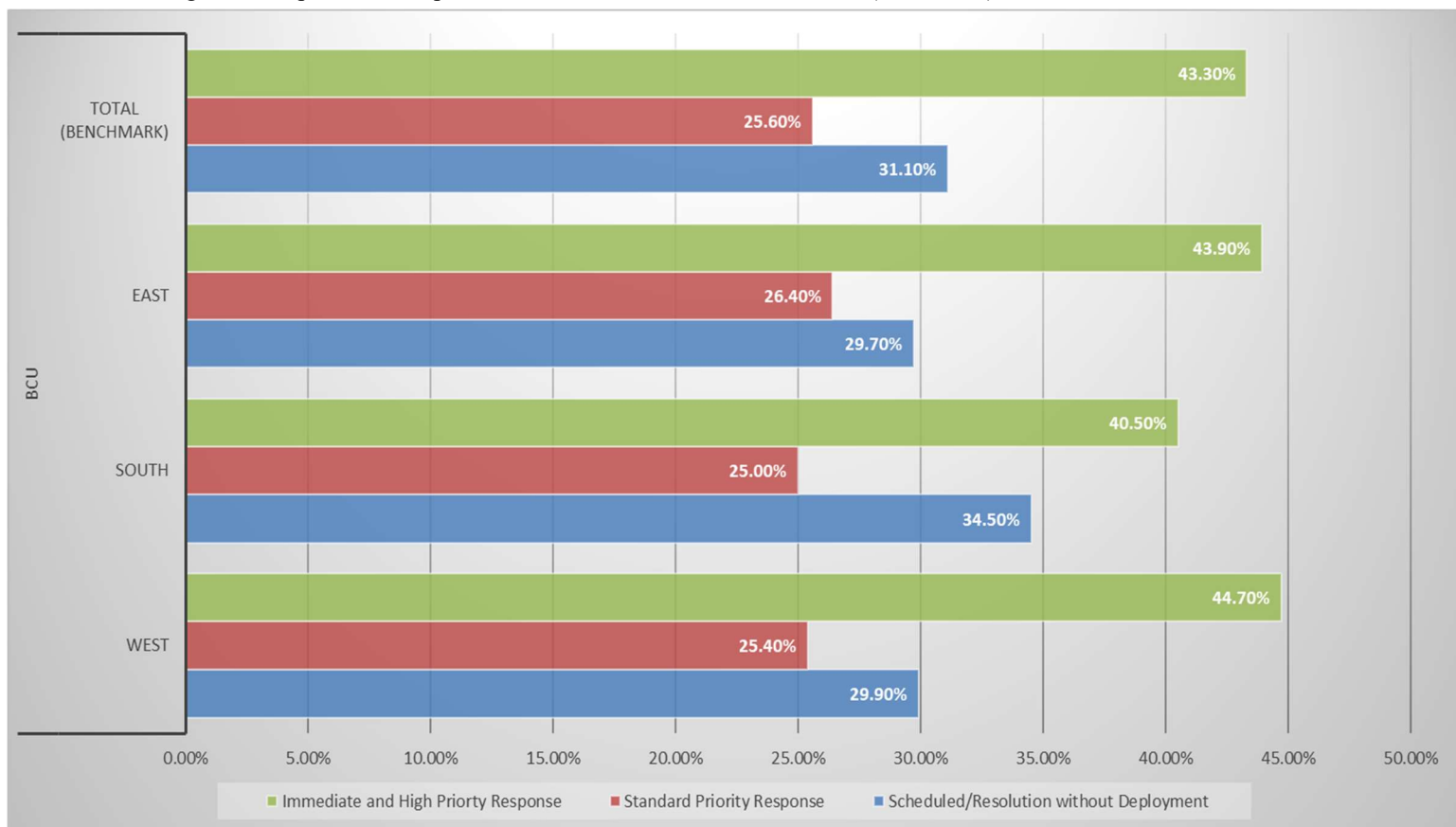
Examining the call times (in Figure 6 below), each of the BCUs had a similar trend in mental health calls which matched the overall peak demand times of the Constabulary. This meant that the peak afternoon call demand was consistent across all BCUs.

Figure 6: Total mental health related calls plotted per hours of the day across each BCU.
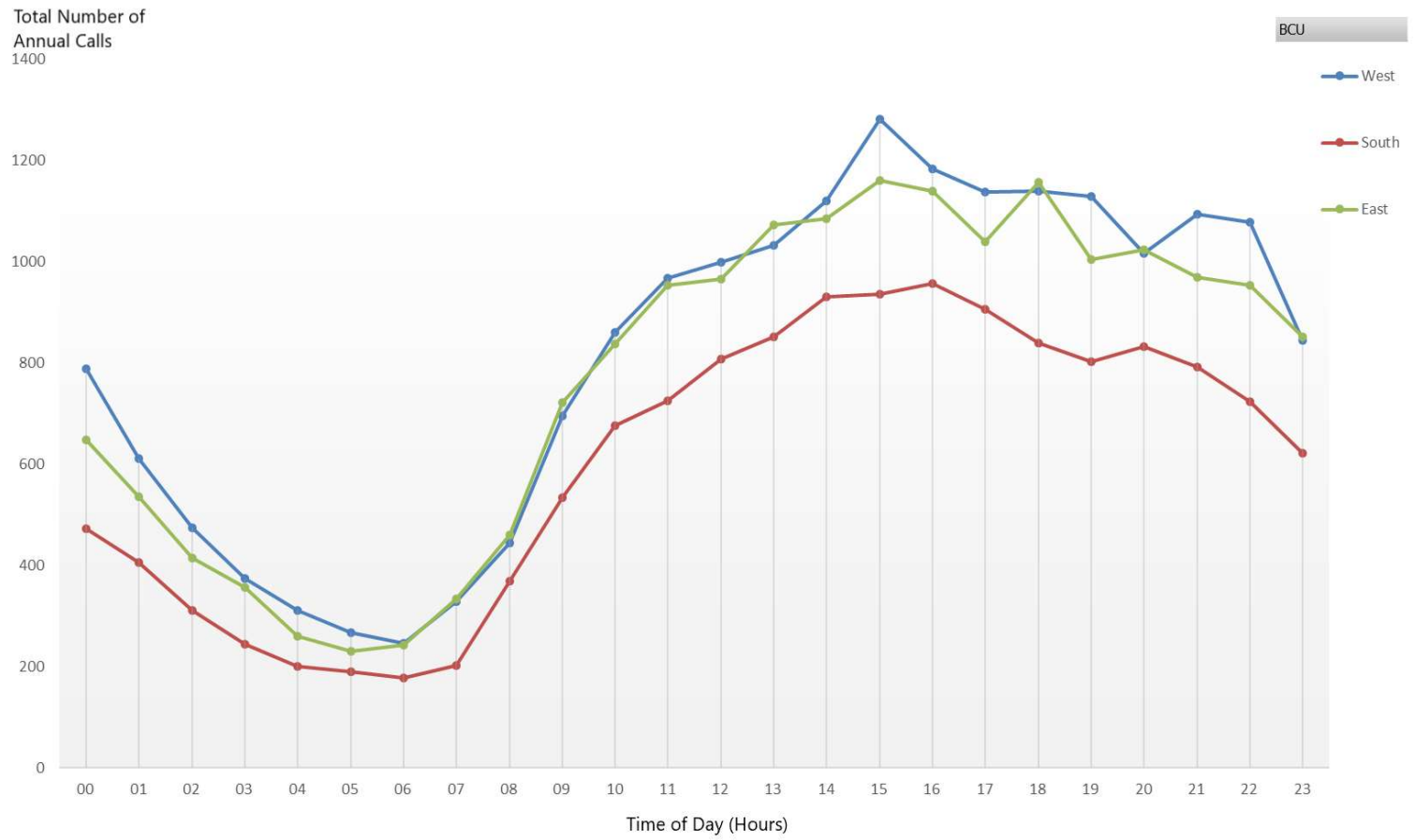
The mental health key words were then examined across each BCU (excluding outside of Lancashire Constabulary) to determine whether some issues were more prevalent in certain areas. To conduct the analysis, West BCU was chosen as a comparator due to the large volume of mental health cases within Blackpool. From examining the data, the best fit for the model included: ADHD, Alzheimer's/dementia, autism, Schizophrenia, s.135/6, and overdose/self-harm/suicide (please see Table 4 for results). The results show how there were significantly different proportions of cases with mental health key words occurring within certain BCUs.

Table 4: Multinomial logistic regression examining mental health key words against Lancashire Constabulary BCU, using West as a comparator.

Note: R^2 =.005 (Cox-Snell, and Nagelkerke). Model χ^2 (12) = 238.424, p <.001. *p <.05, **p <.01, ***p <.001.

Key Word	BCU			
	West	South	East	Total
ADHD	33.6%	25.9%	40.5%	100%
	(*n* = 607)	(*n* = 468)	(*n* = 731)	(*n* = 1,806)
Alzheimer's/Dementia	38.0%	31.5%	30.5%	100%
	(*n* = 1,413)	(*n* = 1,171)	(*n* = 1,136)	(*n* = 3,720)
Autism	38.4%	33.9%	27.8%	100%
	(*n* = 1,067)	(*n* = 942)	(*n* = 772)	(*n* = 2,781)
Schizophrenia	33.1%	29.7%	37.2%	100%
	(*n* = 551)	(*n* = 494)	(*n* = 618)	(*n* = 1,663)
S135/6	38.9%	32.1%	29.0%	100%
	(*n* = 495)	(*n* = 409)	(*n* = 370)	(*n* = 1,274)
Overdose, Self-harm and Suicide	38.7%	26.1%	35.2%	100%
	(*n* = 5,503)	(*n* = 3,717)	(*n* = 5,005)	(*n* = 14,225)

ADHD:

The test found that South and West had a similar level of calls involving ADHD based upon their total proportions of calls; however, the East BCU was 1.31 times more likely to receive calls involving ADHD in comparison to West.

Alzheimer's/Dementia:

The East BCU was a fifth less likely (81.2%) to involve Alzheimer's/dementia in comparison to West. However, South was 1.11 times more likely than West to involve Alzheimer's/dementia, based upon their total proportion of cases.

Autism:

A similar pattern was also found with autism related calls, as the South BCU was 1.19 times more likely to receive autism calls in comparison to West. Conversely, East BCU was 70.9% as likely to receive autism related calls in comparison to West.

Schizophrenia:

Both South (1.20 times) and East (1.16 times) BCUs were more likely to involve schizophrenia in comparison to West.

S135/6:

The East BCU was only three-quarters (77.2%) as likely to involve the key word of 's.135/6' in comparison to West.

Overdose, Self-harm, and Suicide:

Both South (89.1% as likely) and East (92.4% as likely) were less likely to involve calls involving overdoses, instances of self-harm, and attempts or instances of suicide in comparison to West BCU.

DISCUSSION AND RECOMMENDATIONS

The study aimed to provide a transparent analysis of mental health demand within the Lancashire Constabulary. From a total of 577,076 incidents that occurred within 2018, 9.17% (*n* = 52,937) cases were returned as containing at least one of the mental health key words. This was consistent with previous research within the Lancashire Constabulary (Kirby *et al*., 2017; Crorken, 2017) which found that 8% of cases were returned using a smaller, but similar, search function in 2017. Furthermore, from an examination of context there was an estimated 3.7% false positives (*n* = 1959) within the sample. Overall, this shows that in 2018 logged calls relating to mental health demand was made up between 8.83% and 9.17% of all calls.

The overall figures appear to compliment previous research conducted in other police forces. As Stanko (2012; in Adebowale, 2013) examined only mental health flagged calls within the Metropolitan Police Service, it is likely that the 1.5% of mental health cases identified was due to an uncontextualized search in 2011-12. Furthermore, the contextual algorithm developed by Manchester Metropolitan university for Greater Manchester Police found a total of 10% of mental health cases in 2017 (Ellison *et al*., 2018), which could be attributed to the detail in which the algorithm searched the incident logs. Therefore, the identification of 9.17% (8.83% if false positives removed) of cases with mental health demand appears complimentary as the search utilised a comprehensive (yet conservative) list of mental health key words only, without considering the context of behaviours.

It can also be highlighted that the most commonly reported terms were generic or easily observable (i.e., mental health or self-harm). This suggests staff and officer understanding of mental health illness is limited and overarching terms are more likely to be used for specific illnesses or behaviours.

Demand across the Lancashire Constabulary

There were distinct trends of mental health demand that appeared to occur within the Lancashire Constabulary. Whilst this partly reflected findings from previous research (HMICFRS, 2018; p.37), the current study also explains how there were two distinct profiles

of demand that occurred at different times. They were considered as *intense early hour demand* and *bulk afternoon demand*.

1) Intense Early Hour Demand

The intense early hour demand was significantly more likely to be grade 1 and grade 2 responses to mental health issues such as paranoia, s.135/6, and overdose/self-harm/suicide. Such responses are likely to be immediate and high priority as the incident logs reflect an immediate harm or threat to life. This intense early hour demand may also generate extended demand, as some officers may be required to use s.136 or be assigned 'bed watch' to prevent further harm to the individual.

Finally, it should be highlighted that the intense early hour demand was significantly higher on the weekend, in comparison to weekdays.

2) Bulk Afternoon Demand

The demand occurring in the afternoon hours concerned the majority of mental health related incidents across the Constabulary. A high number of incident logs were created between the hours of 1-7pm, with a peak at 3pm. These cases were significantly more likely to be recorded as ADHD, Alzheimer's/dementia, autism, psychosis, and Schizophrenia, which was more likely to receive a grade 3 standard risk response.

The bulk afternoon demand was highest throughout the weekdays, with a lower number of afternoon incidents occurring on the weekend.

Demand within the BCUs

From the analysis, it appeared that the BCUs had different characteristics of mental health demand. Whilst East (18,414 total incidents) and West (19,421 total incidents) showed similar characteristics, with a higher number of immediate and high priority responses, this contrasted against South (14,509 total incidents). This BCU was associated with more scheduled responses and resolutions without deployment.

The West BCU had a heavy concentration of mental health related incidents that were largely clustered around Blackpool. A similar level of incidents also occurred in the East BCU, but they appeared to be more spread out over a larger geographical area including Blackburn, Accrington and Burnley. The West BCU had a significantly higher likelihood of

incidents involving overdoses, self-harm and suicides (and mentions of s.135/6) in comparison to the other BCUs, which could potentially explain why it had the highest number of grade 1 and 2 responses. Blackpool is considered one of the most deprived areas in the UK, with high levels of poverty and drug use (Early Action Task Force, 2016). Subsequently, the rationale and findings may provide insight into the demand stemming from Blackpool. It appears that the cases from that area are more likely to relate to life threatening behaviours which require immediate and high priority responses, often occurring in the late evening and early hours of the morning. Whilst this may explain the higher association with immediate and high priority resources, it may also have an impact upon the call centre staff within the West hub. The researchers' visit to the contact centre highlighted issues with call taker welfare, as they highlighted the need to form a dialogue with the individual to prevent self-harm. Further investigation to determine the level of life threatening calls and how these impact upon call taker welfare may be useful and could be especially targeted towards the West hub in the contact centre.

In contrast, the East BCU appeared to have a similar level of immediate and high priority responses in comparison to the West; however, the characteristics of the mental health related incidents appeared to be more specific. The East BCU was more likely to report handling incidents involving ADHD and schizophrenia, in comparison to the West BCU. Further research using qualitative methods would be best suited to further explore the potential trend of mental health incidents in each BCU, and especially those occurring in the East and South BCUs. Interviews with officers and call takers from each area may provide insights into case handling when specifically asked about the types of mental health incidents they were required to handle or attend. Furthermore, interviews with the calls handlers may also provide insight into the 'hidden demand' created when they provide advice and outcomes to callers without the opening of an incident log.

The South BCU had a smaller level of mental health demand, which was more likely to be addressed using scheduled visits and responses without deployment. This response may be indicative of a different type of demand, whereby reported incidents do not require an urgent response to prevent life threatening behaviour (as in the West BCU). This may be further strengthened by the types of mental health key words associated with the BCU, where cases of Alzheimer's/dementia, autism, and Schizophrenia may not pose the same threat to life. However, it is crucial to note that immediate and high priority responses during the early

hours of the morning were consistent across all BCUs, meaning that South also had an intense early morning demand with associated grade 1 and 2 responses.

REFERENCES

ADEBOWALE, V., 2013. *Independent commission on mental health and policing report.* London: Independent commission on mental health and policing.

ANGIOLINI, E., 2017. *Report of the independent review of deaths and serious incidents in police custody.* London.

BRADLEY, K., 2009. *The Bradley Report: Lord Bradley's review of people with mental health problems or learning disabilities in the criminal justice system.* London: Department of Health.

CRORKEN, F., 2017. *What difference an intervention makes: comparing the effectiveness of interventions on the continued demand for police services from people experiencing mental health problems.* MSc Early Action, Preston: University of Central Lancashire.

CUMMINS, I. & EDMONDSON, D., 2015. Policing and street triage. *The Journal of Adult Protection,* **18**(1), pp. 40-52.

DEPARTMENT OF HEALTH AND CONCORDAT SIGNATORIES, 2014. *Mental health crisis care concordat - improving outcomes for people experiencing mental health crisis.* London: HM Government.

DYER, W., SEER, M. & BIDDLE, P., 2015. Mental health street triage. *Policing,* **9**(4), pp. 377-387.

EARLY ACTION TASK FORCE, 2016. *Thriving minds: acting early on mental health.* London: Community Links: Early Action Task Force.

ELLISON, M., HALEEM, M. & BANNISTER, J., 2018. *Qualifying the volumes of mental ill health incidents dealt with by GMP.* Manchester; Greater Manchester.

HMICFRS, 2018. *Policing and mental health: picking up the pieces.* London: HMICFRS.

HORSPOOL, K., DRABBLE, S. & O'CATHAIN, A., 2016. Implementing street triage: a qualitative study of collaboration between police and mental health services. *BMC Psychiatry,* **16**, pp. 313-324.

KIRBY, S., BOULTON, L., FRAMPTON, C., ISHERWOOD, L., OKEKE, R. & SHORROCK, S., 2017. *The early action programme: final evaluation.* Preston: University of Central Lancashire, Lancashire Constabulary, and Lancashire County Council.

REVERUZZI, B. & PILLING, S., 2016. *Street triage: report on the evaluation of nine pilot schemes in England.* London: University College London.

SENIOR, J., NOGA, H. & SHAW, J., 2014. When two worlds collide: a twenty-firs century approach to mental health and policing. *Criminal Behaviour and Mental Health,* **24**, pp. 81-85.

APPENDIX ONE: Analysis of Mental Health Qualifiers

Introduction

To understand how mental health cases were identified by the police, both mental health tags and qualifier were identified across the sample. Mental health tags related to the tagging of an incident during the initial officer response, whereas qualifiers were applied by the call handler when closing an incident log to determine whether mental health was a factor within the incident. Both were initially examined to establish what proportion of the 52,937 cases extracted using the mental health key word search were also recognised by police staff. Table 1 below illustrates the proportion of cases that carried a mental health tag and qualifier.

Table 1: Proportion of the total sample that carried a mental health tag and qualifier.

	n	*%*
MH Tags		
Present	91	0.2
Not Present	52,846	99.8
MH Qualifiers		
Present	6,924	13.1
Not Present	46,013	86.9

There appeared to be a very low frequency of mental health tags across the sample. This was likely due to their purpose, as tags were applied during the response and were often temporary indicators for practical use. This meant there was a high probability that tags were removed throughout the incident when the initial situation had been dealt with by officers, perhaps explaining the low frequency across the sample. This could have included when any mental health issues were appropriately handled, as well as officers discovering there was no mental health issues present when they arrived on scene. Unlike tagging, mental health qualifiers were recorded when closing the case to indicate when mental health may have been a factor within the incident. Due to their purpose, the qualifiers appeared to be a consistent recording of mental health and in reflecting police staff identification of mental health issues.

As such, only the qualifiers were used for further inferential analysis as there was more certainty as to whether police staff thought there was or was not mental health involved. This differed from tags as it was not clear how many cases may have had tags that were later

removed. Therefore, the report further examines the mental health qualifiers over the variables: BCU; response grade; day of the week; time of the day; and key words. This was to establish an understanding of how mental health was being identified by police staff, and whether qualifiers were more likely to be associated with certain types of mental health demand.

Results

BCU and Response Grade

The analysis first examined whether mental health qualifiers were more prominent across any of the three BCUs. Chi square analysis found no significant association between mental health qualifiers and BCU, with each command unit falling within expected frequencies (p >.05).

However, when examining mental health qualifiers over the different grades of response, the test found that higher grade responses were more likely to have mental health qualifiers, χ^2 (2, n = 52,937) = 682.331, p <.001. The results illustrated that immediate and high priority responses (grades 1 and 2) were significantly more likely to have mental health qualifiers, when compared to both standard priority responses (grade 3) and Scheduled/Resolution without deployment (grades 4 and 5) (see Table 2 below).

Table 2: Frequency, proportion and expected frequency of mental health qualifiers across the grades of response.

	Immediate/High Priority Response (Grade 1 & 2)	Standard Priority Response (Grade 3)	Scheduled/ Resolution without Deployment (Grade 4 & 5)	Total
MH Qualifier Present	3,917	1,096	1,911	**6,924**
	(56.6%)	(15.8%)	(27.6%)	**(100%)**
Expected Count	*2,966*	*1,760*	*2,198*	***6,924***
No MH Qualifier	18,758	12,369	14,895	**46,013**
	(40.8%)	(26.9%)	(32.4%)	**(100%)**
Expected Count	*19,709*	*11,696*	*14,607*	***46,013***

Day of Week and Time of Day

There was no significant association between the use of mental health qualifiers and whether the call was on a weekday or weekend ($p > .05$).

Conversely, there was a weak significant association that illustrated how qualifiers were more likely to be placed on calls reported in the nighttime (18:00hrs - 05.59hrs), in comparison to in the daytime (6am – 5.59pm), χ^2 (1, $n = 52,937$) = 10.158, $p < .01$ (see Table 2 below).

Table 2: Breakdown of mental health qualifiers applied to calls occurring in the daytime and nighttime.

	No Qualifier	MH Qualifier Used	Total
Daytime	25,078	3,632	28,710
	87.3%	*12.7%*	*100%*
Nighttime	20,935	3,292	24,227
	86.4%	*13.6%*	*100%*

Type of Mental Health

To first understand how the key words interacted with one another, a correlogram was developed to visualise the correlational relationship between the mental health key words across the sample (see Figure 1). The correlogram was developed as a visual aid only and did not consider inferential testing between the key words.

Figure 1: Correlogram of the recorded mental health key words.

	ADHD	Alzheim	Autism	Depress	Anxiety	OCD	Paranoi	PTSD	Persona	Psychos	Schizop	S135/13	Overdo:	Mental Health
ADHD														
Alzheimers/Dementia														
Autism														
Depression														
Anxiety														
OCD														
Paranoia														
PTSD														
Personality Disorder														
Psychosis														
Schizophrenia														
S135/136														
Overdose/Selfharm/Su														
Mental Health														

Key

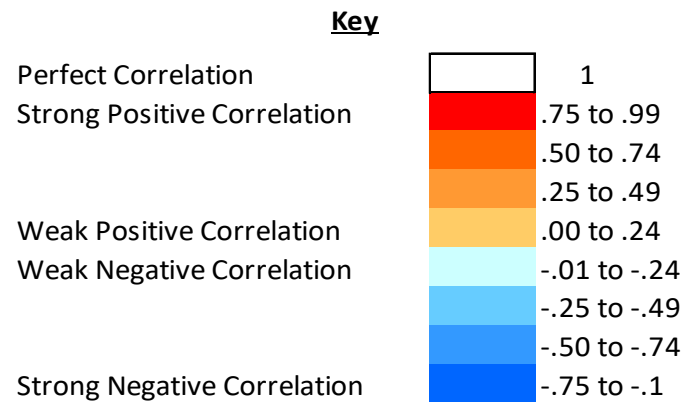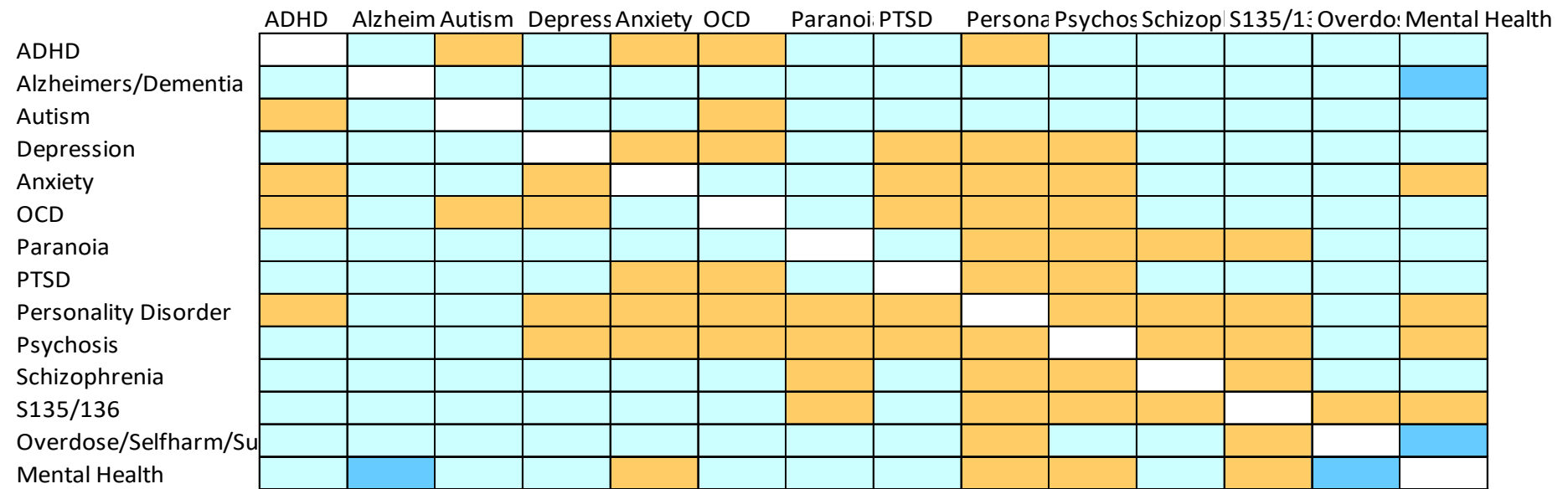| Perfect Correlation		1
Strong Positive Correlation		.75 to .99
		.50 to .74
		.25 to .49
Weak Positive Correlation		.00 to .24
Weak Negative Correlation		-.01 to -.24
		-.25 to -.49
		-.50 to -.74
Strong Negative Correlation		-.75 to -.1

Figure 1 illustrated that there was a weak negative correlation amongst majority of the key words, suggesting that they were likely to be relatively exclusive in their application across the sample. However, there was a slightly stronger negative correlation between the key word 'mental health' and two other key words 'Alzheimers/dementia' and 'Overdose/Self harm/Suicide'. This suggested that the key word mental health appeared less often in cases where 'Alzheimers/dementia' and/or 'Overdoes/Self harm/Suicide' were mentioned.

To understand which key words were associated with the presence of mental health qualifiers, binary logistic regression was conducted. The analysis examined the dependent variable of mental health qualifiers (0 - Not Present; 1 - Present) through 14 explanatory variables related to the key word search, including: mental health; overdose/self-harm/suicide; depression; Alzheimer's/dementia; autism; paranoia; ADHD; Schizophrenia; S135/6; PTSD; personality disorder; psychosis; OCD; and anxiety disorder. Whilst the model was statistically significant, χ^2 (14) = 1348.963, p <.001, it provided little explanatory power (4.7%) of the variance in applying qualifiers to cases (Nagelkerke R^2 = .047). This was largely due to the model not being a good fit for the data.

However, the regression illustrated how calls involving 'autism' and 'ADHD' were significantly less likely to have a mental health qualifier within the sample. In comparison, calls with the key words 'mental health' and 'S135/6' were 2.5 times more likely to receive a mental health qualifier than cases without the key words present. 'Alzheimer's/dementia' was 1.9 times more likely to receive a qualifier; 'psychosis' was 1.7 times more likely; and 'overdose, self-harm, and suicide', 'paranoia', and 'Schizophrenia' were 1.5 times more likely to receive a mental health qualifier within the sample (see Table 3 for more detail).

Table 3: Mental health key words across the sample broken down by the presence, proportion and odds ratio of qualifiers being attached to that key word.

Mental Health Theme	Total Frequency across Sample	MH Qualified Cases	%	Odds Ratio (exp. β)
Mental Health	34,558	5,464	15.8	2.6***
Overdose, Self-harm, and Suicide	14,431	2,050	14.2	1.5***
Depression	5,028	579	11.5	1.0
Alzheimer's/Dementia	3,746	502	13.4	1.9***
Autism	2,795	159	5.7	0.7***
Paranoia	2,784	482	17.3	1.5***
ADHD	1,818	98	5.4	0.6***
Schizophrenia	1,676	318	19.0	1.5***
S135/6	1,279	364	28.5	2.4***
PTSD	939	102	10.9	1.0
Personality Disorder	837	141	16.8	1.2*
Psychosis	716	152	21.2	1.7***
OCD	164	17	10.4	1.0
Anxiety Disorder	27	4	14.8	1.1

*p <.05; **p <.01; ***p <.001.

Conclusion

The appending analysis aimed to explore the use of mental health qualifiers across the 52,937 cases identified with mental health key words. From the total identified, qualifiers were present in 13.1% (n = 6,924) of cases. When the figure was applied to the yearly population of incidents of 2018 (n = 577,076), it represented a proportion of 1.2%. This would appear consistent with previous research in the Metropolitan Police Service, whereby an examination of four million calls in 2011-12 resulted in the identification of 1.5% (n = 60,306) being 'flagged' as mental health (Stanko, 2012; in Adebowale, 2013).

This further supports the argument made within the main report, which was that the proportion of cases identified as mental health is largely influenced by the method used to identify cases. Throughout the report, the examination of qualifiers found proportions similar to the study of cases in the Metropolitan Police. Conversely, the mental health key word search found larger proportions of mental health cases in Lancashire Constabulary, but that were consistent with previous research using a similar methodology (Kirby *et al.,* 2017; Crorken, 2017). As the previous two methods of counting mental health cases found a similar proportion of cases to that found in previous research using the same methods, it is further hypothesised that developing an algorithm to identify behaviour alongside key mental health words would return a minimum of 10% of cases being identified as mental health, consistent with findings by Ellison *et al*. (2018).

With regards to the characteristics of mental health qualified cases, the results demonstrated that there was no significant association between BCU and day of the week. However, there was a weak significant association indicating that mental health qualifiers were significantly more likely to be used on calls that occurred in the nighttime (18:00hrs - 05:59hrs); however, the overall number of qualified cases was higher during the daytime. This relationship relates back to the different types of demand outlined in the main report, since it was the 'intense early hour' demand that appeared more likely to attract qualifiers in comparison to the 'bulk afternoon demand'.

The above point was also supported by the stronger significant association indicating that mental health qualifiers were more likely to be attached to grade 1 (immediate) and grade 2 (high priority) responses. The likely explanation for the finding is that in cases where mentally ill health led to behaviour requiring a high priority response, the case was significantly more likely to receive a qualifier as it formed a major part of the incident,

requiring officers to do something "additionally or differently" (Email: Chief Inspection Michael Brown, NPCC Mental Health Coordinator, 2018) as the main part of the incident.

The regression analysis of the key words found that cases involving the word autism and ADHD were significantly less likely to receive a mental health qualifier. The lower likelihood of qualifiers in autism and ADHD may have several explanations. For example, the main report outlined several false positive results, whereby the key word 'autism' was found to relate to an individual collecting money for a fake autism charity. As mental health was not a main feature in this case (as well as other potential false positives), it is likely that these circumstances would not have attracted a qualifier. In addition to false positives, the themes of autism and ADHD are more commonly recognised in young adults and children (Brugha *et al*., 2009; NHS, 2018). As such, it may be that these cases presented different circumstances in comparison to cases involving other mental health themes, such as Alzheimer's/dementia or Schizophrenia. Whilst the former may be more likely to involve children under the care of adults or as additional information within a non-mental health related incident, the latter may have presented more urgent incidents or "nuisance" behaviour that required the attendance of officers (Kane & Evans, 2018). Mental health themes that were more likely to include qualifiers were Alzheimer's/dementia, psychosis, overdose/self-harm/suicide, paranoia, and Schizophrenia. In such cases, the key words could pertain to adults or elderly adults who could have been more likely to display behavioural issues that required the police to do something "additionally or differently" in many of the cases.

References

ADEBOWALE, V., 2013. *Independent commission on mental health and policing report.* London: Independent commission on mental health and policing.

BRUGHA, T., MCMANUS, S., MELTZER, H., SMITH, J., SCOTT, F., PURDON, S., HARRIS, J. & BANKART, J. (2009) *Autism spectrum disorders in adults living in households throughout England: report from the Adult Psychiatric Morbidity Survey 2007.* Leeds: NHS Information Centre for Health and Social Care

CRORKEN, F., 2017. *What difference an intervention makes: comparing the effectiveness of interventions on the continued demand for police services from people experiencing mental health problems.* MSc Early Action, Preston: University of Central Lancashire.

ELLISON, M., HALEEM, M. & BANNISTER, J., 2018. *Qualifying the volumes of mental ill health incidents dealt with by GMP.* Manchester; Greater Manchester.

KANE, E. & EVANS, E. (2018) Effectiveness of current policing-related mental health interventions: A systematic review, *Criminal Behaviour and Mental Health 28*(2), 108-119.

KIRBY, S., BOULTON, L., FRAMPTON, C., ISHERWOOD, L., OKEKE, R. & SHORROCK, S., 2017. *The early action programme: final evaluation.* Preston: University of Central Lancashire, Lancashire Constabulary, and Lancashire County Council.

NHS. 2018. *Overview: Attention deficit hyperactivity disorder (ADHD).* (Accessed 30th April 2019). Available at: https://www.nhs.uk/conditions/attention-deficit-hyperactivity-disorder-adhd/