Ethics Committee Briefing Note

Project Reference: DAL_2018_0002_Priorities
Purpose of data analysis: WMP's response to demand is a key strategic priority and is noted in several areas of the Improvement Plan 2019-20; the target within the improvement plan for P1 immediate responses is for the median response time to be below 13 minutes. With this in mind, the broad aims of the project are to investigate the "best" mix of crew type in order to help achieve an optimal response (i.e. the best form of response to priority events whilst being able to maintain response times, etc.).
Source of analytical question / hypotheses to be examined: The business question was posed by the FET.

Data to be used:
 	
The data used for this project principally come from the OASIS logs (the event logging system), Crimes (crimes committed) and the GRS system (data relating to officers and staff). A sample of data from the Telematics system (GPS in cars) will also be used to inform the analyses.
 	
Level of analysis:
 	
☐ Individual
    Individuals aggregated?
    ☐ Yes
    ☐ No
☐ Specific Area:
    ☐ Output Areas
    ☐ Super Output Areas - Lower
    ☐ Super Output Areas - Mid
    ☐ Wards
    ☐ Districts
☑ West Midlands
☐ Other

Reliability of data: The data are sourced from the core WMP systems. The data have been cleaned, parsed and put into tabular formats. Missing values, etc. have been identified (missing information is the main reason for using the sample of data from the Telematics data). As far as possible, discussions with subject matter experts (SMEs) have enabled identification of some of the issues with the data and the relationship between the various datasets. **Sample or entirety:** Predominantly in entirety – the exception is the Telematics data which will be a sample as the system does not allow bulk extracts and a manual process is required to extract the data.

If sample:

Method of sampling:

A random sample (randomised over call signs) with a specific selection of those call signs that have undertaken a larger than average number of trips (as identified via the analyses undertaken to date).

Method of choosing sample size:

Based on the requirements of the analyses (the relationship between the end of an event to which responses resources have been deployed and how this is reflected in the OASIS system).

Sample size:

Circa 30 call signs (circa 3% of call signs)

Type of analysis:

☑ Exploratory
☐ Explanatory
☐ Predictive
☑ Optimisation

Proposed methodology:

Data from the OASIS system (the dispatch time, priority, etc.) are taken from the OASIS logs (requiring parsing information from the logs' free text and other fields). These are then related to the Crimes data (for the outcome code, etc.).

In order to undertake optimisation simulations are being constructed whereby different configurations of crew size, event type, day of week, etc. will be assessed in terms of their impact upon response times, risk posed to officers and the ability to come to a successful conclusion. These simulations will be undertaken for the time period of the analyses and are not used in a predictive fashion.

Essentially, the question is to minimise response time subject to minimising resource requirements, maximising solvability, taking event complexity into account and minimising the risk posed to officers (hence using data from the GRS system as there is a need to identify the risk posed to officers).

Will the project eventually be automated:

☐ Yes
☑ No

Means of evaluation:
NA

ALGO-CARE considerations:

Advisory:

If applicable, are the outputs from the algorithm to be used in an advisory capacity?

The simulation will allow scenario type questions to be asked and how these may affect the factors of interest. In turn, these factors can be varied (and limits placed on them) in order to ascertain a minimisation of response time to particular events.

The findings from the simulation will be used to provide information as to the potential effects of broad policy decisions and the nature of response.

It will not be used in an advisory capacity on a regular time basis or in a predictive sense.

Does a human officer retain decision-making discretion?

Not applicable.

Lawful:

What is the policing purpose justifying the use of the algorithm (means and ends)?

The purpose is to enable an assessment of the potential to optimise resource use (and what this may mean for policies around resource utilisation).

Is the potential interference with the privacy of individuals necessary and proportionate for legitimate policing purposes?

There is a need to access the injury / health records of officers in order to link these back to events where injuries have been experienced. This is necessary to calculate the risks to officers. The records of WMP staff are also used so that these can be used as comparators for similar health issues (those of staff are aggregated) which allows for a better indication of the risk to response officers.

These analyses could not be undertaken and take risk to officers into account if these data were not used.

In what way will the tool improve the current system and is this demonstrable?

There is no system currently in operation that allows for this type of analysis.

Are the data processed by the algorithm lawfully obtained, processed and retained, according to a genuine necessity with a rational connection to a policing aim?

The underlying data are gathered as part of the normal day-to-day operations of WMP via the

system currently in use to manage response and the events to which they are dispatched.

Is the operation of the tool compliant with national guidance?

The analyses proposed would accord with DCMS Data Ethics Framework 2018.

Granularity:

Does the algorithm make suggestions at a sufficient level of detail given it's purpose and the nature of the data processed?

Within the simulations, whilst an individual (simulated) event or response could be examined, the purpose is to identify patterns in aggregate and ways in which, subject to some factors (e.g. day of week) being manipulated, response times and resource use could be minimised. Given this, analyses at the aggregate level are appropriate.

Are data categorised to avoid broad-brush grouping and results and therefore issues of potential bias?

Categorisations are undertaken for response type (type of crew) and event types (the priority and, where available from the data, the type of event). Whilst the analyses will be on guard against the potential for paradoxical results that may arise from categorisation these are unlikely to be seen. The analyses do not cover non-WMP individuals.

Do the potential benefits outweigh any data quality uncertainties or gaps?

The analyses may enable the identification of a 'maximal' use of resources and this is why, for example, use of a sample from Telematics data is to be used to make the data for the simulations as accurate as possible.

Is the provenance and quality of the data sufficiently sound?

Whilst the underlying data do have some gaps these are the only data available and use of the Telematics sample data and discussions with SMEs will enable many of these identified issues to be addressed as much as possible.

If applicable, how often are the data to be refreshed?

Not applicable.

If the tool takes a precautionary approach in setting trade-offs, what are the justifications for the approach taken?

Not applicable.

Ownership:

Who owns the algorithm and the data analysed?

WMP owns the analyses and the underlying data.

Does WMP need rights to access, use and amend the source code and data?

No.

Are there any contractual or other restrictions which might limit accountability or evaluation?

No.

How is the operation of the algorithm kept secure?

The data and the analyses are contained wholly within the WMP Hadoop system and the security measures employed therein. The type of analyses do not lend themselves to on-going operation (in an automated fashion).

Challenge:

What are the post-implementation oversight and audit mechanisms, e.g. to identify any bias?

Not applicable.

If the algorithm is to inform criminal justice disposals, how are individuals notified of its use?

Not applicable.

Accuracy:

Does the specification of the algorithm match the policing aim and decision policy?

The nature of the analyses chosen have been determined to be the best means of addressing the research question.

Can the accuracy of the algorithm be validated periodically?

No applicable.

Can the percentage of false positives / negatives be justified?

Not applicable.

How was the method chosen as opposed to other available methods?

Due to the nature of the research question (optimisation as opposed to, for example, prediction).

What are the (potential) consequences of inaccurate forecasts?

Not applicable.

Does this represent an acceptable risk?

Not applicable.

How are the results checked for accuracy and how is historic accuracy fed back into the algorithm

for the future?

Not applicable.

How would inaccurate or out-of-date data affect the result?

If data were to be wholly inaccurate then the analyses would essentially provide inapplicable findings. The Lab has sought to minimise this potential through a thorough analysis of the data and their pitfalls, issues and overall nature; through discussions with SMEs (including as to how certain types of events are approached , their makeup, how long they take, etc.) and through the acquisition of a sample of Telematics data. The simulations are also being developed just the latest 1 years' worth of data which should also help avoid changing data entry, etc.

Responsible:

Would the operation of the algorithm be considered fair?

The analyses will be fair in that every data point will be considered on its own merits.

Is the use of the algorithm transparent (taking account of the context of its use), accountable and placed under review?

Any assumptions used and 'feed-in' modelling will be documented and available for perusal where appropriate.

Would it be considered to be used in the public interest and to be ethical?

With demand increasing and available resources tightening, the ability to understand how resources may be optimised (and what this could look like) would better enable WMP to meet the needs and expectations of the public.

Explainable:

Is information available about the algorithm / decision-making rules and the impact of each feature?

Information regarding the approach(es) taken and any assumptions made could be made available where appropriate. There will be no features or feature importance due to the nature of the type of analysis.