



Home Office

Impact of Forensic Science

Study Initiation Document - Template

For use to design Forensic Impact Studies using the Impact Point Model

(Italicised text provides instructions to support you to design your study)

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Impact of Forensic Science on the CJS

Impact of Forensic Science Project Background

Forensic Science is vital to the investigation of crime and the efficient and effective operation of the Criminal Justice System (CJS). Anecdotal evidence is that it can greatly improve outcomes for police investigations and the CJS.

The 2016 Home Office Forensic Science Strategy noted **“Research into the contribution that forensic evidence makes to the investigation of crime is limited [...]. There is a need for in-depth analyses to enhance our understanding of the specific contribution of forensic science to the CJS [...], in terms of deterrence, increased prosecutions and convictions, and maintaining legitimacy and impartiality.”**

Similarly, the 2019 Joint Review of Forensic Science Provision found **“The evidence base on the use and impact of forensic science is not extensive, but it does indicate that it has an important role to play in a number of areas, including the detection of ‘hard to solve’ cases, and in the apprehension of prolific offenders. While assessing the impact of forensic evidence is challenging, some measures to indicate its value to criminal justice outcomes would be strongly preferable to reliance on anecdotal feedback.”**

In 2020 the Home Office initiated the Impact of Forensic Science Project to develop a model to allow the impact of forensic science across the CJS to be measured quantitatively. Since then, the project has undertaken extensive cross CJS stakeholder engagement and developed an approach to measuring “Impact” that focusses on a series of detailed “Impact Points” (Impact Point Model). This approach has been tested in a series of proof-of-concept studies. The project has now created a toolkit to allow the use of that model to generate evidence on forensic impact.

Impact of Forensic Science Project Aims

The Impact of Forensic Science project aims to introduce a reliable method of assessing the efficiency (effectiveness and timeliness) of any forensic discipline (both physical and digital), which can be applicable to any crime type. Data analysis using this model provides evidence on the effectiveness and timeliness of the utilisation of a forensic discipline or disciplines in different crime types.

This evidence can enhance our understanding of the impact of forensic science and “what works”. It can also help to inform decisions regarding the effective use of forensic science and factor that impact that effectiveness. This evidence is needed to:

- allow the creation of robust forensic policies and strategies, both by government and their CJS partners of policing and the CPS,

- inform investment and resourcing decisions,
- measure the benefits of the changes enacted by those policies and decisions,
- identify best practice along with opportunities to standardise national approaches,
- identify missed opportunities to take advantage of potential forensic value.

Your Study's Aims

Describe here what your study aims to measure. The model is designed to study the impact of a named forensic discipline (or collection of forensic disciplines) on the investigation and/or prosecution of a named crime type (or collection of crime types). As a sophistication of this you may want to compare different operational approaches (such as submission policies) to delivering that forensic discipline; or compare the metrics for different forces/areas; or the metrics before and after a change (such as the introduction of a training course or additional staffing for example).

Examples might be:

“This study aims to measure the impact of digital forensics on the investigation of RASSO cases in X Police force. We will focus on the analysis of mobile phones. This study is designed to baseline what that impact is.”

“This study aims to measure the impact of fibre analysis on the investigation and prosecution of domestic abuse cases. It will look at that impact both before and after the introduction of a specialised awareness training course for SIO's to understand the impact of that course”

“This study is designed to measure the impact of DNA profiling on the investigation and prosecution of stranger rape cases. It will compare the impact achieved between force A and force B to identify best practice. We will capture information about the exhibit types and victim/offender relationships so that we can understand the potential effect of both of those factors on the impact achieved.”

Dataset requirements and information

Impact points (IPs)

The list of Impact Points, below, identifies where and when forensic science has the capability to contribute during an investigation, charging decisions or the court process. Each impact point has an associated Question Posed (QP). Decide which Impact Points are most relevant to your research study and delete those that are not relevant. The more you measure, the more nuanced your findings should be, however, the more IPs you include, the more resource intensive your data capture will become so prioritisation is important.

1. **Establish crime committed:** Confirming or refuting that the reported crime has occurred. – Question Posed (QP) “Can we determine if a crime has been committed?”
2. **Identify victim:** The process of Identifying who a victim is. – QP “Can we determine who is the victim of this crime?”
3. **Victim assurance (pre-charge):** The provision of reassurance and confidence to a victim of a crime that an investigation is proceeding. – QP “Can we positively contribute to victim assurance?”
4. **Safeguarding:** The protection of vulnerable individuals, especially victims, from additional negative impacts of crime. – QP “Can we positively contribute to safeguarding individuals?”
5. **Establish cause of death:** To determine how an individual died. – QP “Can information be provided that establishes the cause of death?”
6. **Generate intelligence:** A broad category to cover the developing of information and material that will progress an investigation. – QP “Can we develop information that will assist the progression of the investigation of this or other crimes?”
7. **Link scenes:** Provision of evidence that links separate locations that may be involved in the same crime. – QP “Is there any evidence to link different scenes in this crime?”
8. **Link crimes:** Provision of evidence that links separate crimes that may be involved in a series of crimes. – QP “Is there any evidence to link other crimes to this crime?”
9. **Generate line of enquiry:** Provide a thread of reasonable and relevant questions to be asked in the investigation of a crime including provision of hypotheses. – QP “Is there information that could generate a line of enquiry?”
10. **Identify person of interest:** To provide information about an individual that may have an involvement in a crime, either as a perpetrator or as a witness. – QP “Can information be provided about who was involved, either as a perpetrator of, or a witness to, this crime?”

11. **Inform interview strategies:** Providing information that can be used to formulate an approach to questioning suspects and witnesses. – QP “Can we determine information that will inform our interview strategy?”
12. **Eliminate suspect (pre-charge):** The provision of evidence that excludes an individual as a suspect of perpetrating a crime prior to proceeding to any formal charges. – QP “Can information be provided about whether an individual was definitely not involved as a perpetrator of this crime?”
13. **Classify a firearm as illegal:** To determine the classification of a firearm and whether it is illegal under the Firearms Act. – QP “Can evidence be provided about whether this firearm is an illegal weapon?”
14. **Classify a drug as illegal:** To determine the identity of a drug and whether it is proscribed under the Misuse of Drugs Act. – QP “Can evidence be provided about whether this substance is an illegal drug?”
15. **Determine if drink/drug is over the limit:** Measuring the level of alcohol and/or drugs in an individual’s breath, saliva, blood or urine to determine if they are over the proscribed limit for driving. – QP “Can we determine if the individual is over the proscribed limit for drink and/or drugs?”
16. **Validate or refute accounts/sequence of events (pre-charge):** Provide information that may support (or otherwise) the witness or suspect’s version of events including the order that events occurred in prior to any formal charges being put for consideration. – QP “Can we validate or refute this account of events?”
17. **Admission of guilt (pre-charge):** Provide information to investigators that leads to a suspect admitting that they have committed an offence prior to any formal charges being put for consideration. – QP “Was evidence provided that led to a suspect admitting their guilt prior to them being charged with the offence?”
18. **Referral for charging:** Provide evidence that leads to referral of a case to the CPS for charging advice. – QP “Can evidence be provided that will directly lead to the referral of case for charging?”
19. **Charge:** Sufficient evidence to provide a realistic prospect of conviction a decision to charge is made. Depending on the type and seriousness of the offence committed, this decision is made by the police or the CPS. – QP “Can evidence be provided that will directly lead to a charge?”
20. **Disclosure:** To ensure that all parties are aware of the information that has been collected (either used or unused) as part of the investigation and prosecution of a crime.
21. **Validate or refute accounts/sequence of events/address issues (post-charge):** Provide information that will support (or otherwise) defendant’s version of events including the order that events occurred in after charging. – QP “Can we validate or refute this account or challenge to the evidence?”
22. **Eliminate suspect (post-charge):** The provision of evidence that excludes an individual as a suspect of perpetrating a crime after they are charged, and they have

responded to the evidence served on the defence. – QP “Can information be provided about whether an individual was definitely not involved as a perpetrator of this crime?”

23. **Guilty plea:** Provision of evidence that leads to a suspect admitting that they have committed an offence once they have been formal charged with that offence. – QP “Was evidence provided that contributed to a suspect admitting their guilt after they were charged with the offence?”
24. **Guilty:** When a defendant is found Guilty of a crime by the Magistrates or Jury. – QP “Did the evidence impact on the Guilty finding?” *(Note: there is little prospect of being able to measure this impact as jurors cannot be interviewed. Consider capturing as a factual finding/impacting Factor and look for associations with utilising forensic science.)*
25. **Sentence:** The impact made to the length or type of sentence imposed on an offender by a Judge or Magistrates. – QP “Did the evidence provided influence the sentence?”
26. **Not guilty:** When a defendant is exonerated of crime by the Magistrates or Jury. – QP “Did the evidence impact on the Not Guilty finding?” *(Note: there is little prospect of being able to measure this impact as jurors cannot be interviewed. Consider capturing as a factual finding/impacting Factor and look for associations with utilising forensic science.)*
27. **Victim assurance (post-charge):** The provision of reassurance and confidence to a victim of a crime that in the justice process. – QP “Can we positively contribute to victim assurance?”

The above questions posed/QP’s would have a binary “yes” or “no” response, with “yes” meaning that forensic science had contributed to answering the question posed and having value and “no” meaning it had failed to do so and having no value.

Type of impact being measured

The key metrics of the Impact Point Model so far can be distinguished in two main categories according to the impact they measure. Indicate here if you intend to measure each or one of them:

- **Effectiveness:** how often forensic science positively contributes to answering a question posed at an Impact Point.
- **Timeliness:** how quickly forensic science answers (or fails to answer) the question posed at an Impact Point.

Units of measurement

Your study heavily depends on quantitative data that can be extracted from Police reports or other sources, which allow meaningful measurements and comparisons. By example the study may primarily measure the following (delete as appropriate):

- **Effectiveness:** Number (Count) of instances when forensic science provided an answer to a question posed for a specific impact point (positive contribution), e.g. It helped investigators to establish that the crime was committed (“Can we determine if a crime has been committed?” – Impact Point 1). Effectiveness can be also expressed as the percentage (%) of positive contributions out of the overall instances of impact recorded on a dataset. The use of percentages makes the results of a study more comprehensive and comparable to similar figures from other studies.

Note “Instances of impact” will need to be defined here. This should represent the opportunities that forensic science is given to contribute, for example for “eliminate suspect this should be each individual instance where an individual has been eliminated (or not) rather than a single entry per case.

Evidence provided by forensic science can be either critical (totally contributing) or supporting (partially contributing) to answering a question. Both types of evidence are regarded as positive contributions.

- **Timeliness** – Number of days or hours taken for a forensic investigation (duration). Ideally timeliness is measured from the point in time when forensic science is commissioned until the delivery of that evidence

Note that for some impact points the evidence delivery may be completion of this analysis delivered for example by a verbal or interim report. Try to describe that here prior to gathering your data). The available dataset may impose certain limitations.

The choice of measurement unit (days / hours) depends on what is more appropriate for each dataset. Keeping the same unit for the entire study is important for data analysis. In terms of data validity, delays in the commencing of the forensic investigation should be considered in this measurement but delays in commissioning the work should not be. The study measures how fast forensic science can produce results. For example, if CCTV was accessed ten days after the crime and the CCTV footage analysis took one day, the right value for timeliness is 1, not 11, as the 10-day delay is unrelated to the forensic investigation itself. However, if the CCTV footage is recovered and submitted on day 1 but not analysed until day 11 and completed that same day, then the right value for timeliness is 11.

Sample size

Detail your sample size here. The minimum recommended sample size is 200 instances but the bigger sample size the better.

Large samples can:

- *be more representative,*
- *allow analysis of multiple variables and*
- *lead the findings to be more statistically significant.*

It is important to avoid selection bias and so ensure your sample selection method avoids this (see below).

Date range

Detail your date range here. Any date range can be chosen as long as it includes a significant number of instances (suggested to be over 200, please see “Sample Size”). For the avoidance of selection bias, all the instances that occurred within the chosen date range should be included.

Location(s)

Detail the location(s) of your study here. Single or multiple police forces, or an area within a single police force can be selected. For the avoidance of selection bias, all the instances that occurred within the chosen area and date range should be included.

Crime type(s)

Detail your study’s crime type(s) here. It is recommended that you confine your study to a single crime type or closely related set of crime type, as the type of crime impacts on forensic science’s ability to have impact. If you are studying more than one crime type you will need to increase the number of instances measured and ensure you analyse your metrics broken down by crime type to understand the impact that crime type is having.

Forensic discipline(s)

Detail your study’s forensic disciplines here. If you are studying more than one discipline you may need to increase the number of instances measured and ensure you analyse your metrics broken down by discipline to understand the impact that has had on your findings.

Non-Forensic discipline(s)

Depending on the nature of your study, you may wish to collect information about non-forensic interventions used (examples might be eyewitness accounts or ANPR) in the context of the impact points and the instances you are capturing. You might want to capture these collectively as a single recording or be more granular and record different types of intervention separately. Either can provide you with useful information on how forensic science interacts with non-forensic methods and allows you to generate “exclusive effectiveness” metrics which describe where forensic science was the only method of deriving impact. The counter to this extra detail is that this can add to the burden of data capture.

If you are going to capture non-forensic data, then detail your study’s approach here.

Background information

Capture high level local policy(ies) on the use of the forensic discipline(s) in the context of the crime type(s) you are studying – for example what policies are there on the sequencing/decisions about scene attendance or when an exhibit is seized/submitted? This gives context to your study and means it can be compared to other studies while still understanding what might differ between local approaches to using forensic science.

Other impacting factors

Describe here the other details you want to capture in your data set to make your data more meaningful. Impacting factors describe the things that impact on forensic science and affect its ability to deliver value. Try to keep these limited to factors that have binary or a limited number of variable responses. For example, “Exhibit location” is an impacting factor and “Indoors/Outdoors” could be the binary variable responses of that factor. “Triage used?” is an impacting factor and “yes/no” are the binary variables of that factor.

As well as capturing factors that impact on forensics science you may want to consider capturing “Final CJS outcome” and “Outcome in court”. Again you need to have clearly define acceptable responses and these should be listed here.