Utilising AI technology to improve modern slavery survivor support

Research summary

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PROJECT RESTART

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Acknowledgements:

Background

Since the introduction of the National Referral Mechanism (NRM), the UK's dedicated framework for identifying and supporting survivors of modern slavery, conversations have focused on its effectiveness in meeting survivor support needs. Arising out of the recognition that the UK still falls short of adequately protecting survivors of modern slavery, project Reporting Experiences of Survivors to Analyse in Real-Time (RESTART) sought to provide a proof of concept for a new, and more effective, method for understanding survivors' needs. To that end, we were led by four research questions:

1. **How can support workers, researchers and policy makers harness AI capabilities to provide faster, more effective and efficient insights into the support requirements of modern slavery survivors?**

2. **If AI is beneficial in gaining insights, what are the recommended methods for its utilisation, and what challenges does it present?**

3. **Does technology serve as a viable platform for survivors to contribute their lived experiences and expertise in shaping modern slavery services authentically?**

4. **What are the prevailing support needs amongst survivors of modern slavery?**

RESTART employed an innovative blend of artificial intelligence systems, data analytics and interactive mobile applications to analyse large datasets related to survivor support needs. Project RESTART used Natural Language Processing (NLP), an AI technology, to analyse large and complex data sets held by Causeway, a charity that supports survivors of modern slavery, that would otherwise remain underutilised due to resource constraints. Survivors were consulted on the design and use of NLP through a Lived Experience Advisory Panel.

Recognising the authority of survivors in comprehending their own needs and proposing solutions, RESTART introduced a novel approach to integrating survivor voices in research. This approach empowered survivors to actively document their individual experiences and assess their own needs and goals via a smartphone app (called MeL) over a four-month period. Subsequently, the data generated by survivors underwent analysis using NLP techniques.

By leveraging AI techniques, particularly NLP, this research emphasises the potential advantages of using technology to handle large volumes of data and bypass manual analysis to inform insights and proposals regarding survivor needs. It also highlights technology as a new avenue for survivors to actively shape support services and policy recommendations.

Key findings

On the use of AI technologies to analyse modern slavery-related data sets:

1. Whilst substantial resources are initially required for training and validating NLP models, once established, data can be analysed rapidly. In the long term, investing in NLP is both efficient and effective for stakeholders seeking deeper insights into modern slavery and human trafficking, and its impact.

2. Natural Language Processing is an effective tool for uncovering insights from textual data, such as survivors' stories, and can identify the types of support needed by survivors of modern slavery. However, it may be less effective when analysing culturally specific language. Human involvement is crucial in supporting survivors by overseeing the insights derived by AI technology, determining the *so what,* and providing direct support.

3. Survivor needs identified using NLP are consistent with the needs identified by conventional methods. However, NLP enables this identification to be conducted at scale and in real-time.

On the use of mobile app technology in delivery of support for modern slavery survivors:

4. Access to an appropriate app yields benefits to survivors of modern slavery by providing a space where they can record their recovery journey, and thoughts and feelings throughout it, independently. The MeL app's distinction between immediate needs and long term goals further encouraged app-users to reflect on their recovery in a more holistic way.[1]

5. The potential therapeutic benefits of journaling within a suitable app, particularly in contexts where access to sustained, formal mental health and well-being services is limited, hold significant promise for survivors of modern slavery and human trafficking. The MeL app provided avenues for emotional processing through journal entries, enabling survivors to freely express and record their thoughts and feelings at any time.

6. Maximising survivor engagement with app technology requires suitable assistance. This was evident in participant's initial hesitancy toward using the app, which was subsequently overcome with the assistance of a dedicated Participation Facilitator. As one participant expressed, "*If you told me to use an app I wouldn't know how and wouldn't have the confidence to. But the information they gave, it gave me confidence and I did it.*" *(RP23)*

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1. Survivors of modern slavery have immediate needs that may include safety, access to health care, psychological support, legal assistance and economic stability. Longer term goals more commonly related to stability, wellbeing, financial independent and educational and professional development. This broader understanding of recovery reflects the Modern Slavery Core Outcome Set, Phapitis, S., et al, Modern Slavery Core Outcome Set MS COS, (MSPEC, Feb 2023).

Methodology

The project was conducted in two stages, using a mixed-method, co-design approach.

Phase 1 entailed the application of NLP technology in the anonymization and analysis of survivor case notes drawn from Causeway's LifeLine service. LifeLine provides long-term support independently of the NRM, and primarily caters to those who have exited the system but still require ongoing assistance. It was introduced prior to the launch of Reach-in, a Government-funded support programme available to survivors of modern slavery who have received positive conclusive grounds decisions and are transitioning out of NRM support services. While similar to Reach-in support in its scope of support provision, LifeLine is accessible to people regardless of the outcomes of their referrals to the NRM mechanism and is fully independent of the UK Government (as it is funded by Causeway) and not subject to statutory guidance. Due to time constraints in securing Home Office permissions, our analysis only incorporates case notes from post-NRM services. Nonetheless, we recommend that the Home Office develops a more streamlined process to facilitate responsible access to their data for beneficial analysis.

How is LifeLine data obtained? Case workers record notes for each support call with a service user, which include summaries of ongoing support needs. While case notes serve as a reflection of a service user's needs as expressed during support calls, they are authored by caseworkers and are not direct transcriptions. Although there is a standardised organisational approach to compiling case notes, uniformity in the process is not guaranteed. Variations in note-making styles may occur over the analysed period due to variance in staff approaches.

Phase 2 of the research entailed the generation of data relating to survivors' needs using a smartphone app (MeL app). It sought to move away from conventional research methods, particularly interviews, to establish an alternative platform for survivor engagement in data creation. The MeL app enabled survivors to record 'bullet journal'-style diary entries using their own words, at their own pace, where and when it suited them. They also used the app to express their needs in real-time, and within the context of available support structures. The text generated by survivors was analysed using NLP, enabling the identification of trends and patterns of the evolving needs of survivors.
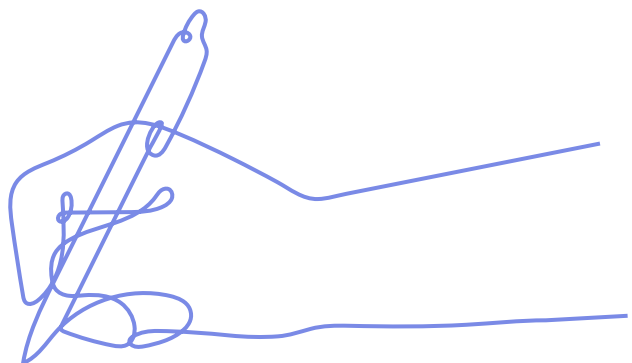
Key findings analysis

A set of findings were developed and are presented below.

On the use of AI technologies to analyse modern slavery-related data sets:

1. Whilst substantial resources are initially required for training and validating NLP models, once established, data can be analysed rapidly. In the long term, investing in NLP is both efficient and effective for stakeholders seeking deeper insights into modern slavery and human trafficking, and its impact.

While RESTART's NLP models required comprehensive training to navigate the complexities of the Causeway dataset, and much effort was spent to ensure anonymity and compliance with data protection, the researchers found the results justified the time and resources spent at the beginning. We developed tailored models, as off-the-shelf AI models lack the specificity necessary to consider these complexities and would run the risk of oversimplifying or misinterpreting critical information, potentially hindering the effectiveness of data analysis.

Once trained, the NLP model was able to rapidly analyse and identify trends despite the size of the input. Causeway supplied Trilateral with 39,513 unique case notes, facilitated by a data-sharing agreement. These notes documented interactions with 545 distinct service users who received support from Causeway over a period of more than five years, from March 2018 to April 2023. Exclusive and consistent human analysis of such large datasets would be unfeasible, and so NLP provided a novel method of making use of such rich data.

2. Natural Language Processing is an effective tool for uncovering insights from textual data, such as survivors' stories, and can identify the types of support needed by survivors of modern slavery. However, it may be less effective when analysing culturally specific language. Human involvement is crucial in supporting survivors by overseeing the insights derived by AI technology, determining the *so what,* and providing direct support.

NLP models were developed in consultation with the subject-matter experts within the research team, and the experts by experience through the LEAP. This was essential to the training phase and ensuring the analysis responded to specific categories related to modern slavery. Despite this, NLP remained unable to understand culturally specific language or contexts. The research team was subsequently essential in placing the findings within the context of wider literature relating to survivor needs.

Survivor participants highlighted their desire for human scrutiny of data analysed by NLP, feeling that only a human could properly understand their feelings. As such, use of AI technologies should be complimented by a human response to the needs it may identify.

3. Survivor needs identified using NLP are consistent with the needs identified by conventional methods. However, NLP enables this identification to be conducted at scale and in real-time.

While all service users represented in the dataset had exited the NRM, most had support needs related to their modern slavery experience that endured long past their exit. The number of service users who mentioned support needs in the case notes steadily increased, starting from 32 individuals (60% of the sample at that point in time) in March 2018 to 116 individuals (71% at that point in time) in December 2019. 532 users (99% of the sample group overall) mentioned at least one support need across the sampled period.

515 service users (96% of the overall sample of 545) mentioned needing legal support, making it the most mentioned support need. This was followed by financial support, mentioned by 470 individuals (88% of the overall sample) and mental health support, mentioned by 442 individuals (83% of the overall sample). The impact of external pressures on survivor recovery journeys is illustrated by a surge in support calls exchanged between survivors and their caseworkers[2] from March 2020 and March 2021. This timeframe corresponds with the Covid-19 pandemic lockdowns and business closures, leading to the sudden loss of direct access to many support services. Notably, 2020 and 2021 witnessed the highest volume of calls, totalling over 10,000 calls each year.
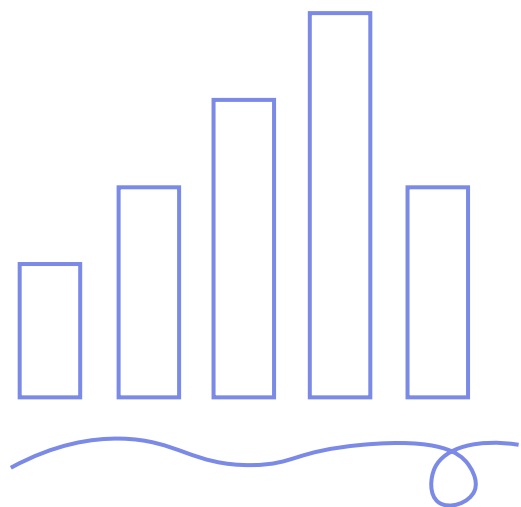
2. The increase in calls not only reflected the heightened efforts made by caseworkers to contact survivors in response to the challenging circumstances brought about by the pandemic, but also indicates an increase in survivors' attempts to connect with their caseworkers.

On the use of mobile application technology in support delivery:

4. Access to an appropriate app yields benefits to survivors of modern slavery by providing a space where they can record their recovery journey, and thoughts and feelings throughout it, independently. The MeL app's distinction between immediate needs and long term goals further encouraged app-users to reflecting on their recovery in a holistic way prompted survivors to consider both their immediate needs and long-term goals in a holistic way.

As Causeway data consisted of a caseworker recording the needs of their service users, and considering the limitations of NLP in recognising the nuance of more complex thoughts and feelings, RESTART complimented its analysis of survivor needs that enabled survivor engagement in data creation itself via the MeL app.

Based on recommendations from the LEAP, which noted that support for survivors tends to focus exclusively on immediate needs, we implemented a distinct 'goals' category. This category encouraged survivors to reflect on the broader aspirations critical to recovery, such as education, professional development, secure housing, and financial independence. This distinction was useful to app-users, with some examples of survivors' use of the app to work towards professional goals resulting in successful job applications. It more generally promoted a greater recognition of the importance of holistic, long-term goals in app-user recovery journeys.

Survivor app-users also found that the journaling function of MeL allowed them to record and reflect on their needs and goals in novel and useful ways, in a time and place where they felt comfortable doing so. Data taken from MeL demonstrated how survivors consider their needs and goals differently and work towards them. Over half of the journal entries were about needs (57%) and 43% were about goals. While needs most often related to categories such as medical care, housing and support, goals more often related to broader things such as education and finding purpose in life, broadening our understanding of the long-term goals of survivors.

"It really had a positive impact because I was able to differentiate my goal, my support and my need. And once you do that you see, OK, I'll need this support for me to be able to achieve my goal…So I'll reach out to somebody who will be able to help me meet that need." (RP6)

An information and signposting page on the app, co-authored by the LEAP, also proved useful for survivors in understanding next steps in their support journeys.

5. The potential therapeutic benefits of journaling within a suitable app, particularly in contexts where access to sustained, formal mental health and well-being services is limited, hold significant promise for survivors of modern slavery and human trafficking.

Beyond serving as a platform for authentic and multifaceted data creation, the use of an app demonstrated therapeutic benefits for survivors, especially in contexts where access to sustained, formal mental health and well-being services is limited. Specifically, the ability to freely express and record their thoughts and feelings at any time, thereby facilitating emotional processing, was noted as beneficial.

"The app can be a therapeutic thing for people. Just going there and writing your thoughts and your goals, it can be a relief for you. Survivors go through a lot of trauma…and I understand better what I need through writing." (RP2)

6. Maximising survivor engagement with app technology requires suitable assistance. This was evident in participant's initial hesitancy toward using the app, which was subsequently overcome with the assistance of a dedicated Participation Facilitator.

The role of the Participation Facilitator (an individual based in Causeway who acted as a liaison between the survivors participating in the research and the technology) proved essential to overcoming barriers related to low-confidence, tech-illiteracy and language to allow a diverse group of survivors to participate in the MeL trial. This required significant resourcing, including regular contact and support and the creation of information sheets and other tutorial materials.
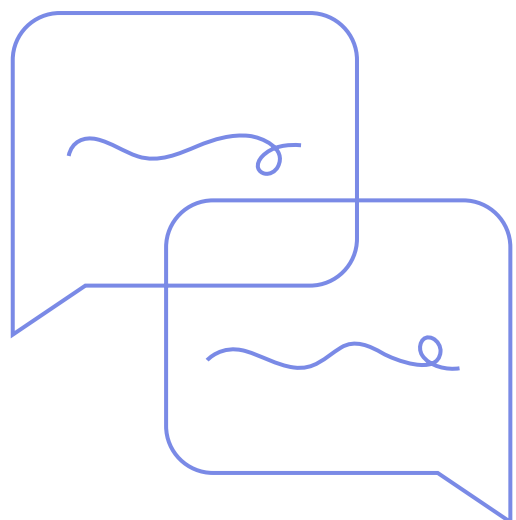
Recommendations

Arising out of the recognition that the UK still falls short of adequately protecting survivors of modern slavery, project RESTART sought to provide a proof of concept for a new, and more effective, method for understanding survivors' needs. Following the research conducted by the consortium, a set of recommendations were developed, and are presented below.

To the UK Government:

- **Incorporate, with associated funding, the use of AI technologies such as NLP across UK Home Office and First Responder agencies as a means of identifying fluctuations in modern slavery trends and survivor support needs in real-time, with a view to sustained enhancement of support measures and mechanisms. The Independent Anti-Slavery Commissioner should consider facilitating and overseeing the amalgamation of these diverse data sets as part of her role in supporting research:** RESTART effectively employed NLP to identify survivor support needs as they evolved over time, and doing so continuously in real time could create a more responsive approach to law enforcement and survivor support responses to modern slavery.

- **Training should be introduced at the national level to ensure all statutory and state-funded support services collect and record data in line with strict data privacy and protection measures and in a uniform, consistent manner. This would better enable efficient analysis and anonymisation by AI technologies:** the uniform manner in which Causeway recorded data allowed for NLP to more easily anonymise and categorise data, and more uniformity in data collection methods would enable for the effective implementation of AI on a larger scale.

- **Subject-matter experts (including lived experience experts) should be involved in the development and vetting of any use of AI tech and other technologies to ensure they are customised to respond to the complexities related to modern slavery:** the subject-matter experts and experts by experience involved in RESTART played a crucial role in ensuring that the NLP and mobile app technologies used in RESTART were adapted to be relevant to the specific complexities of modern slavery, culturally sensitive and trauma-informed. They also mitigated some of the shortcomings of NLP in analysing culturally specific data by ensuring the findings were reflective of the lived experience of survivors.

- **Access to mobile devices and internet data packages should be made available through state-funded survivor support services, and the use of apps to help survivors to manage their needs and goals should be encouraged:** survivors involved in the MeL app trial found that it helped them manage their needs and goals, in some cases helping to identify and secure employment and education opportunities. App-users also recorded therapeutic benefits and improved access to information, but stressed that they would like their use of the app to be supplemented and enhanced by human caseworkers.

For UK Practitioners:

- Education, empowerment and upskilling programmes should be integrated into survivor support services and should enhance tech literacy. Such programmes should include support for survivors wishing to participate in consultation activities and mentoring opportunities: NLP analysis found that survivors often prioritise long-term goals such as professional or personal development, but existing support services do not directly facilitate this. Lived experience participants in RESTART learned new skills and appreciated the opportunity to share their perspectives in a professional capacity, but the process of facilitating their participation was resource-intensive. Participants expressed interest in providing or accessing mentoring opportunities for other survivors to further encourage self-actualisation.

Areas for further research

One limitation of the timeframe of this project was that the team was not able to fully identify the benefit of real-time insights coming from modern slavery survivors – for example, via use of the mobile app or from live case note data. Further research could explore this potential over a longer timeframe, to monitor the following outcomes which were alluded to during RESTART:

- The positive impacts on survivors' wellbeing in using an app to record needs, goals and reflections in their own time and space.

- Incorporating the recommendations on being able to have proactive follow-up from caseworkers or monitoring of journaling/question responses in real-time.

- The potential for this kind of real-time insight from survivors to feed into adaptation of support to better meet their needs (and to result in faster outcomes, such as a survivor finding employment, or getting medical/financial support) – as well as to feed into faster/more nuanced decisions around policy.

- Further research should be conducted into exploring the use of an app with increased functionality, including interactivity with caseworkers and more curated signposting resources (for example, by region, or for different stages in the NRM process).

- Access to data was a limitation of NLP work. With more training data, there is potential for the NLP model to increasingly learn the context around different classes, or types, of information and thereby improve performance. This might be the subject of a future research project.

- Any future projects using sources and methodology similar to RESTART should, if possible, be carried out on a larger scale and over a longer time frame, using data from several different organisations, in order to be able to provide more accurate general recommendations. Ideally, such projects should be conducted with a view to enabling comparison of support provision amongst the relevant organisations.

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The Centre is hosted by the Humanities Division at the University of Oxford. The Centre is a consortium of three universities consisting of the Wilberforce Institute at the University of Hull, the University of Liverpool, and the Bonavero Institute of Human Rights at the University of Oxford. Between 2019 and March 2024, the period when this project was awarded funding, the Centre was led by the Bingham Centre for the Rule of Law (part of the British Institute of International and Comparative Law (BIICL)) and was a consortium of six organisations consisting of the Rights Lab at the University of Nottingham, the Wilberforce Institute at the University of Hull, the University of Liverpool, the Bonavero Institute on Human Rights at the University of Oxford and the Alan Turing Institute.

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