Matching data to support troubled families

As part of its Expanded Troubled Families programme, East Sussex County Council has worked with key partners to reduce the manual handling of data and to target families more effectively through its innovative use of digital technology.

Digital Transformation Programme

The work on this project undertaken by East Sussex County Council has been funded through the Digital Transformation Programme, which is managed and overseen by the Local Government Association (LGA).

The programme was set up to help councils and their partners develop digital solutions to support their work on national programmes of transformation including the integration of health and social care, Troubled Families, welfare reform and public health.

The aim is for the digital tools and solutions created through the programme to be reused by other councils and contribute to the wider work to transform local public services.

The issue and context

East Sussex County Council and its key partners, including the police, Department for Work and Pensions (DWP), National Health Service (NHS) and voluntary and community sector, ran a very successful first Troubled Families programme (TF1) that attracted national attention from central government.

The partners took a broad transformational approach that aimed to embed family work across all teams, both in-house and in commissioned services, rather than focusing narrowly on the payment by results requirements of the TF1 programme.[1] Building blocks included a shared workforce development approach designed in partnership, a shared set of core competencies and a shared training programme. The county also signed information-sharing agreements with the police and probation services and now links through to the Child Protection Information System (CPIS).

As the county began to implement its Expanded Troubled Families Programme (TF2), it was keen to complement these valuable building blocks with a more innovative approach to using digital tools and technologies, with the aim of:

• Reducing the manual handling of data by staff (at that time carried out in Excel, which had proved limited in its ability to handle large data sets and time-consuming in its support of data matching, cleansing and analysis).

• Speeding up the matching processes, thereby making comprehensive data about the needs of families available earlier to frontline workers.

• Using large data sets to identify needs and proactively target families rather than waiting for a referral.

East Sussex therefore applied for funding from the LGA's Digital Transformation Programme.

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1   Section 6.3 'Developing effective delivery models' of the National Evaluation of the Troubled Families Programme, published in October 2016, reflects many elements of East Sussex's approach

The project objectives and targets

The East Sussex bid identified two main project elements:

- To use bulk digital data matching tools to combine information about a large number of individuals into families. This would involve bringing together all the data about a family from a range of partners including the police and health services. Comprehensive family information would therefore be available to workers at the point where referrals were made, rather than some time afterwards. The county's existing but under-used Microsoft DQS (Data Quality Services) system was identified as the relevant tool.

- To develop an analytical approach that would identify those most at risk of poor outcomes by using data about their previous adverse experiences as a predictor. This would require the development, using new digital tools, of prediction metrics to be used with the data matched in the first element of the project above. Fortunately, the county had a large amount of data about past service users, collected over many years, on which to base its predictive approach.

East Sussex could draw upon experience of developing predictive analytics through its earlier work on mapping the risk indicators for those in danger of being NEET (not in employment, education or training). This work had contributed to the county having higher levels of participation in education and training among 16 and 17-year-olds than the England average. However, the work had proved very time-consuming as it was done on a very small scale and without access to advanced data matching.

The practical benefits envisaged for the LGA funded project included:

- Significant reductions in the manual effort required by admin staff to bring together information, combined with speedier access to relevant data for frontline staff, including when they are on the road.

- Greater collaboration between different agencies, helping them to work together more effectively with families and develop a more sophisticated understanding of their needs.

- The ability to identify families in need of support much earlier, enabling the partners to:

  - intervene before the family reaches crisis point

  - focus effort on addressing underlying problems rather than responding to immediate issues

  - mitigate any further difficulties the family might otherwise have faced.

- The use of all the data available to the county and its partners, rather than just the information about individual families referred to them. Also, more secure sharing of data, since staff would no longer be reliant on hard-copy or other insecure forms of information transfer.

- The ability to compare the impact of interventions on families with historical trends or with families that did not receive a service (possibly through refusal to engage). By using standard measures, such as those

in the New Economy Unit Cost database,[2] the county and its partners would be able to measure the financial impact, through cost avoidance, of their work.

- More sophisticated business intelligence to help inform commissioning decisions.

"We have a lot of data about East Sussex and we knew that this project would help us to confirm where the vulnerabilities were. So we'd be able to identify the people we needed to work with and support."

Data and Information Manager, East Sussex County Council

The county would also benefit from taking a significant step forward in its use of digital tools, enabling it to act as a pathfinder for other local public services.

The LGA funding would be used to develop the data-matching tool and to employ a part-time information analyst who would: maximise the tool's use, carry out the analytical research, develop the metrics to identify vulnerable families and package the results of the project in a format that could be easily transferred to and deployed by others.
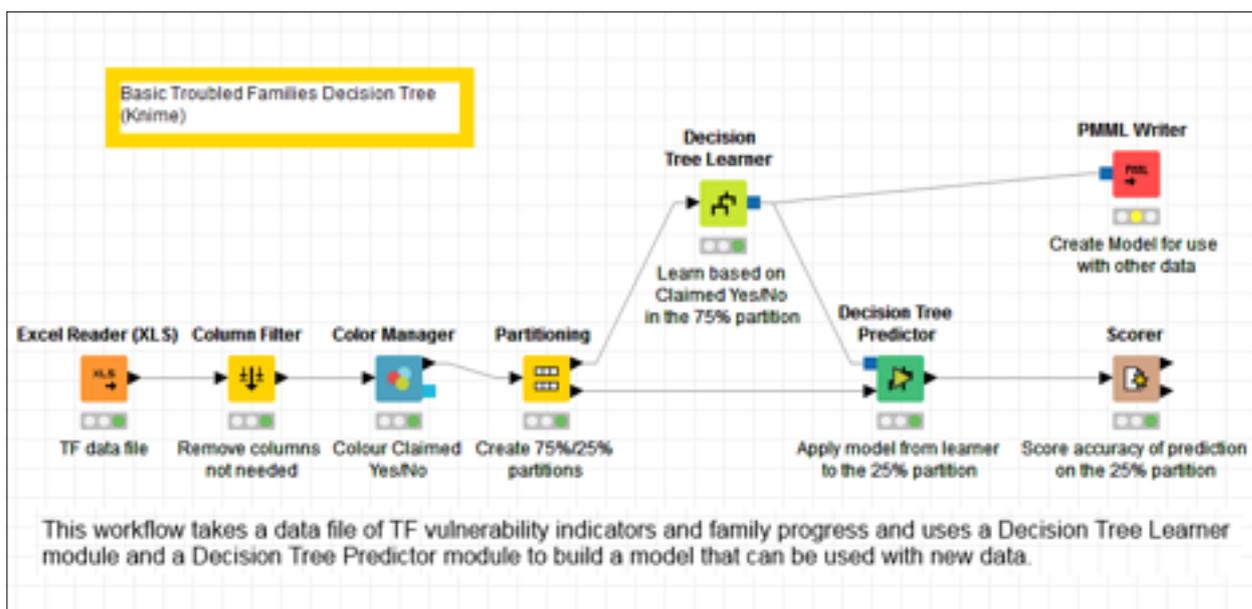
The bid identified potential direct savings in administrative time and ICT of around £121,000 over a four-year period. The productivity gains among frontline staff were estimated as being in the region of £750,000 over four years, based on the reduction in time required to search for information in many different locations in support of the initial assessment and planning for a new case.

The plan was to have the new facility fully operational by March 2017, although the impact would continue to be felt well into the future.

East Sussex also committed to making any assets created during the project, freely available to other councils. These would include:

- a model for how the initial matching/ business rules were developed and applied, including a 'How to' guide and any technical schemas related to the Microsoft DQS system

- a model for the family risk weightings used in the predictive analytics

- the business cases used to secure agreement for the project.

Where appropriate, the county would also offer virtual guidance and support to other councils pursuing a similar path.

This workflow takes a data file of TF vulnerability indicators and family progress and uses a Decision Tree Learner module and a Decision Tree Predictor module to build a model that can be used with new data.

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2   www.neweconomymanchester.com/our-work/research-evaluation-cost-benefit-analysis/cost-benefit-analysis/unit-cost-database

The approach and progress to date

Following the awarding of the LGA grant, the digital transformation project formally kicked off early in financial year 2016/17.

Laying the groundwork – April to October 2016

During this period, East Sussex undertook a range of activities:

- A project board was formally established and began to meet regularly. The staff from both the IT and Digital (IT&D) and the Troubled Families teams who were going to work on the project were also confirmed.

- Key internal and external groups were briefed on the objectives of the project, although the initiative was primarily managed by a small officer team. These included:

  - the county's Information Strategy Board

  - the Business Intelligence Strategy Working Group, which showed interest in applying the approach more widely within other county services

  - the Troubled Families Project Board

  - the South East Troubled Families Coordinators group

  - the county's Information Governance Board – this board was particularly important in highlighting the need for the project team to complete a privacy impact assessment for the project.

- Staff training was arranged on the Microsoft DQS data matching tool. The training highlighted two essential pre-conditions for successful delivery of the project: first, the need for data cleansing before matching could take place; and second the need to ensure that accurate address data was received from Ordnance Survey's AddressBase product. Fortunately, the DQS system proved helpful in addressing both issues.

- The project team carried out a review of available analytical tools, both paid-for and open source. By June they had settled on the RapidMiner analytics tool (www. rapidminer.com), which was subsequently installed. RapidMiner allowed East Sussex to use a free Education Program licence for the duration of this project.

- The team also reviewed the background literature on the use of predictive analytics both in the UK and New Zealand, which highlighted the need to consider the ethics of predictive risk modelling. We return to this issue later in the case study.

"Having clean data is really important. It's nitty gritty work, but you have to do it. If you can just get the data right at the beginning it makes everything so much easier."

**Family Keywork Data Manager,
East Sussex County Council**

By the autumn of 2016, therefore, the project was well underway.

Specifically, over one million person/address records from 20 source systems/data sets had been consolidated into 600,000 persons living in 97,000 addresses (both current and historical). The 20 sources included spreadsheets from the DWP and Job Centre,

extracts from internal education and social care systems, and nationally-available address lists.

Meanwhile, the team had begun running test sets of this matched data through RapidMiner, which was automatically providing basic demographic data such as ethnicity and relationship type (child, parent, grandparent, etc) and showing relationships between the Troubled Family outcomes and whether a claim had been made.

The team had been able to identify the Troubled Families vulnerability indicators most prevalent within the cohort and to investigate the relationship between these and the length of engagement. This represented the beginning of the development of a predictive model and approach that could be applied to East Sussex's whole population data.

"We're fortunate in East Sussex in not having a blame culture around data. People are genuinely interested in what the data is telling them, rather than dismissing it as 'wrong' if it doesn't fit current preconceptions."

Data and Information Manager, East Sussex County Council

Developing the model – November 2016 to March 2017

During the following months, the East Sussex team continued to refine their predictive model and undertook advanced training on RapidMiner to ensure they were using its full capabilities. They also had to address a variety of technical issues, such as how best to make the matched data from the Microsoft DQS system available to RapidMiner. The team also had to decide which specific indicators about families it would be appropriate to attach to the matched family/address data.

The most significant next step was to combine information on the wider East Sussex population with the predictive model to identify a wider group of families that might meet the Troubled Families criteria. The team would then be able to test the validity of the model by monitoring whether any of these families were referred into the programme via the normal routes during the early months of 2017.

A further fruitful avenue for investigation was to explore the characteristics of families that took different lengths of time to meet the targets for progress within the Troubled Families programme – whether six, 12 or 18 months. In some cases, families might prove to have little chance of meeting the targets within the overall Troubled Families timetable, in which case a different approach, outside the formal programme, could be more appropriate.

"The data highlighted some families that just can't be turned around within the scope of the Troubled Families programme. So now we deal with them in other ways."

Assistant Director, Children's Services, East Sussex County Council

This type of investigation would allow East Sussex to plan and prioritise its resources and potentially both accelerate family progress and save professional time. The average Troubled Families case took 38 weeks to resolve, but the analysis revealed a group of families that had similar characteristics but could potentially be 'turned around' in a significantly shorter period. This supported the idea of developing a short-term team that would target these families.

The East Sussex team continued to make connections with other councils following a similar path. For instance, productive discussions were held with Camden, where a similar LGA funded project to bring together data on Troubled Families was underway. A case study of Camden's project is available on the LGA website www.lga.gov.uk

By early 2017, around 600 additional families who met at least two of the Troubled Families vulnerability indicators had been identified from a subset of matched whole population data. The number was expected to increase as more indicators were added. The initial monitoring suggested that the families flagged up by the model were indeed presenting formally to the county via normal channels, underlining the likely validity of the model.

Meanwhile, the project team had begun discussions with senior colleagues within East Sussex about how this information could best be used to understand need, target key groups and inform service development. The possibilities included:

- Providing this list of families to service managers who could then consider approaching them.

- Identifying the most prevalent needs and locations of these families to support service development. This would require additional data to be matched to be fully accurate.

- Using the information derived from the analytics to predict the likely length of an engagement based on the families' needs (vulnerability indicators), thus influencing the type of service they would receive.

- Using the matched data to support engagement with families identified as having multiple issues, even if they were below the usual threshold for action. This would enable the county to intervene early and prevent problems from escalating.

By the end of March 2017, therefore, core elements of the LGA funded project, including the matched data and predictive model, were in place and ready to be used in practice. However, one major strategic decision taken by the council would affect its full implementation.

In January 2017, East Sussex's senior management team agreed to replace its existing Children Index with Liquidlogic's SingleView product, with a proposed implementation date of June that year. SingleView offered a long-term and sustainable corporate solution to making information available to county staff.

The project team therefore began to explore how best to make their matched data available to frontline workers as set out in their original bid to the LGA. This included making contact with Wigan Council whose LGA funded digital transformation project also involved implementing the SingleView product.

Completing the project – April 2017 to the present

During financial year 2017/18, the project began to deliver significant benefits. An administrative post, previously required to bring together disparate data under the TF1 programme, was deleted from April 2017. And following analysis of the data produced by the project, which had confirmed that there was a substantial cohort of families who could be turned around more quickly than the 38-week average, a short-term service had been established and had begun to perform well. The financial implications of these initiatives are discussed later in the case study.

"The short-term team aims to work with families for a maximum of six months and ideally over three or four. We focus on families facing lower-level issues, so we can intervene earlier and prevent the situation from escalating, at the same time increasing the number of cohorts we can work with in a given period."

Practice Manager, Short-Term Keywork Service, East Sussex County Council

Making matched data from the project available to frontline staff proved more problematic.

Although two modules of SingleView were functioning by early May 2017, the full implementation had been pushed back from June to September. The digital transformation project team therefore focused on developing an interim solution to providing the matched data.

An initial proposal was to use pdf documents to support the county's Single Point of Access team, which was responsible for triaging initial contacts and managing referrals to the council's social care and early help teams. However, in June, the county's IT&D team suggested creating an online solution using Microsoft's Business Objects Reporting Services which would avoid the need to store pdfs separately.

A working version of the interim online solution was delivered during July 2017 but testing over the summer highlighted queries about the accuracy of some of the data being presented. Meanwhile, the county's IT&D team was fully focused on delivering SingleView. In the event, the successful implementation of SingleView in late September superseded the need to develop an interim solution.

However, the work on the interim solution had proved very valuable in highlighting the information that frontline staff would like to see displayed.

Discussions about how to make use of the matched data created by the transformation project continued during the remainder of 2017 but were hampered by staff changes in the county's Troubled Families and Business Intelligence teams and the project board. Liquidlogic had also appointed a new project manager for the SingleView implementation.

As the county's data and information manager commented "The vision to make matched data more widely available through SingleView is still there and it's all set up to happen, but the staff changes are making things challenging."

A further complication was the imminent arrival of the General Data Protection Regulations (GDPR), creating some uncertainty about whether the individual families identified through the predictive modelling could legally be approached. This required the involvement of the county's information governance lead.
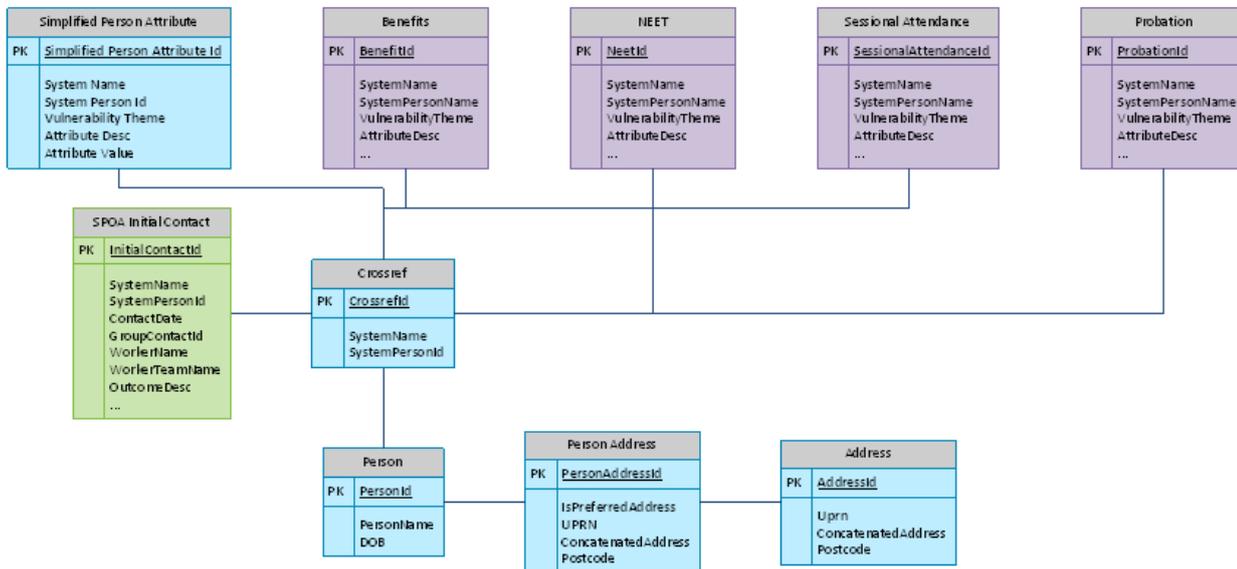
By early 2018, as the SingleView roll-out continued, it was becoming clear that the system was successfully drawing on and matching a wide range of education, social care and NHS data (including information from GPs and health visitors).

The county therefore took the view that the specific ambition to make matched data available to frontline staff, as originally set out in its bid to the LGA, had been achieved but via a parallel route – SingleView – that could not have been foreseen at the time of the bid.

However, the work supported by the LGA project continues to be invaluable in informing the development of SingleView, while the other elements of the project are now a core part of the county's day-to-day operations, particularly around identifying families in need of support.

"The LGA project made us think differently about how we made decisions about families, the data we already had and how we brought it together. It was really useful as a lead-in to SingleView."
Family Keywork Practice Lead, East Sussex County Council

Example table diagram

Simplified Person Attribute	
PK	Simplified Person Attribute Id
	System Name System Person Id Vulnerability Theme Attribute Desc Attribute Value

Benefits	
PK	BenefitId
	SystemName SystemPersonName VulnerabilityTheme AttributeDesc ...

NEET	
PK	NeetId
	SystemName SystemPersonName VulnerabilityTheme AttributeDesc ...

Sessional Attendance	
PK	SessionalAttendanceId
	SystemName SystemPersonName VulnerabilityTheme AttributeDesc ...

Probation	
PK	ProbationId
	SystemName SystemPersonName VulnerabilityTheme AttributeDesc ...

SPOA Initial Contact	
PK	InitialContactId
	SystemName SystemPersonId ContactDate GroupContactId WorkerName WorkerTeamName OutcomeDesc ...

Crossref	
PK	CrossrefId
	SystemName SystemPersonId

Person	
PK	PersonId
	PersonName DOB

Person Address	
PK	PersonAddressId
	IsPreferredAddress UPRN ConcatenatedAddress Postcode

Address	
PK	AddressId
	Uprn ConcatenatedAddress Postcode

The outcome – successes and challenges

East Sussex's digital transformation programme has achieved significant benefits, both financial and non-financial.

Financial benefits

The project team has identified a range of financial savings. Some of these savings are genuine cost reductions; others are avoided costs that have been modelled using a range of data. The savings that have been achieved as a direct result of the LGA funded project can be summarised as follows:

Area of saving	Value £ (April 2018)	Projected total value £ (Oct 2020)
Short-term service	487,000	Unknown[3]
Admin staff	21,255	80,000
ICT	9,167	34,200
Key worker searches	22,340	29,400[4]
External consultancy	45,000	45,000[5]
Total	**584,762**	

The detailed calculations are explored in more detail below.

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3   This value will depend on the future of the Troubled Families Programme

4   This value reflects the full programme target for East Sussex's Expanded Troubled Families programme

5   This is a one-off avoided cost already realised by April 2018

In addition to supporting these direct savings, the work on the digital transformation project helped to inform the eventual shape of the county's SingleView implementation and therefore can be said to have contributed – if indirectly – to savings in professional staff time from the use of SingleView estimated at £155,100 by April 2018 and projected over four years at £620,000.[6]

Short-term service

The short-term service was established during 2016 to take advantage of the analytics being produced by the digital transformation project. The frontline managers and the analytics project team had identified a group of families that had specific characteristics that meant they could be turned around in a much shorter time than the 38-week average.

A financial analysis using calculations based on the Manchester New Economy models showed that the work with these families through the short-term team saved the county an additional £6,090 per family in avoided costs compared with those dealt with by the main teams.[7] An added advantage was that the council could claim for these families more quickly.

By April 2018, the short-term team had made 80 claims leading to cost avoidance for the county with a nominal value of £487,000.

Admin staff

Before the digital transformation programme, admin staff would trawl different systems to collate background information on families identified for potential inclusion in the Troubled Families programme by frontline staff. This was very laborious and time-consuming.

Under the new arrangements, this information is brought together electronically, which allowed the county to delete one full-time administrative post in March 2017. The savings, including on-costs, equate to £21,225 per annum.

"Under the TF1 programme, we had to spend a lot of time on admin tasks, bringing together information from different sources and different systems. The changes have made things so much easier. Now we automatically know about the families and any previous interventions."

Family Keywork Project Officer, East Sussex County Council

ICT

As part of the transformation project, the county's former data matching solution for the Children Index, Clearcore, was decommissioned in favour of the Microsoft DQS system. The cost savings are in the region of £10,000 per annum, in addition to any operational benefits delivered by having a more modern and effective system.[8]

Key worker searches

Under the new arrangements, key workers when they first take on a case no longer need to search for core information – for instance, speaking to schools about a child's attendance record or asking families to see evidence of their benefits. This is conservatively estimated to have reduced the time taken on each case by 30 minutes.

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6   Based on an estimated 18,280 contacts to MASH and the Early Help Hub per annum each taking 20 minutes less to process by staff on a salary of £42,000 including on-costs

7   The average length of an engagement was 38 weeks, but for the short-term team it was 24 weeks, giving 14 weeks of additional avoided cost at an average of £435 avoided cost per week per family. For more detail of the Manchester New Economy models, see www.neweconomymanchester.com/ our-work/research-evaluation-cost-benefit-analysis/cost-benefit-analysis

8   In 2017/18 a small payment (£833) was made as the system was decommissioned making that year's saving £9,167

The Troubled Families service had engaged 2,624 families by the end of March 2018, saving an estimated 1,312 hours of staff time. Applying an hourly rate of just over £17.00 gives a total saving of £22,340. The target for East Sussex's full Expanded Troubled Families (TF2) programme is 3,450 families, which should generate a saving of £29,400.

External consultancy

The county has calculated that if it had used external consultants at standard consultancy day rates of £500 to deliver the matching and analytics project, rather than internal staff, the likely cost would have been in the region of £45,000.

An added benefit is that the county has improved its overall skills and knowledge and ability to carry out similar projects in the future.

"One lesson is that with modern analytics tools, you can actually do this work yourself. At various times over the lifetime of the project, the county was approached by consultants who offered to match and analyse our data. Doing this in-house has not only saved money but also developed our skills for the future."

Data and Information Manager, East Sussex County Council

Family Keywork engagement length in weeks
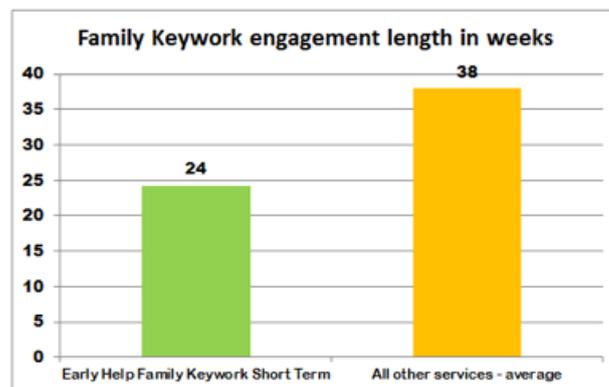
Non-financial benefits

The digital transformation project has delivered additional benefits which, although difficult to quantify precisely, are nonetheless significant. These include:

Better performance against Troubled Families criteria: Analysis of the matched data allowed the project team to identify that educational attendance was a major factor in preventing the county from claiming for families. Two distinct cohorts emerged:

- families for whom educational data was available but who did not meet the Troubled Families criteria (90 per cent attendance over the previous three terms)

- families for whom educational data was not available, meaning the county could not check if they met the criteria.

For the first cohort, the project team identified those families where education was the sole reason for not claiming. They then assessed how far the family was from meeting the 90 per cent criteria and discovered that many were just a few percentage points away from being claimable. As a result, the county is planning to provide attendance data to keyworkers at the start of each intervention with a family, enabling them to assess the required distance to travel to meet the criteria and adapt their work accordingly.

"The project has provided us with a potentially enhanced income stream, helping us to shore up capacity at a time when the county, like other councils, is facing severe budgetary pressures."

Assistant Director, Children's Services, East Sussex County Council

The team also highlighted families that had made significant improvements in educational attendance but remained significantly below the required attendance threshold. For these families, they worked with other councils and the Ministry of Housing, Communities and Local Government (MHCLG) to revise the criteria and allow for a distance-travelled indicator, which recognises significant improvement and, in some circumstances, permits claims to be made. This has now been implemented and is reflected in the MHCLG's latest Financial Framework for the Troubled Families programme.

For the second cohort the county identified ways to improve its data-matching processes, primarily through enhanced data cleansing. This resulted in more families being successfully matched to attendance records. For those families that still could not be matched, the team has begun to explore alternative options for sourcing attendance data, including contracting external companies to contact schools directly and request the information.

The county's Troubled Families team is now able to provide a monthly report about how the programme is performing in terms of number of families worked with, how many claims have been made and what has been claimed for. In addition, the team can also:

- analyse the average length of intervention of each children's services team and the mix of vulnerabilities they are dealing with

- provide a baseline at the beginning of each intervention so the key workers can view the improvements being made and any areas that are being missed

- highlight the main reasons for claims not being made – this helps both to maximise the money the council is able to claim but also the issues that families are facing.

As the county's family keywork data manager commented: "The teams can now really see how they are doing and it's helped to streamline their work. And we've only just scratched the surface of what is possible with the data."

Clearer evidence of impact: The project has resulted in a better understanding of the engaged families, their vulnerabilities, the complexity of interventions and the outcomes achieved, including which interventions are most likely to achieve results and within what time frame.

It has therefore allowed East Sussex to target its work more effectively in a period of financial constraint and has also given the county an evidence base on the impact of its work, making it much easier to respond for instance to requests or audits by MHCLG.

The information is now being used as a key part of an ongoing review of the county's early help services.

"The work on the digital project has given us an evidence base to demonstrate that early intervention and support can help prevent later costs. It was the first port of call when we started our early help review. Having this sort of evidence is really important given the budgetary pressures all councils are facing."
Assistant Director, Children's Services, East Sussex County Council

Better interactions with clients and other professionals: There has been a 'goodwill' impact because county staff are no longer having to chase clients or other busy professionals (for instance, in schools) for basic data. Also, providing key county staff with better data at the outset of the process improves the initial stages of engagement.

"The project has enabled frontline staff to spend more time with families rather than chasing information. We're also not wasting our partners' time."
Assistant Director, Children's Services, East Sussex County Council

"A fundamental part of the project has been to give key workers the best possible information to help the families they work with."
Family Keywork Data Manager, East Sussex County Council

Improved form design: The Troubled Families process involves a lot of paperwork. Key workers start the process by completing a nomination form which the central Troubled Families team supplements with additional information to produce a combined form.

Key workers then have another opportunity to add any further information before the family are formally engaged into the TF2 programme. At the end of the engagement, the county has to produce a closure form combining all the data, which acts as their claim. Previously the various forms were separate. Now all the information is collected in one form (increasingly pre-populated with data), making it much easier for everyone to use.

"It used to take us weeks to bring all the data together for the closure form. Now it's much easier to claim. Our recent payment by results window was the first where we were quite calm!"
Family Keywork Project Officer, East Sussex County Council

Comprehensive data for the county: The project has created a comprehensive matched data set for the county that is available for other uses. Discussions at the county's Information Strategy Board have explored how the data could be used more widely in areas such as adult social care and transport.

Key learning points

A range of key learning points have emerged from East Sussex's digital transformation programme. They include:

- Clean data is crucial at all stages of any matching and analysis work. Project plans and timetables must reflect the potential work involved in cleaning the base data before embarking on subsequent stages of a project.

- The joint project team involving both IT&D and Troubled Families staff worked well. The project started off following a Prince methodology and then moved to an agile approach once the basic foundations were in place.

- When developing predictive models, it is vital to work with the service managers and staff who will ultimately use the outputs. This not only helps to make the predictive models more accurate, it also ensures that any results are presented in a way that is understandable and practical for the service managers and staff. On a positive note, the use of modern tools such as RapidMiner means that changes can be made to the analyses there and then, making conversations with service managers and staff more productive.

"The importance of a constant dialogue between staff in the data and service functions can't be stressed enough. If you don't have the right level of engagement, the people delivering the service can lose faith in the data and won't use it."

**Data and Information Manager,
East Sussex County Council**

- Project plans should build in time for the ICT department to robustly risk assess any new piece of software (such as RapidMiner), both in terms of its capabilities and its 'fit' with the existing ICT infrastructure.

- Complex and longer-term transformation projects are inevitably going to meet unforeseen obstacles and challenges. In East Sussex's case, the decision to implement SingleView had an important impact on the LGA funded project. Staff changes also proved disruptive at different points of the project, while the project manager's time was highly constrained at times by the need to support Ofsted inspections. It is important for the overall project plan to be ambitious but realistic in allowing for contingencies, and for the project team to be flexible in the way they achieve their goals. In East Sussex, a major objective (making matched data available to key frontline staff) was ultimately achieved, but via a different route to that originally envisaged.

- Finally, the East Sussex project team found there was a lot to learn from other councils and from experience abroad. For instance, they drew on work in New Zealand around the ethics of predictive risk modelling to inform how the county would use the outputs of the analytics. The recommendations from New Zealand were that any families identified through the analytics should not automatically be assumed to be in need and that the families' details should be passed to service managers who would make professional decisions about possible interventions based on frontline information as well as the analytics.

Dealing with the General Data Protection Regulations (GDPR)

Privacy is a major concern in any transformational project of this nature. East Sussex has carefully considered the requirements of GDPR in relation to their work on matching data and developing predictive analytics. Their aim is to ensure that they have all the necessary permissions to match data from a range of different sources, make it available to frontline staff and to target individual families with services.

The approach involves the following steps:

- Identify the data items which ideally would be included in the matching.

- Identify the systems in which these data items exist.

- Identify the permissions/consent already obtained on these data items/systems.

- Hold a structured privacy impact discussion with information governance staff involving two key approaches:

  ○ if consent is available to use the data item/system in the way envisaged, then develop a case for its use, write a privacy impact assessment and begin using the data in the matching

  ○ if consent to use the data item/system is not available, consider ways of making this possible eg by re-writing the privacy notice or consent form.

- Work on the data items/systems where there is no current consent to use the data. This may have wider ramifications for the council than just 're-writing' them. Both practical aspects (e.g. the need to write to every household in East Sussex) and political aspects (e.g. the risk of stimulating a local data privacy campaign) will need to be considered. Ultimately, it may not prove possible to use certain items/systems.

East Sussex estimates that this work will take at least six months and possibly significantly longer for some items/systems.

Next steps

The next steps will include:

- Continuing work on the implications of GDPR as set out above.

- Work on bringing in new data sources, in particular information about families' Universal Credit status.

- Ongoing refinement of the predictive model based on practical experience and the monitoring of families entering the county's Troubled Families programme, with the eventual aim of applying the predictive modelling approach to the whole East Sussex population, including families who do not actively ask for help.

- Extending the provision of relevant data and analysis to the frontline teams, so that they are even better prepared to support families.

- Further work on assessing the outcomes for families of their involvement in the programme and whether better results could be have achieved by a different form of intervention.

- Securing a suitable product to support the data matching work in the longer term. The county acquired the RapidMiner product on a very advantageous deal for the first year, but the cost for subsequent years proved prohibitive. The team are currently using an open-source solution Knime, but may have to explore other options.

- Packaging up both the intellectual and technical work carried out by the LGA funded project in a way that will make it easily transferrable and useable by other councils.

- More broadly, further work on the design and implementation of SingleView to ensure the learning from the LGA funded project is maximised.

"Our work on data matching and predictive analysis has not necessarily given us blinding new flashes of insight. But it's been invaluable in confirming what we thought was going on and giving us a solid evidence base for action."
Data and Information Manager, East Sussex County Council

"Having such robust data has really helped us make the best possible strategic decisions about how we continue to support families in the future."
Assistant Director, Children's Services, East Sussex County Council

Further information

For further information on this project, please contact:

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