Report title: Analytics and Data Science Overview	
Report to: Corporate Policy and Scrutiny Committee	
Report author: Richard Puleston, Director of Policy	
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County Divisions affected: All of Essex	

1. Introduction

1.1 The Chairman and Vice Chairman have requested a briefing on the collection and use of data analytics and artificial intelligence, including practical examples of how it has been used in ECC to solve problems.

2 Action required

2.1 This is an item to build awareness and share use case studies. The Committee is asked to note our approach to the use of analytics and data science in alignment with our data strategy and comment on any topic of interest they would like to explore further, related to Everyone's Essex aims.

3 Background

3.1 Analytics is the discovery, interpretation, and communication of meaningful patterns in data; and the process of applying those patterns to effective decision making.

3.2 We do this every day, making best use of data across our whole system in a joined-up way - to help us work out what has happened, where, when and why (descriptive and diagnostic analysis); and also to help us get ahead of the curve - forecasting and predicting what might happen next, understanding important causes and risk factors, modelling different scenarios and correlations, optimising decisions and best-case outcomes for the choices we have to make (predictive and prescriptive analytics).

3.3 It's in the field of predictive analytics that we deploy the use of Data Science and Machine Learning. Put simply, Data Science is a multi-disciplinary field that uses a combination of statistical analysis, programming, and domain expertise deployed in a real-world environment to extract knowledge and insights from data. These insights subsequently support decision making.

3.4 Across Essex County Council we use both of these to help us

- o Plan and prepare for the future by understanding trends & forecasts, thinking about what might happen next, where and when

- o Prioritise and target activity to people and places that need it the most

- o Predict outcomes before they arise so we can intervene earlier and prevent or delay crisis

3.5 It is important to note that however good our data insight is, it cannot replace the judgement about what to do in response to it. That remains properly the role of decision makers.

4 Limitations and considerations

4.1 Because of the increase in the use of analytical approaches it is critical that we give appropriate and careful ethical consideration to what is an acceptable use of analysis. To achieve this, we undertake a best practice ethical review before commencing key data science projects and have an independent Data Ethics Committee, established by ecda – the Essex Centre of Data Analytics – a partnership venture between Essex County Council, Essex Police and Essex University that seeks to promote the use of data sharing and analytics to improve outcomes for local people.

4.2 The Data Ethics Committee, made up of data science specialists, experienced human rights experts, senior policy representatives, residents of Essex and Information Governance specialists has been established to provide independent advice on the use of data for public benefit. They provide additional capacity and independent advice to ensure we achieve a critical balance of the legal and ethical considerations of data use and maintain ethical accountability and public trust.

4.3 Finally, in order to understand what our residents think of us using data this way, ecda has engaged with residents to explore [citizen attitudes towards data sharing and analytics within the public sector](). Their research, which included in-depth interviews and focus group sessions with Essex residents, concluded that people are relatively open to the idea of data-sharing when it is explained to them the purposes for which the data is being shared and the benefits that will accrue as a result of the sharing.

4.4 However it remains important to be transparent with how we are using data to inform decisions, and communicate the difference and impact it has and continue to empower and inform residents on the use of data we hold – we do this via an [open data portal]() and [insight blog]().

5 Use case examples

5.1 We have shared some examples of work and projects aligned to supporting Everyone's Essex strategic aims, detailing the impact and further use analytics and data science can have across our organisation – See slides attached.

6   Next steps

6.1   As part of the Essex Data Strategy, we will continue to treat our data as an asset and make best value of it to make evidence-based decisions, including the use of analytics and data science.

6.2   Our goal is to increase our level of data maturity as an organisation. This will include a focus on 4 key areas
- o   Collecting and sharing data to improve outcomes – looking beyond our own organisational boundaries and adopting a place-based approach to data management that strengthens our ability to deliver Everyone's Essex and support the levelling up agenda.

- o   Proactively fixing processes – deploying sustainable and flexible cloud-based technologies that allow us to store, integrate and report on data that provides rich insight

- o   Connecting to build capability and capacity – enabling growth and development by bringing together the community of analysts across the organisation (and system) whilst continuing to cultivate and retain best in class advanced analytics skills, building careers in data, not just skills.

- o   Turning insight into action – raising data literacy among our workforce, ensuring decision makers have access to the right intelligence at the right time and know how to use it, whilst being ethical and responsible in how we use data to make decisions.