

Predicting Harm & Contextual Safeguarding: Insight Bristol Case Study

2nd March 2020

Seth Cooke

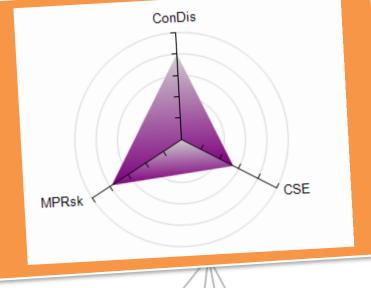
Business Intelligence Developer

Bristol Insight Analytical Products





Qlik' Sense S



Think Family Database





FAMILY

Think Family Database Indicators Insight Bristol



1A committed criminal offence

1B committed ASB

1C prisoner 12 months from release

1D breached order or injunction

1E ASB managed by Police

1G Youth Caution/Restorative Justice

2A School attendance < 90%

2B 3 fixed term exclusions from school

2C permanently excluded from school

2D registered at Pupil Referral Unit

3A open to Families in Focus

3B Looked After Child

3C Child In Need

3D Child Protection Plan

3E teenage pregnancy

3F missing person

3G accessing Housing Support services

3H risk of Child Sexual Exploitation

4A claiming out of work benefits

4B risk of NEET

4C Child NEET

4E affected by the Benefit Cap

4F rent arrears

4G free school meals

5A victim of DV

5B perpetrator of DV

5C linked to non-crime DV

6A concerns for mental health

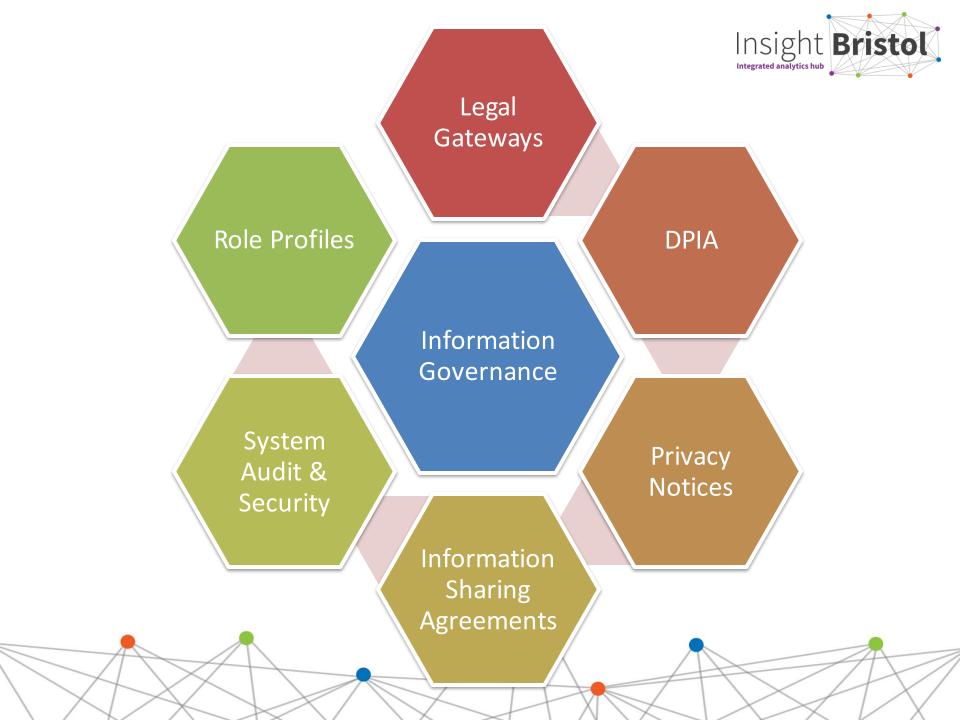
6B drug or alcohol incident

6C drugs or alcohol support

PERSON

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5A victim of DV 5B perpetrator of DV 5C linked to non-crime DV 6A concerns for mental health 6B drug or alcohol incident **6C** drugs or alcohol support



Legal Gateways



- The Digital Economy Act 2017 and the Public Service Delivery, Fraud and Debt: Data Sharing Code of Practice
- Sections 10 and 11 of The Children's Act 2004,
- Section 82 of The National Health Service Act 2006
- Section 1 of The Childcare Act 2006
- Section 23 and 25 of The Children's and Families Act 2014
- Section 17, 37 and 115 of The Crime and Disorder Act 1998
- Section 11, 21, 157 and 175 of The Education Act 2002
- Section 1 of The Localism Act 2011
- Section 1 of The Children (Leaving Care) Act 2000
- Special Education Needs and Disability Regulations 2014
- Immigration and Asylum Act 1999
- Education and Skills Act 2008 (ESA 2008)

http://www.Bristol.gov.uk/policies-plans-strategies/the-troubled-families-scheme

Who's it used by?



- FIF staff
- Social workers
- YOT
- First Response
- School Safeguarding Leads
- Safeguarding GPs
- Police staff
- Council Benefits team
- Employment, skills and learning team

100-120 users per month

Around 3000 searches per month

54,604 searches since Feb 17

Ingrained in working practices



Social Network Analysis Operational Learning



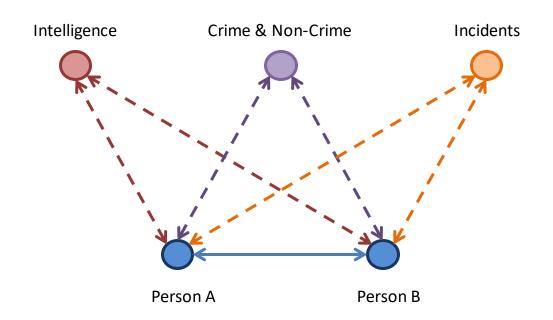
- Building on previous work: Operation Barrier (CSE) & Anti-Social Behaviour analysis
- CSE risk is introduced into a child's life through social environment / extra-familial relationships
- However: DATA QUALITY!



Solution: The Person Link Table



Building the Person Link Table allowed us to overcome our data quality issues!



All relationships are scored based on recency, frequency and gravity.



Person Link Table Scoring Method



- Thematic risk scores derived for every person.
- The Person Link Table identifies subjects in that individual's social network who also have that risk type.
- New measures are derived for the count of subjects in the individual's network who share that risk type; the sum of their risk score; and the proximity of the risk.
- The risk score of the network is used to modulate the risk score of the individual.



Contextual Safeguarding



"Contextual Safeguarding is an approach to understanding, and responding to, young people's experiences of significant harm beyond their families.

It recognises that the different relationships that young people form in their neighbourhoods, schools and online can feature violence and abuse.

Parents and carers have little influence over these contexts, and young people's experiences of extra-familial abuse can undermine parent-child relationships.

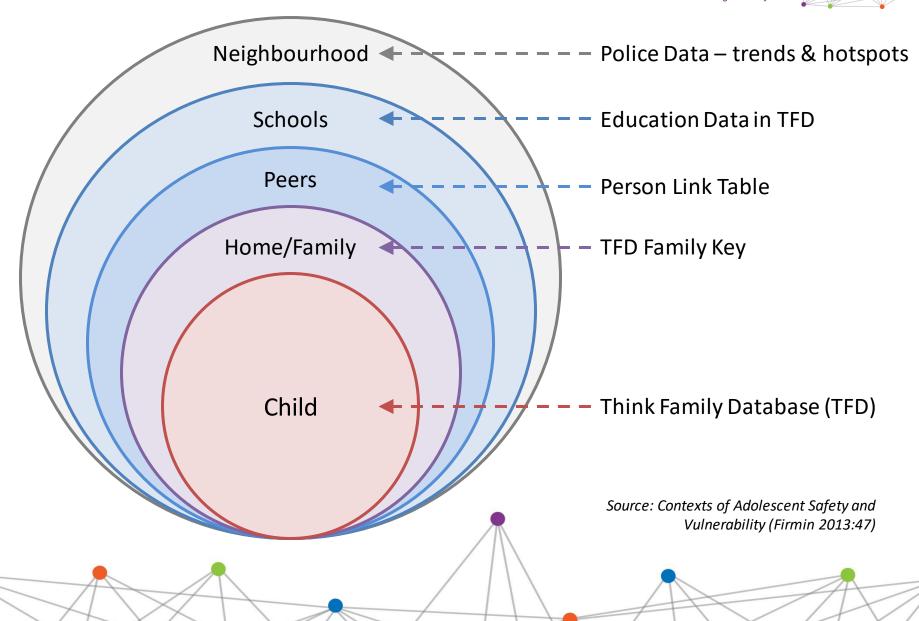
Therefore children's social care practitioners need to engage with individuals and sectors who do have influence over/within extra-familial contexts, and recognise that assessment of, and intervention with, these spaces are a critical part of safeguarding practices."

Carlene Firmin, Contextual Safeguarding
University of Bedfordshire (2017)



Data for Contextual Safeguarding





Insight Bristol Modelling Approach

Social

Network



1. Index score based on known risk factors (Recency, Frequency, Gravity scoring)

Police Indicators

Police Indicators

Misper Reports
Custody Records
Management Plans

Person Link Table (Contextual Safeguarding) Person TFD Family Key

3. Predictive risk modelling based on partnership data for individual and family

TFD
Individual

Crime/ASB
Education
Social Care/Early Help
Unemployment
Domestic Abuse
Health

Benefits of Social Network Analysis



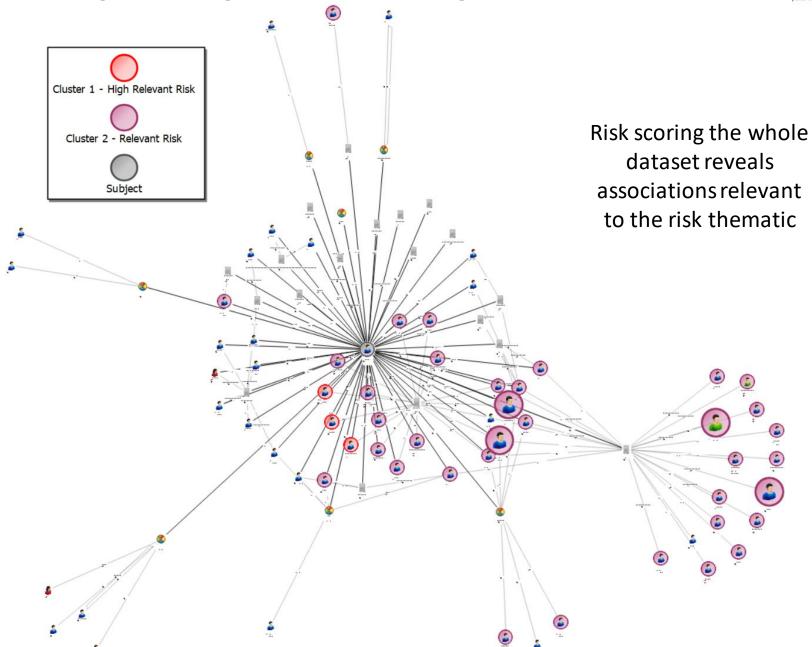
- Risk to individuals is appropriately weighted based on the risk in their network
- Identification of emerging cohort
- Clear risk vectors identified for targeted intervention
- Associations are thematic-agnostic there is a high risk that they would be missed by any thematic scanning practice
- Delivers both depth <u>and</u> efficiency, leveraging volume data



Example: Depth, Efficiency & Volume Insight Bristol Emerging cohort subject, showing direct and indirect person associations

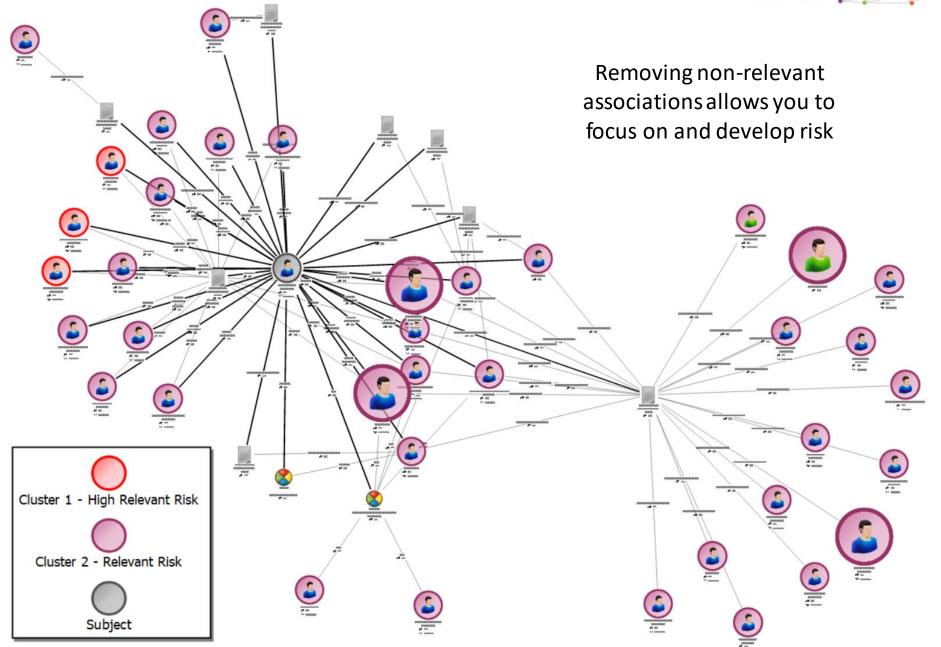
Example: Depth, Efficiency & Volume



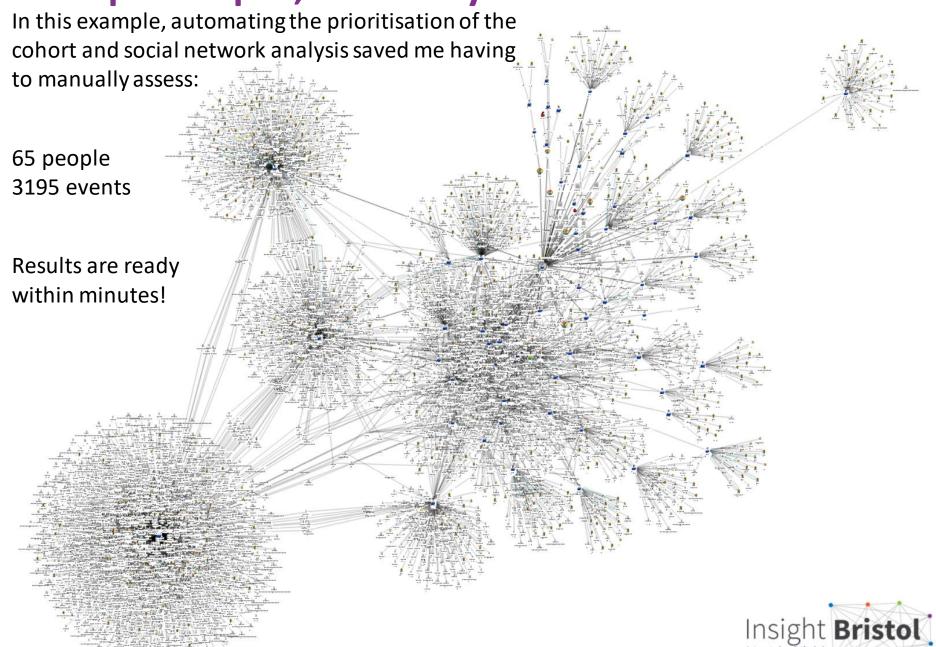


Example: Depth, Efficiency & Volume





Example: Depth, Efficiency & Volume



Risk Models & Analytical Products



Our social network analytical methods have been developed through the following products:

- Child Sexual Exploitation (CSE) Model
- Child Criminal Exploitation (CCE) Report
- Violence Reduction (VRU) Model
- Hate Ideology Problem Profile



Evaluation - CSE



- Modelled on subjects accepted onto the Barnardos Against Sexual Exploitation (BASE) cohort
- Combines predictive and index scoring methods
- Recall 92%, Precision 83%

"recall expresses the ability to find all relevant instances in a dataset; precision expresses the proportion of the data points that the model says were relevant actually were relevant"

Evaluated by Operation Topaz & TFD users



Evaluation - CCE



- Index scored rather than predictive
- VRUs and Safer Options Bristol
- County Lines Thematic Analyst & Researcher



Evaluation – VRU



- Modelled on subjects found guilty of GBH or more severe violence, or victims of the same
- Combines predictive, index scoring and community detection methods
- Recall 90%, Precision 90% "recall expresses the ability to find all relevant instances in a dataset; precision expresses the proportion of the data points that the model says were relevant actually were relevant"
- VRU, Safer Options, Violence Thematic Analyst



Operational Use



- Scoring memory used to calculate score trend for all subjects
 - highlighting high risk, increasing risk and emerging risk
- Scored cohorts feed into Think Family Database and dashboard products for dissemination.
- Cohort teams (VRU, Safer Options, Op Topaz) review subjects according to capacity. Prioritisation supports & informs human judgement – no automated decision making!
- Intelligence staff feed into Police tasking processes & partners for Contextual Safeguarding interventions

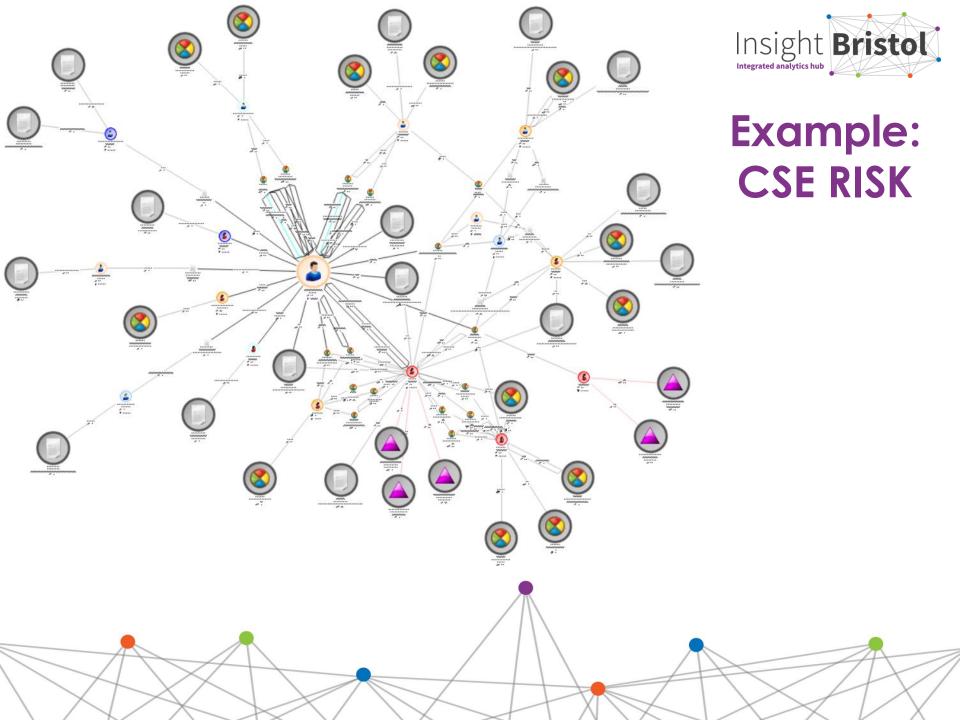


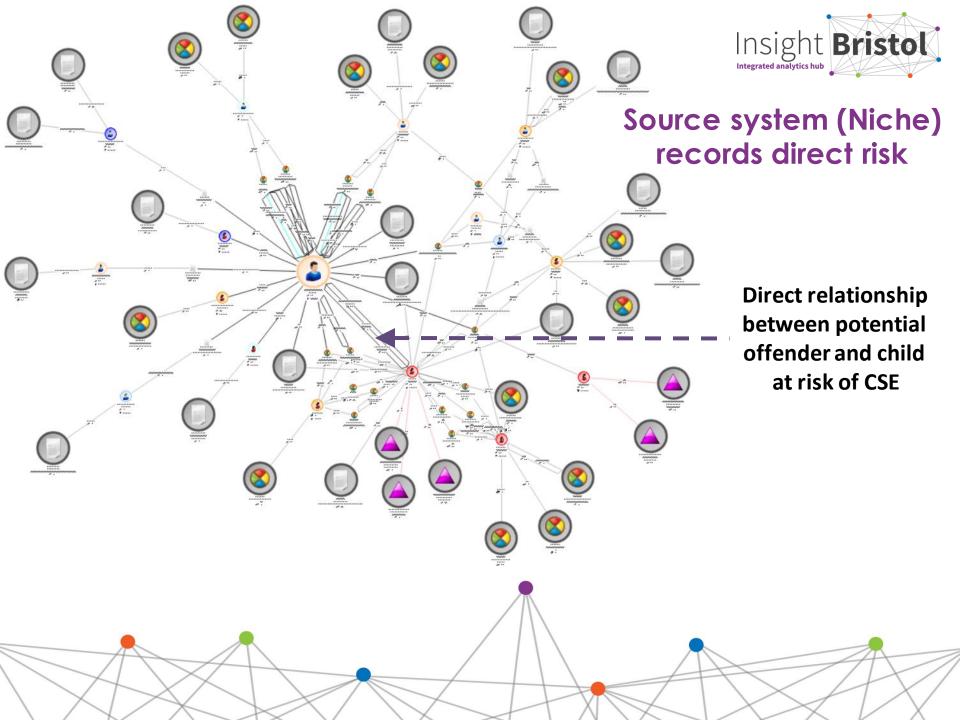
Considerations

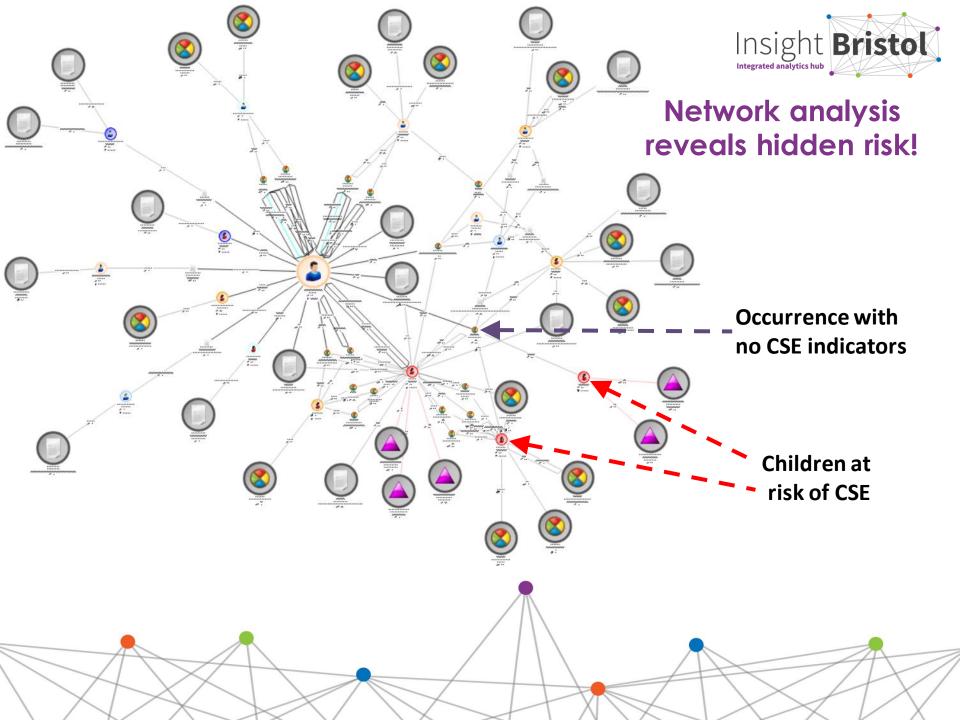


- "If you always do what you've always done, you'll always get what you've always got."
- Access to products systems & data sharing
- Thematic silos too many cooks!
- The deeper the data, the deeper the validation











Any Questions?

Social Network Analysis & Contextual Safeguarding Ethics & Law Workshop

Bristol, Tuesday 24th March





Thank you for listening!

Think Family Data

PERSON

OFFENDER RISK SCORE

1. FLAGS - Type or remarks contain Child Sexual Exploitation or remarks contain CSE. Flagged < age18 = Victim, > 18 = Offender. Vic Flag_C: count of flags

Vic Flag_R: recency of most recent

2. OCCURRENCES – with CSE related flags or Sexual Offences in which victim aged 11-18. Victims & Offenders included.

Vic Occ_C: count of occurrences Vic Occ_R: recency of most recent

3. INTELLIGENCE – with CSE and sexual Subject Types, subject aged 11-18. Vic Int_C: count of intelligence Vic Int_R: recency of most recent

4. MISPERS – misper aged 11-18. Misper C: count of occurrences Misper_R: recency of most recent

5. STORM CALL CARDS - CSE-related and non-CSE related risk questions from Juvenile Misper SmartCall question set. Mis CSE SC C: count of indicators Mis CSE SC R: recency of most recent Mis OTH SC C: count of indicators

Mis OTH SC R: recency of most recent

6. ASSOCIATES – Associate risk for cohort identified in 1-5 above. Emerging cohort not identified in 1-5 above.

<18 Associates Count

<18 Associates Score (total)

<18_Associates_RFM (total)

>=18 Associates Count

>=18 Associates Score (total)

>=18 Associates RFM (total)

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6B drug or alcohol incident

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PERSON

<18 (VICTIM)

RISK SCORE

¥

INTELLIGENCE: CCE, OCG, County Lines, Firearms, Drugs, Robbery, Burglary, Theft & Weapons # INTELLIGENCE REPORTS (9) & recency FLAGS: OCG, Gang, YOT, Safer Options & IOM Impact # FLAGS (5) & recency MANAGEMENT OCCURRENCES: OCG, County Lines & Gangs; Other. # MANAGEMENT OCCURRENCES (2) & recency OCCURRENCES: OCG, County Lines & Gangs only. # OCCURRENCES (1) & recency **EVENTS WITH PERSONS BOTH OVER & UNDER 18:** Occurrences & Intelligence with linked offenders or subjects aged both over 18 and under 18. # OCCURRENCES (1) & recency # INTELLIGENCE REPORTS (1) & recency CRIMINAL ORGANISATIONS: # ORGANISATIONS (1) & recency **MISPER OCCURRENCES:** Misper < 18. # MISPER OCCURRENCES (1) & recency **STORM SMARTCALL TEXT:** Gang & Other risk

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PERSON

indicators to enrich Misper data. # Juvenile Misper Risk Indicators (2) & recency

ASSOCIATE NETWORK: Index score based on above. Identifies additional risk & emerging cohort.

<18 Associates

<18 Associate RFM Score <18 Associate Risk Score

>=18 Associates

>= Associate RFM Score

>= Associate Risk Score

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ASP Data

VICTIM RISK SCORE

Person Link Table

Person Link Table

OFFENDER RISK SCORE

VRU SERIOUS VIOLENCE MODEL

Think Family Data (Bristol & Somerset)

Indicator Count & Recency

Indicator Count & Recency

PERSON

Counts of events and recency of latest event derived for all variables. Additional variables listed where derived.

CRIME: Business Objects Offender & Victim categories & non-crime incidents at Crimsec3 Group level (+ additional disaggregation for Aggravated Burglary). Harm Scores included.

INTELLIGENCE: Subject Level 2 categories, rationalised across current & historic & sorted into current Level 1 categories.

FLAGS & WARNINGS: Flags rationalised across current & legacy systems and aggregated into groups.

MANAGEMENT OCCURRENCES: Aggregated into Open & Filed.

CUSTODY: Detainee, Custody Officer & Pre-Release risk assessments aggregated into counts of positive responses across custody episodes.

MISSING PERSONS: SmartCall person reporting missing script aggregated into counts across episodes; latest risk assessment in Niche converted to numeric value.

STORM: Subjects who have been PNC researched against STORM Call Cards, at Disposal Group level.

ASSOCIATE NETWORK: Index score based on above. Identifies additional risk & emerging cohort, also aggregates subjects who offend together into groups.

Victim Associates Victim Associate RFM Score Victim Associate Risk Score

Offender Associates Offender Associate RFM Score Offender Associate Risk Score

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