Using linked administrative data to improve outcomes for vulnerable families in NSW

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October 2019

TAYLOR FRY

1. Their futures matter investment model – An overview
2. Our approach
3. Key results
4. Next steps
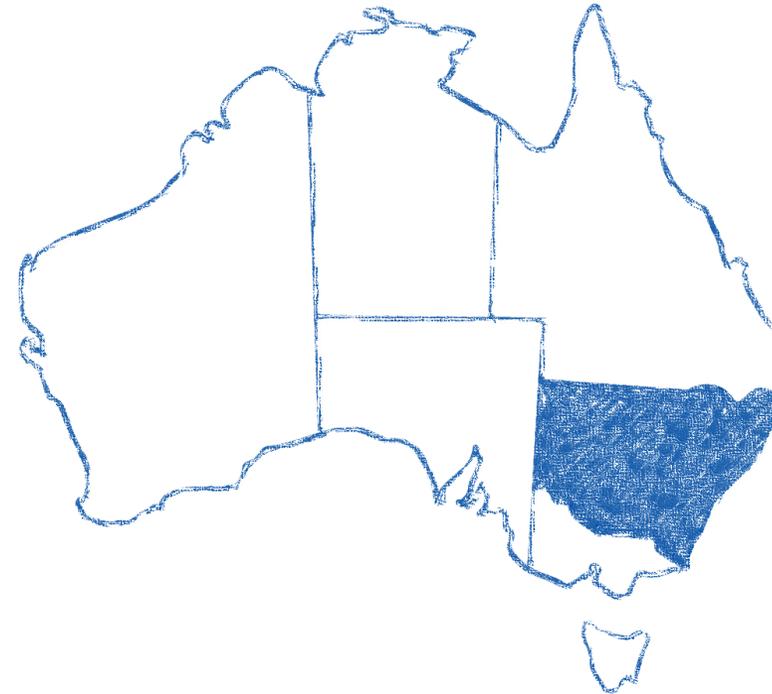5. Further information

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Their futures matter
investment model

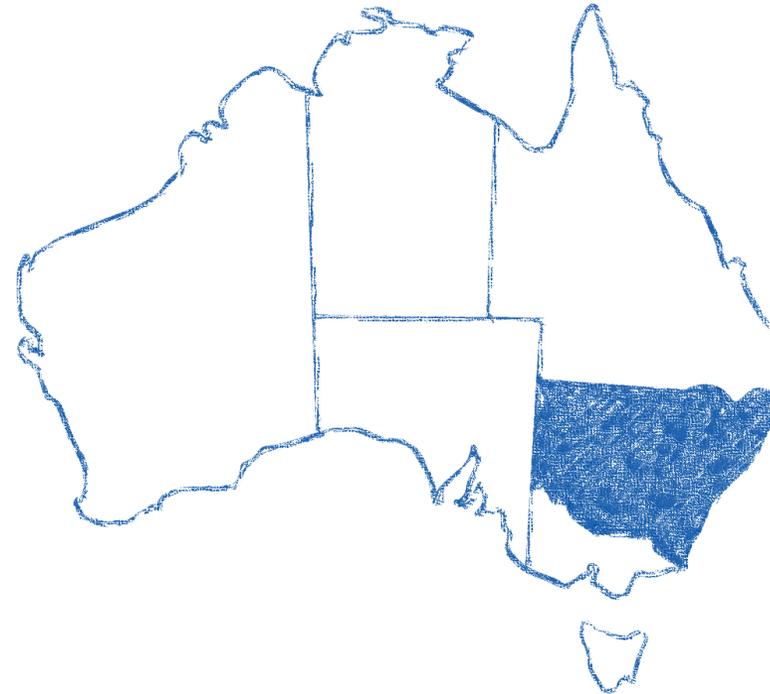# Their futures matter investment model

Introduction

- The **Their Futures Matter Unit** is a New South Wales government agency set up to improve life outcomes for vulnerable children

- It was set up following a 2015 report into foster care in NSW – **the Tune Report**

Their futures matter investment model

The Tune Report found

- Despite increased government expenditure the number of children in foster care has doubled over the past 10 years

- The system is failing to improve long-term outcomes and to arrest cycles of intergenerational abuse and neglect

- While the current system responds to immediate crises it failed to do enough to in the area of prevention

Their futures matter investment model

The investment model ...

- Helps TFM **prioritize investments in vulnerable children** and evaluate those investments

- **Forecasts life pathways and outcomes** for all children in the state

- Considers **cross-agency outcomes**
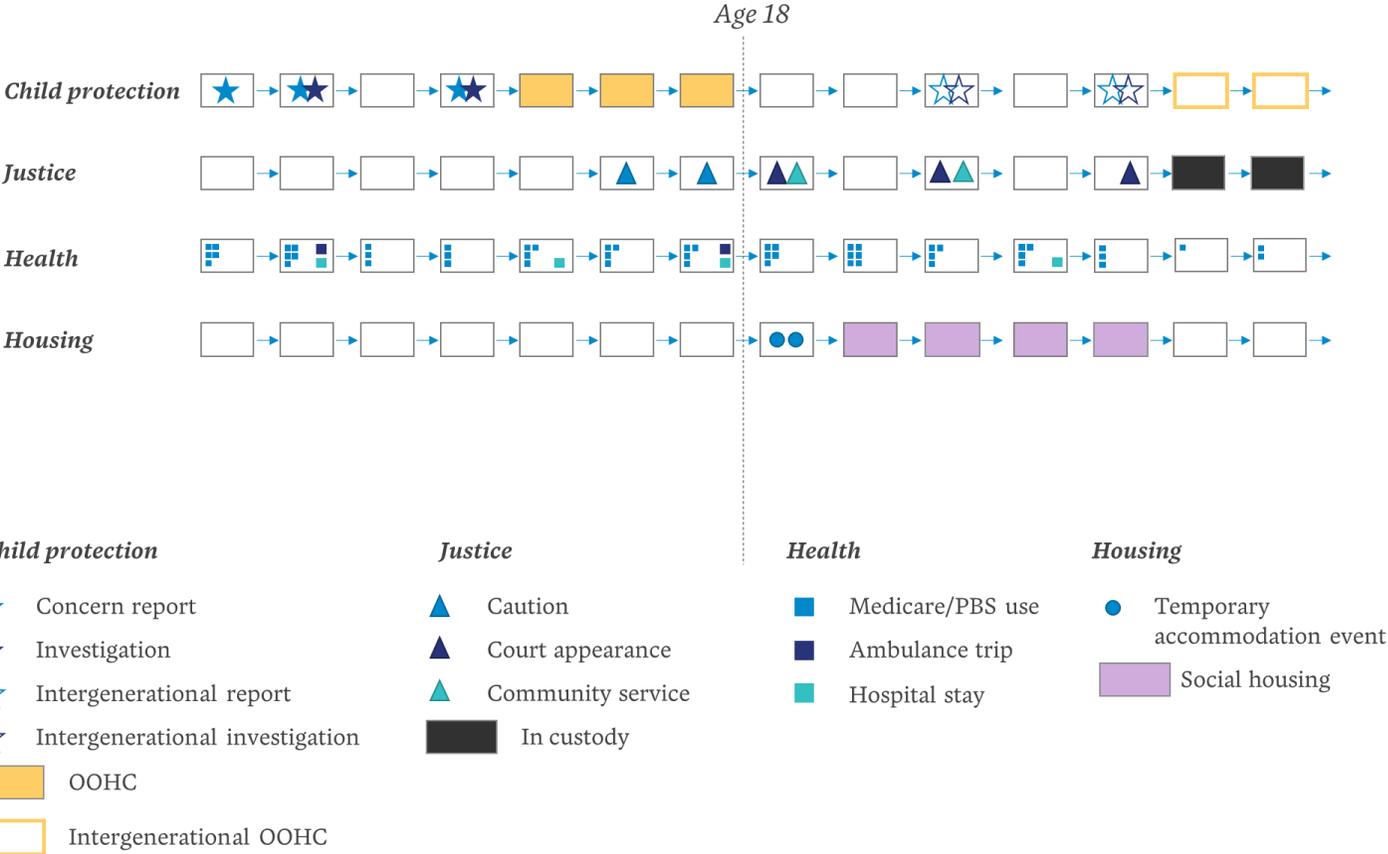
- Considers **long-term outcomes**

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Our approach

Their futures matter investment model

Our approach

- **Linked cross-agency** dataset to create individual historical pathways

- **Analysis of patterns in historical pathways** – used machine learning but final implementation were generalised linear models for more control/explainability

- **Micro-simulation of future pathways** – for a population of about 3m with 80+ component models

Age 18

Child protection

Justice

Health

Housing

Legend

Child protection
- ★ Concern report
- ★ Investigation
- ☆ Intergenerational report
- ☆ Intergenerational investigation
- ▮ OOHC
- ▯ Intergenerational OOHC

Justice
- ▲ Caution
- ▲ Court appearance
- ▲ Community service
- ▮ In custody

Health
- ▪ Medicare/PBS use
- ▪ Ambulance trip
- ▪ Hospital stay

Housing
- ● Temporary accommodation event
- ▮ Social housing

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Data - historical pathways

Which children and young people are included in the analysis?

- All individuals born in 1990 and later who live (or have lived) in NSW

- We also include information about those individual's parents

- More than **3 million** individual pathways were analysed

What agencies contributed pathway information?

- NSW Department of Family and Community Services
- Bureau of Crime Statistics and Research
- NSW Department of Justice
- Legal Aid NSW
- NSW Police Force
- NSW Ministry of Health
- NSW Ambulance
- NSW Department of Education
- NSW Education Standards Authority (NESA)
- NSW Registry of Births Deaths and Marriages
- NSW Treasury

Data - historical pathways

Services and events included in each individual's pathway

Child protection

- Concern reports
- ROSH reports
- SARA
- OOHC episodes (own and next generation)
- Number of placements in OOHC
- OOHC placement type
- Primary issue given as reason for (concern report and SARA)
- Restoration

Housing

- Social housing tenancies
- Private rental assistance
- Homelessness services

Justice

- Custody
- Community supervision
- Court finalisations
- Cautions
- Youth conferences
- Legal aid

Data - historical pathways

Services and events included in each individual's pathway (cont.)

Health

- Public hospital admissions
- Private hospital admissions
- Emergency department presentations
- Ambulance patient contact events
- Child birth
- Opiate treatment programme

Education

- NAPLAN year 3 results
- NAPLAN year 7 results
- HSC completion
- Unexpected government school moves
- RAM equity loadings

Mental health

- Hospital admission for mental health
- Ambulatory mental health

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Data - historical pathways

Services and events included in each individual's pathway (cont.)

Alcohol and other drugs

- Hospital admission for AOD
- Proven AOD offences
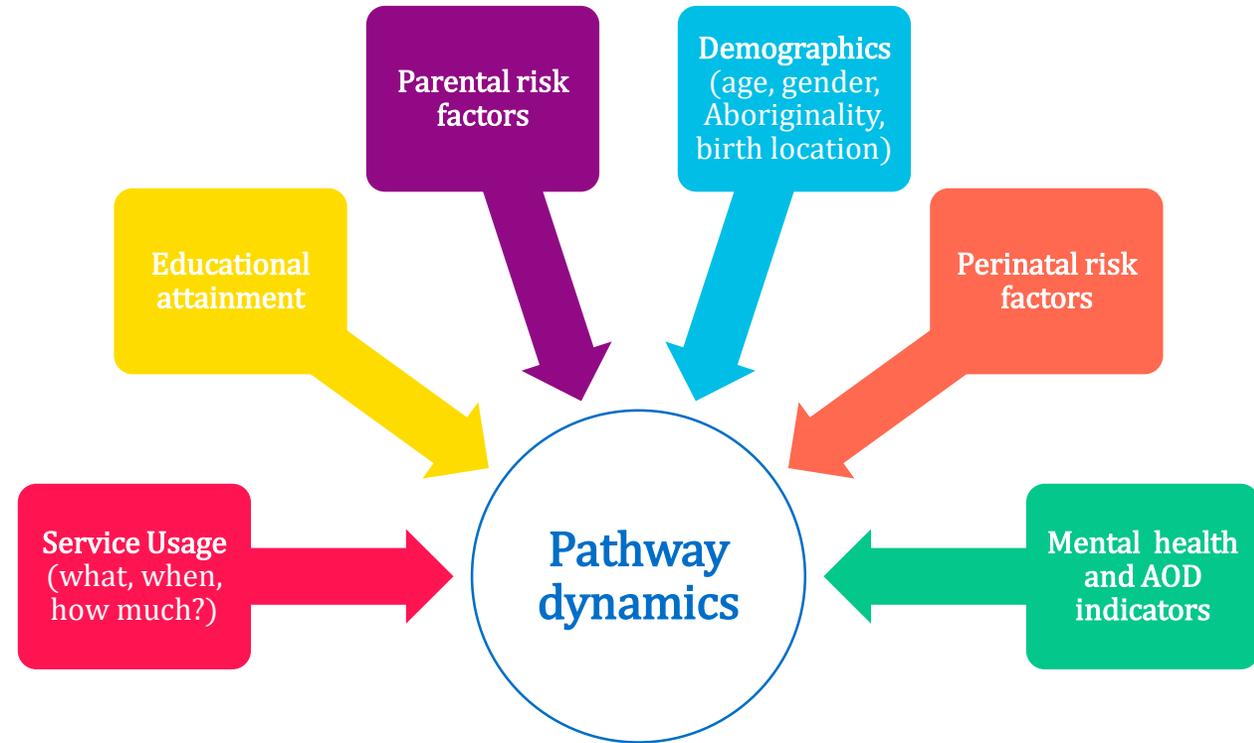
Parental risk factors

- Parent in custody
- Parent interaction with justice
- Proven AOD related offence or AOD hospital admission
- Proven domestic violence related offence or victim of domestic violence
- Treatment for mental health in hospital or ambulatory services

Commonwealth services

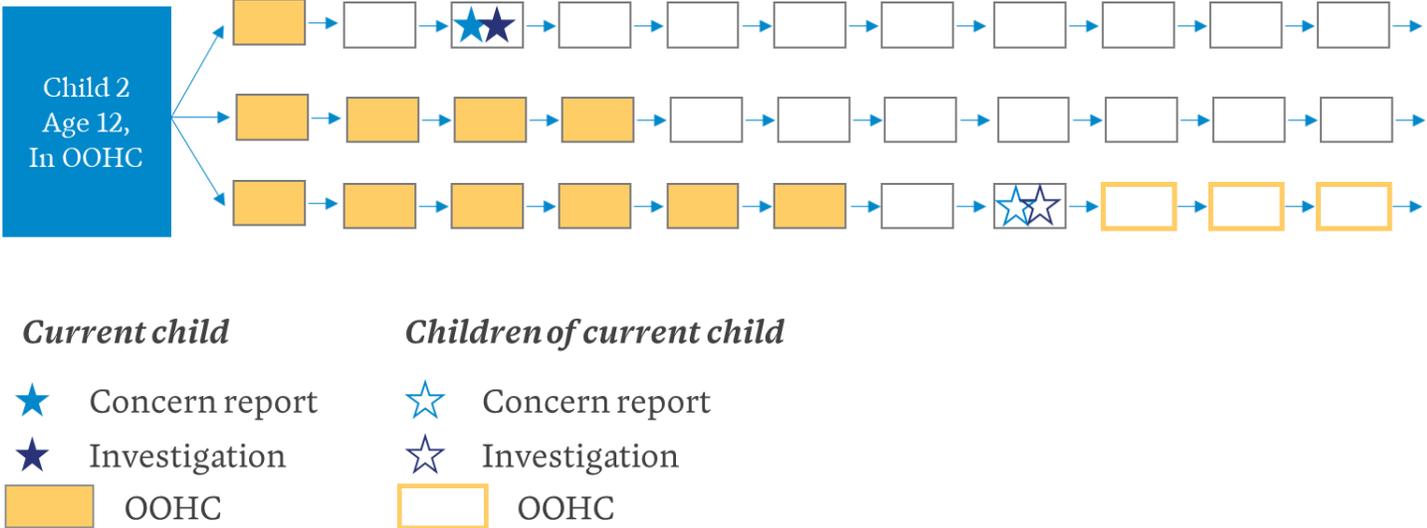- Welfare
- MBS
- PBS

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Modelling – analysing pathways

- This allows us the understand **pathway dynamics**

- **Pathway dynamics** tell us how a persons characteristics and their pathway up to a point in time influence their likely future pathway

Parental risk factors

Demographics (age, gender, Aboriginality, birth location)

Educational attainment

Perinatal risk factors

Service Usage (what, when, how much?)

Pathway dynamics

Mental health and AOD indicators

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Projection – simulating pathways

- The models developed to describe **pathway dynamics** are used to simulate future pathways for all children and young people aged under 25 in NSW.

- There is uncertainty in what a person's future pathways will look like – each simulation represents one possible future pathway.

- By running many simulations we get an estimate of the **distribution of possible outcomes**.


Current child

★ Concern report

★ Investigation

▮ OOHC

Children of current child

☆ Concern report

☆ Investigation

▭ OOHC

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Key results

Their futures matter investment model

Results overview

TFM's Investment Model uses individual-level linked administrative data from most government sectors to estimate future service usage and outcomes for young people of NSW

There were children and young people born in NSW and aged under 25 as at 30 June 2017

2.2M
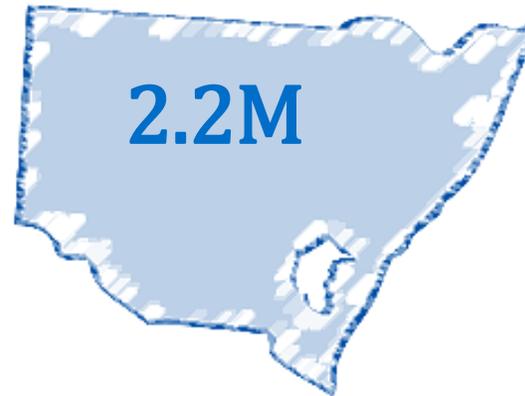
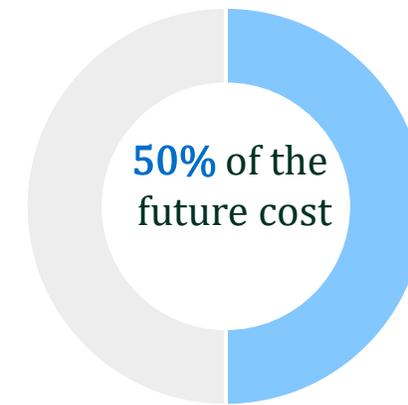We've estimated their average future human services cost (to age 40) to the NSW Government to be
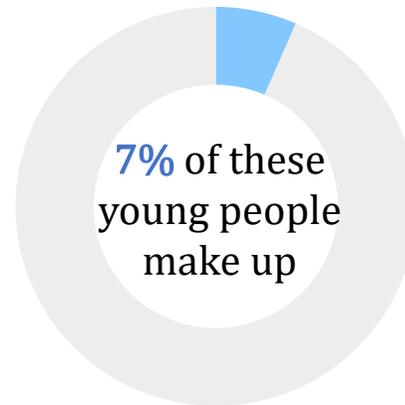
$143k

which adds up to

$332B
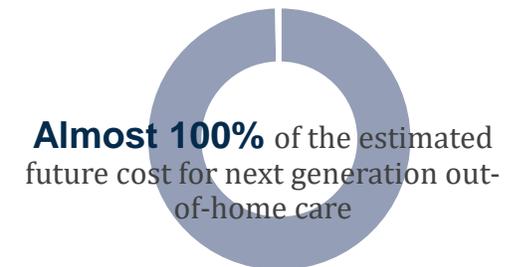
Their futures matter investment model

Results overview

For these young people, future human services costs to the NSW Government are highly concentrated

7% of these young people make up

50% of the future cost

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Their futures matter investment model

Results overview

Estimated future cost is particularly concentrated in some sectors

1% of the study population make up

1% of children currently aged 5 and under make up

5% of females make up

32% of the estimated future cost for NSW justice services

45% of the estimated future cost for NSW child protection services for children currently aged 5 and under

Almost 100% of the estimated future cost for next generation out-of-home care

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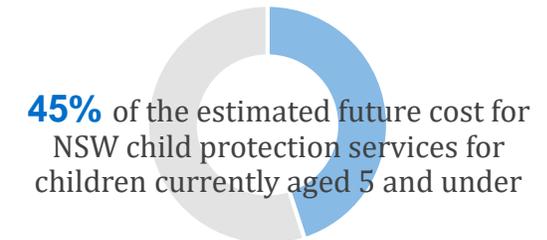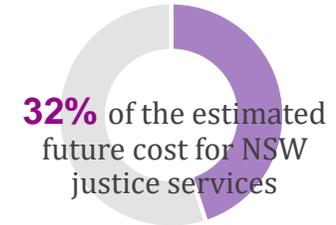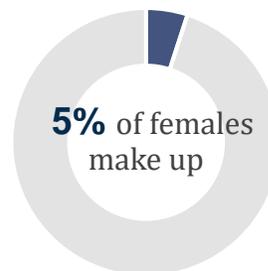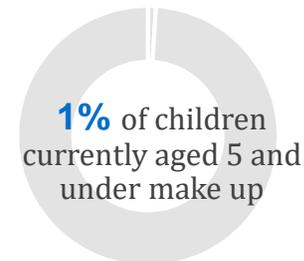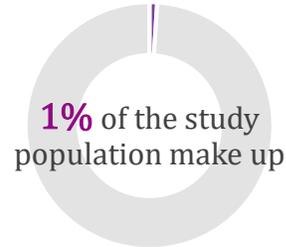
Their futures matter investment model

Results overview

We used the modelling to define six vulnerable groups.

These vulnerable groups were chosen:

- To cover a wide range of vulnerability

- Due to a forecast of high future cost

- To focus on different life stages, because needs can vary significantly by life stage

TFM are focusing on two of the vulnerable groups for state-wide systems and services responses

Average cost   **Vulnerable group**

15.9x	$2.3M	1,000 individuals with highest estimated service costs
6.3x	$902k	Young mothers and their children
2.7x	$382k	Vulnerable young people transitioning to adulthood
2.4x	$344k	Vulnerable young adolescents
2.1x	$300k	Children and young people affected by mental illness
1.7x	$250k	Vulnerable young children aged 0-5
1x	$143k	NSW under 25 population

Make up	**0.04%**	of the study population but comprise	**1%**	of total estimated future costs
Make up	**0.7%**	of the study population but comprise	**1.8%**	of total estimated future costs
Make up	**1.3%**	of the study population but comprise	**3.4%**	of total estimated future costs
Make up	**3.2%**	of the study population but comprise	**7.5%**	of total estimated future costs
Make up	**7.9%**	of the study population but comprise	**17%**	of total estimated future costs
Make up	**6.9%**	of the study population but comprise	**12%**	of total estimated future costs
Makes up	**100%**	of the study population and comprises	**100%**	of total estimated future costs

Vulnerable group – vulnerable young children

Who's in this group?

Children aged 5 or younger at 30 June 2017 with one or more of the following:

- 1 or more parental risk factor
- 2 or more perinatal risk factors
- Assessment as ROSH+

How many kids are in this group?

At 160,403 kids, that's about 1 in 4 NSW-born kids under 5

What is the average future cost of this group?

On average, the future cost of these vulnerable young children is $250k

The vulnerable young children have poor outcomes

Chart legend (top to bottom):
- Next gen OOHC
- Education
- Justice
- Housing
- Child protection
- Health
- MBS PBS
- Welfare

Y-axis: $0, $50,000, $100,000, $150,000, $200,000, $250,000, $300,000

Social outcome	Vulnerable young children
Proportion expected to have an OOHC placement	12x
Proportion whose children expected to require OOHC	3.9x
Proportion expected to enter custody	2.5x
Proportion expected to use social housing as adults	2.5x
Proportion completed or expected to complete the HSC	0.8x
Proportion expected to be admitted to hospital for AOD	1.7x
Proportion expected to be supported by welfare	1.4x

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Results overview

For each vulnerable group we have identified risk indicators associated with these children having poor outcomes later in life.

These risk indicators will allow TFM to better target the most vulnerable in each group.

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Illustrative visualisation

- This visualisation was used to illustrate one of the key findings in relation to the intergenerational transmission of vulnerability

- Link to animation

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Next steps

Their futures matter investment model

Next steps

- Use insights and projections of the model to prioritize investments

- Use model to help evaluate the performance of those investments

- Expand model – more risk indicators and services covered
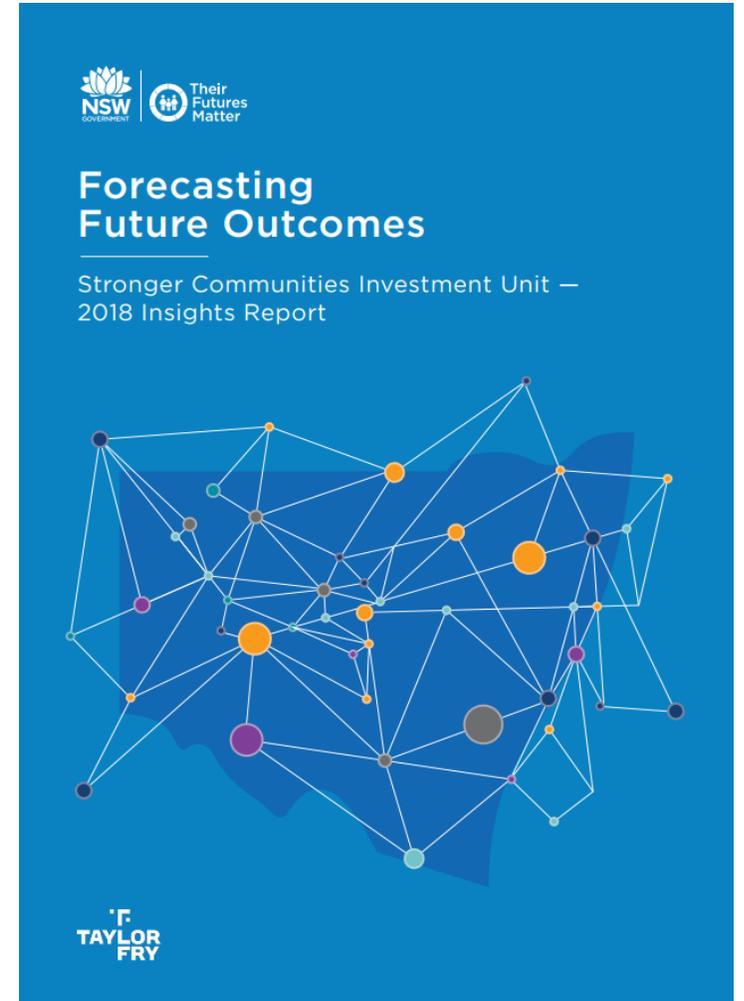
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Further information

Their futures matter investment model

Further information

- [A publicly available report](#) based on the Investment Model

Press articles

- ['Ground-breaking' report: social services overhaul](#)

- [Billions spent 'investing in the wrong stuff', social services sector responds to report](#)

- [Beyond the Folbigg tragedy: silent mental illness in parents the greatest risk for children](#)
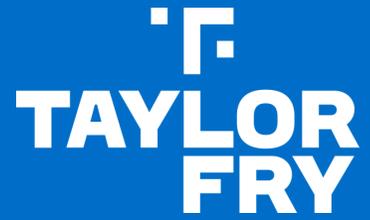
TAYLOR FRY

Level 22
45 Clarence Street
Sydney NSW 2000

www.taylorfry.com.au

Peter Mulquiney | Principal

+61 2 9249 2959

peter.mulquiney@taylorfry.com.au

Linked in