

People Living in Place: Population circumstances for early childhood development and learning

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Centre for Research on Child and Adolescent Mental Health
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THE UNIVERSITY OF
WESTERN
AUSTRALIA



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ARC Centre of Excellence for Children and Families over the Life Course



Early childhood

Relevance to this conference

Context setting – early life-course circumstances that support the onward mental health of children



A 20 minute story

Questions by government:

How do you develop and implement a *population strategy* to improve early child development in the years birth to 8?

How should the government think about this in terms of the *local population* of children?

Re-arrange existing services
Fund new services



Sources

1. Taylor, C. L., Zubrick, S. R., & Christensen, D. (2019). Multiple risk exposures for reading achievement in childhood and adolescence. *Journal of Epidemiology and Community Health*, jech-2018-211323. doi:10.1136/jech-2018-211323
2. Taylor, C. L., Rice, M. L., Christensen, D., Blair, E., & Zubrick, S. R. (2018). Prenatal and perinatal risks for late language emergence in a population-level sample of twins at age 2. *BMC Pediatrics*, 18(1), 41. doi:10.1186/s12887-018-1035-9
3. Christensen, D., Taylor, C. L., & Zubrick, S. R. (2017). Patterns of multiple risk exposures for low receptive vocabulary growth 4-8 years in the Longitudinal Study of Australian Children. *Plos One*. doi:dx.doi.org/10.1371/journal.pone.0168804
4. Taylor, C. L., Zubrick, S. R., & Christensen, D. (2016). Barriers to Parent–Child Book Reading in Early Childhood. *International Journal of Early Childhood*, 1-15. doi:10.1007/s13158-016-0172-2
5. Zubrick, S. R., Taylor, C. L., & Christensen, D. (2015). Patterns and predictors of language and literacy abilities 4-10 years in the Longitudinal Study of Australian Children. *Plos One*, 10(9): e0135612). doi:10.1371/journal.pone.0135612
6. Christensen, D., Zubrick, S. R., Lawrence, D., Mitrou, F., & Taylor, C. L. (2014). Risk factors for low receptive vocabulary abilities in the preschool and early school years in the Longitudinal Study of Australian Children. *Plos One*, 9(7). doi:10.1371/journal.pone.0101476.



Part 1

The Early Years Agenda



The early years agenda

How to position policy and services to focus on children birth to age ~8 yo

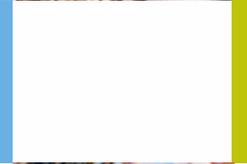
What does the growth of their development tell us about how we should view prevention and intervention opportunities?

How realistic are our expectations about the identification of children in need of early childhood enrichment?



Part 2

Growth in early childhood



Observing typical growth in young children



What grows?

Very few measures of progressive elaboration and growth over extended periods of time (cognition, emotion)

Vocabulary development

Language development is agreed to be a central “pillar” of human development

Vocabulary is a robust indicator of language development

Vocabulary “grows” through life and can be estimated

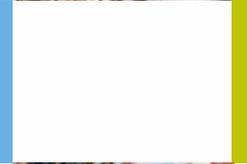


Vocabulary growth as an indicator

The life-long growth of vocabulary (the semantic system) makes it a very attractive candidate for the study of cognitive growth

It's one of the very few early measures that can be plotted with growth curves

Later measures: reading, math



The evidence base for this talk

Longitudinal Study of Australian Children (N=10,000)

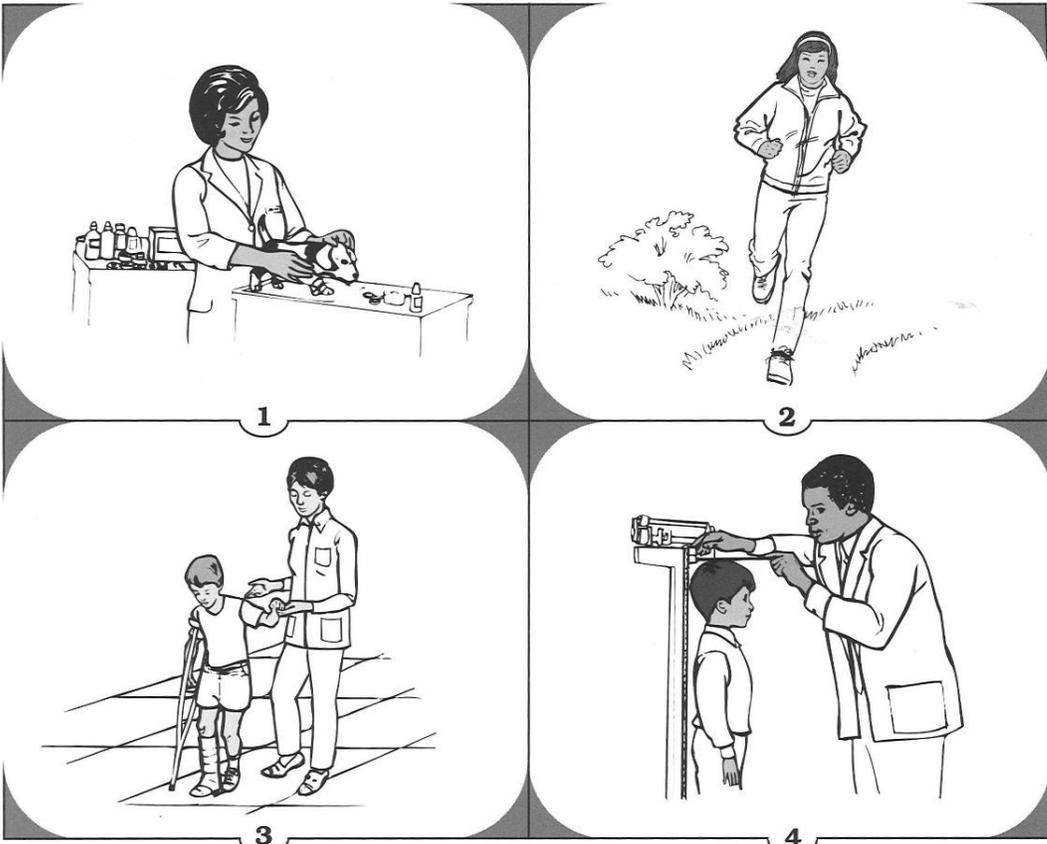
Ongoing, biennial collection, 2002-present

Followed from ~birth (N=5000) and from age 4 (N=5000)

Randomly recruited across Australia



The Adapted Peabody Picture Vocabulary Test (PPVT)

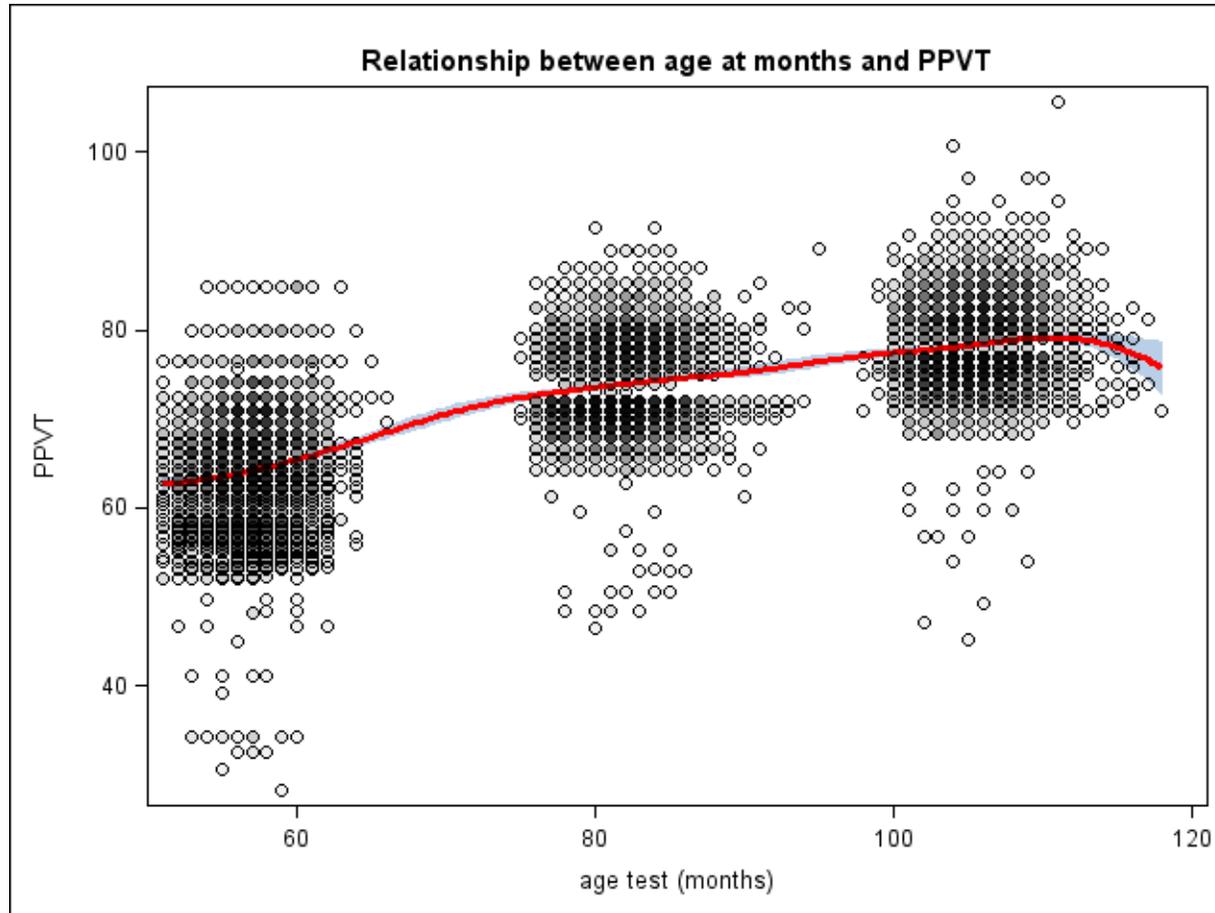


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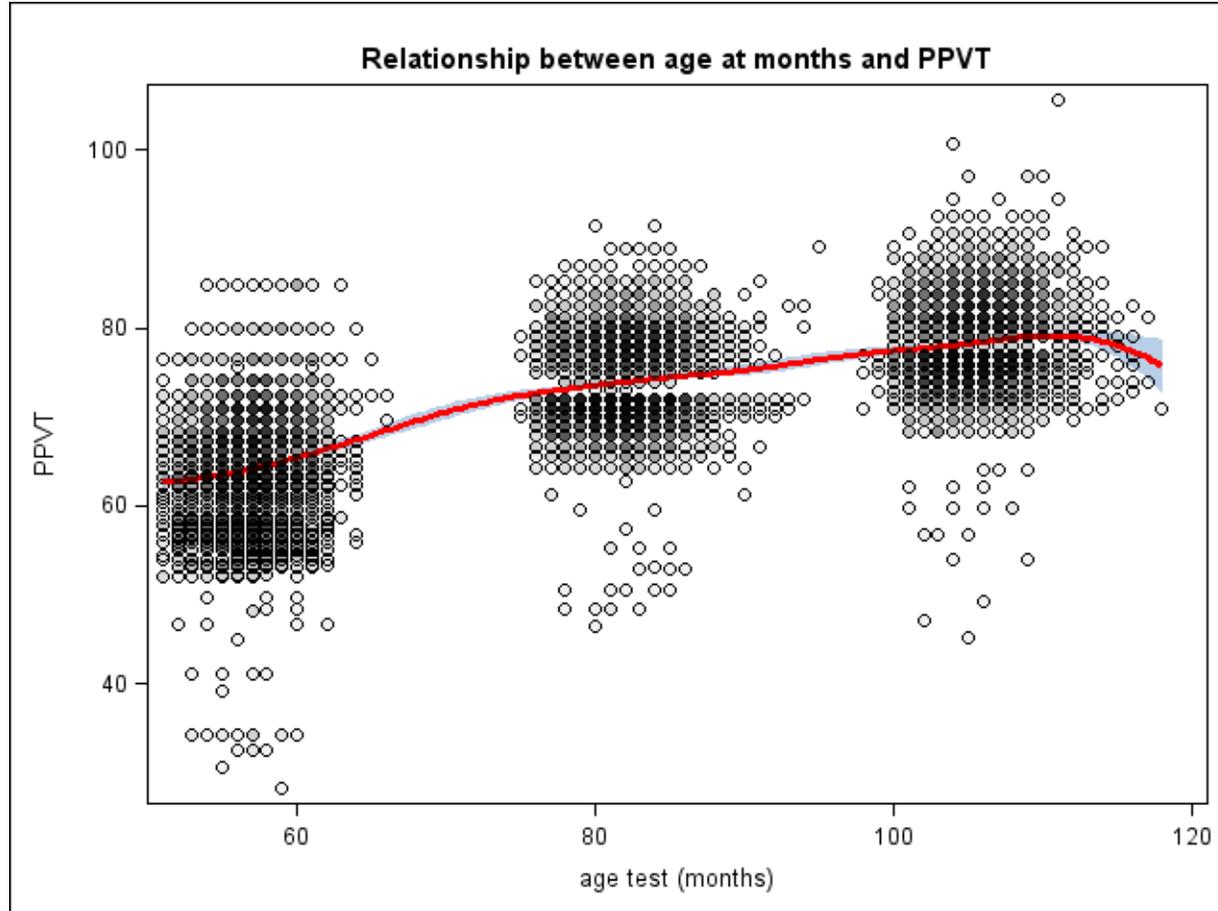
- Given at ages 4, 6, and 8
- Growth of the semantic component
- “Receptive” vocabulary
- Item response theory
- Vertical scaling to allow the measurement of growth



Language growth 4-8 years (N=4322)



What influences this growth?



What influences language growth?

CHILD

- Gender
- Birthweight
- Aboriginal status
- Ear infections
- Persistent temperament
- Reactive temperament
- Sociable temperament
- School readiness

FAMILY

- Family structure
- Number of siblings
- Income
- Health care card
- Financial hardship

MATERNAL

- Age(teen)
- Education
- Work hours low
- Parenting consistency
- Parenting reasoning
- Parenting warmth
- Parenting hostility
- Smoking

- Mental health distress
- Alcohol problem

29 candidate predictors

- Non-English speaking



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16 show growth effects

- Non-English speaking



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- Parenting warmth
- Parenting hostility
- Smoking

- Socio-economic area disadvantage
- Reading to child
- Playgroup
- Hours in care

- Mental health distress
- Alcohol problem

29 candidate predictors

↓
16 show growth effects

↓
11 in final model

- Non-English speaking



How well do these predictors predict at age 4
how children will do at age 8?



The predictive utility of these 11 variables is very poor

53% of the variance in vocabulary growth was predicted by the age of
the child alone

Only 7% of the variance in vocabulary growth was predicted by the
other 11 predictors

Positive predictive value = 25.8% - no practical utility

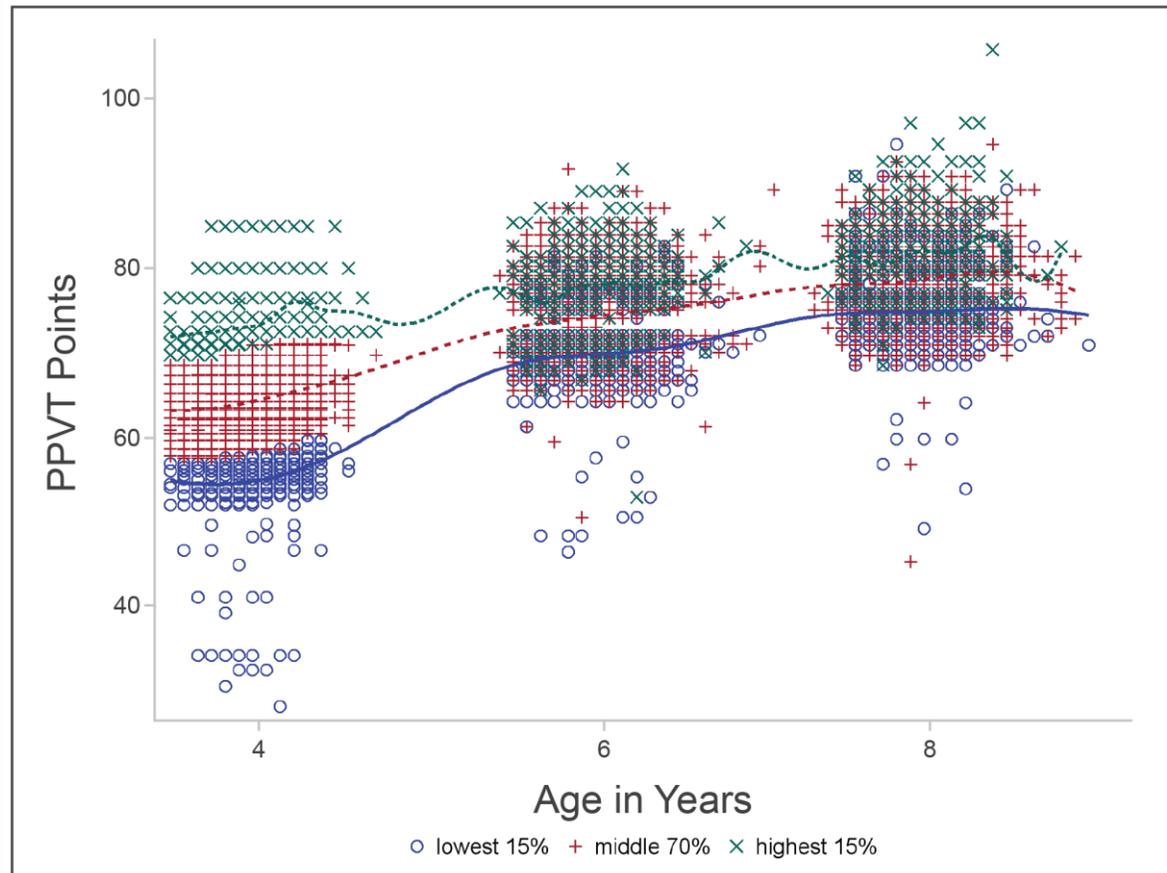


Why is prediction so poor?

Look at where children start and where they wind up.



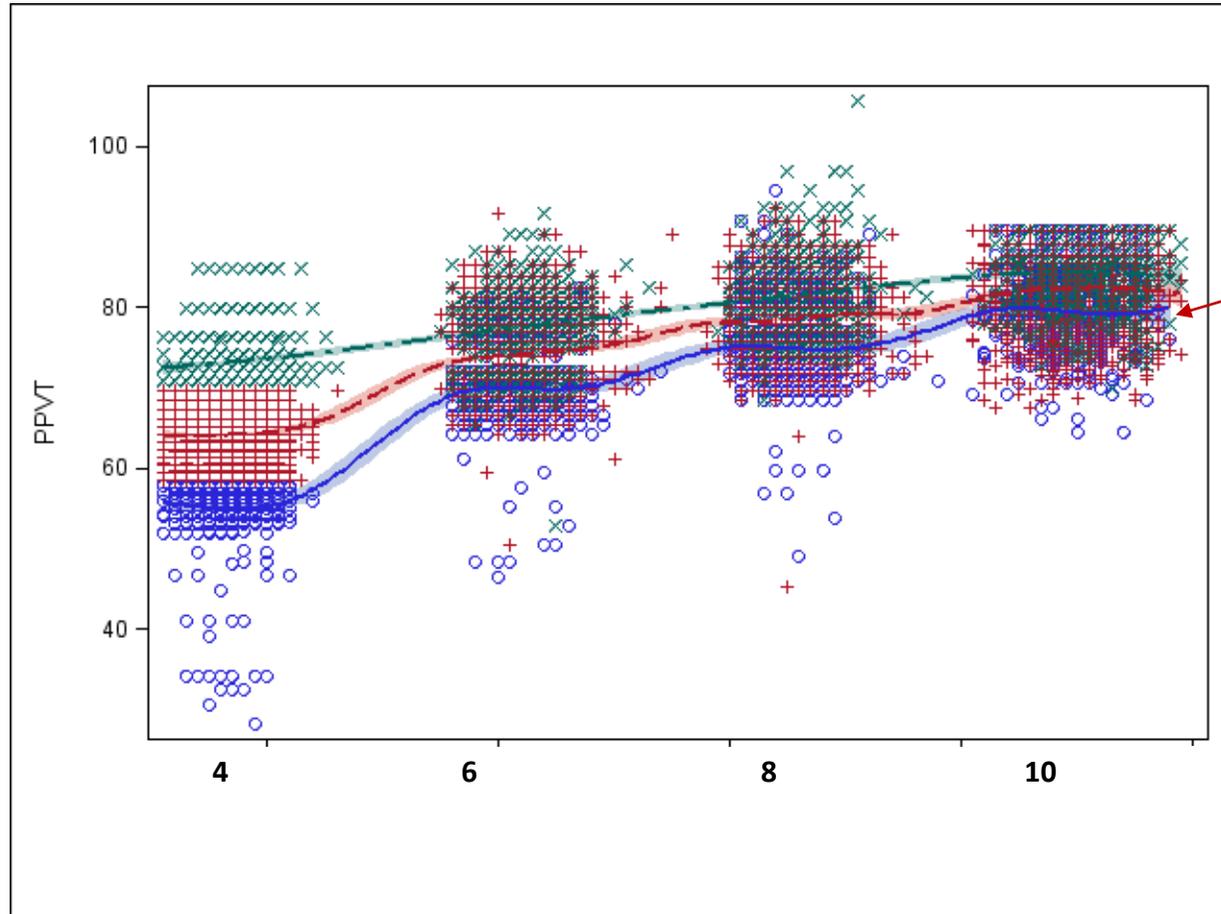
Vocabulary growth age 4-8



The children are changing position! This is why prediction from age 4 to 8 is poor.



Typical developmental growth 4-10 years (N =4332)



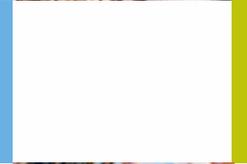
Academic rating
scale - literacy

A typical pattern of change
in child development over
time – this uses growth in
language



Part 3

Developmental circumstances



Overcoming “risk” thinking

Is there another way of thinking about risks and outcomes for children?

Can we overcome thinking about individual point-in-time risks?



Developmental circumstances

There are known risks for poorer child development

They don't occur "one at a time"

These risks occur in "batches"

They vary in length, intensity and duration

These circumstances may offer different ways of thinking about how to design intervention strategies



So

What happens when we look at risk as a
developmental circumstance?

Across time

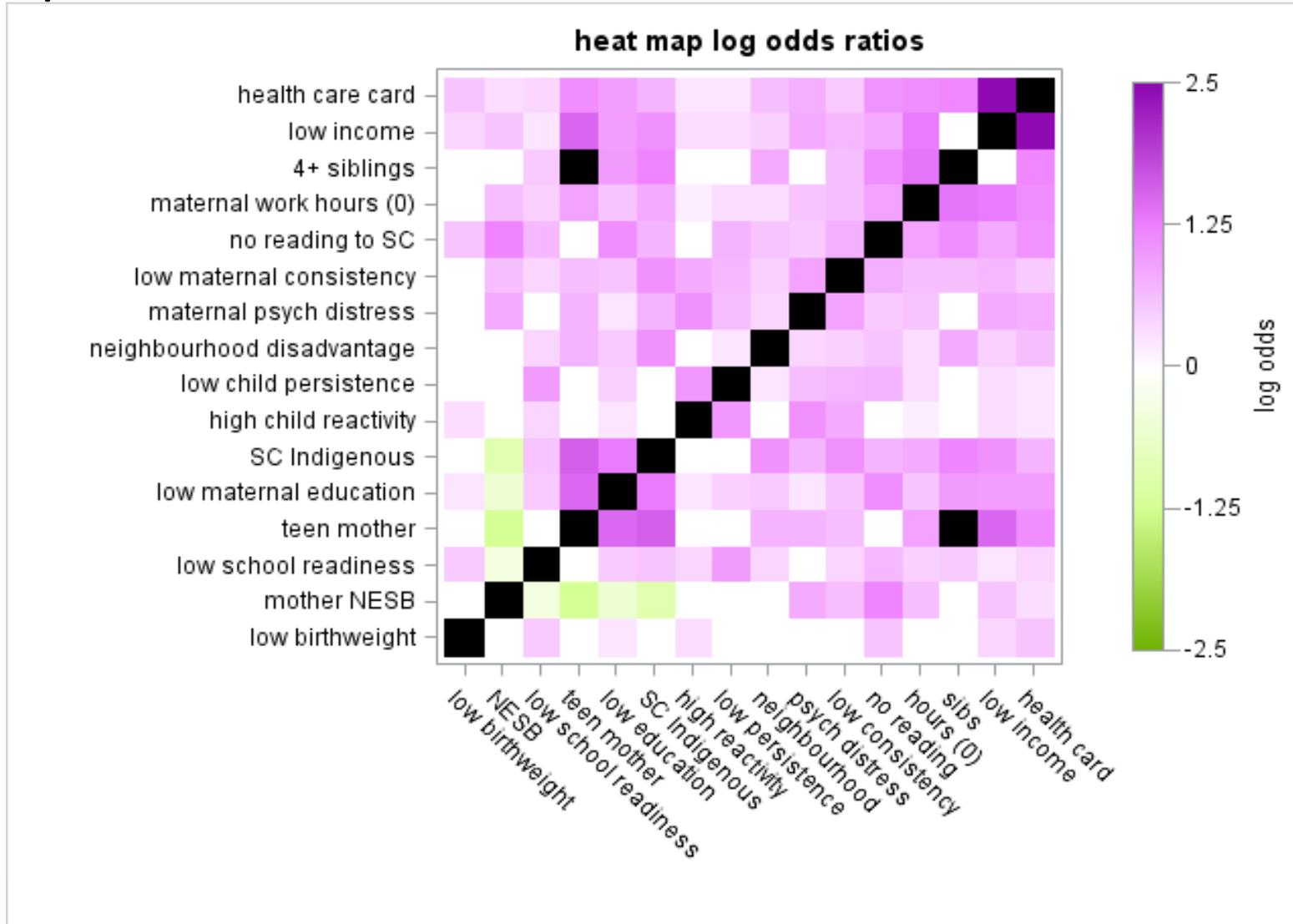
Place-based

In populations of children

We returned to our 11 individual risks and . . .



Developmental circumstances



Developmental circumstances

Latent classes

1,415,000 children in Australia aged 0-4

Developmentally enabled (ref.)	46% = 651,000
Working poor	20% = 283,000
Overwhelmed	10% = 141,500
Developmental delay	9% = 127,500
Low human capital	8% = 113,000
Resource poor NESB	7% = 99,000



Developmental circumstances

46% of children are Developmentally Enabled

N = 650,000 Australian children 0-4 years

Typical circumstance

Older mothers, more educated, smaller families, no multiple stresses

Prevalent book reading

Child development is on time and robust

Policy prerogative

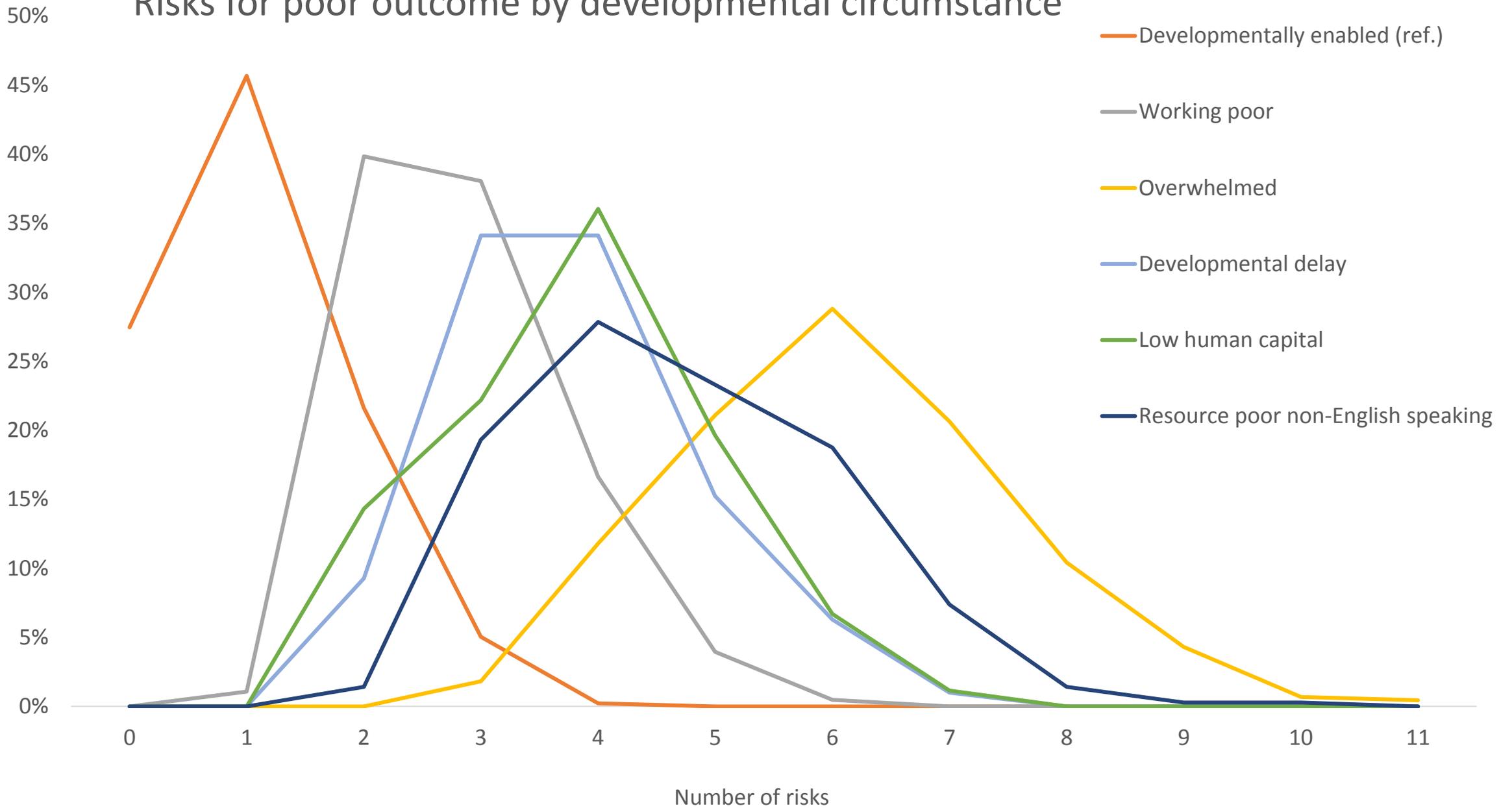
Maintain developmental encouragements and opportunities

Monitor population progress

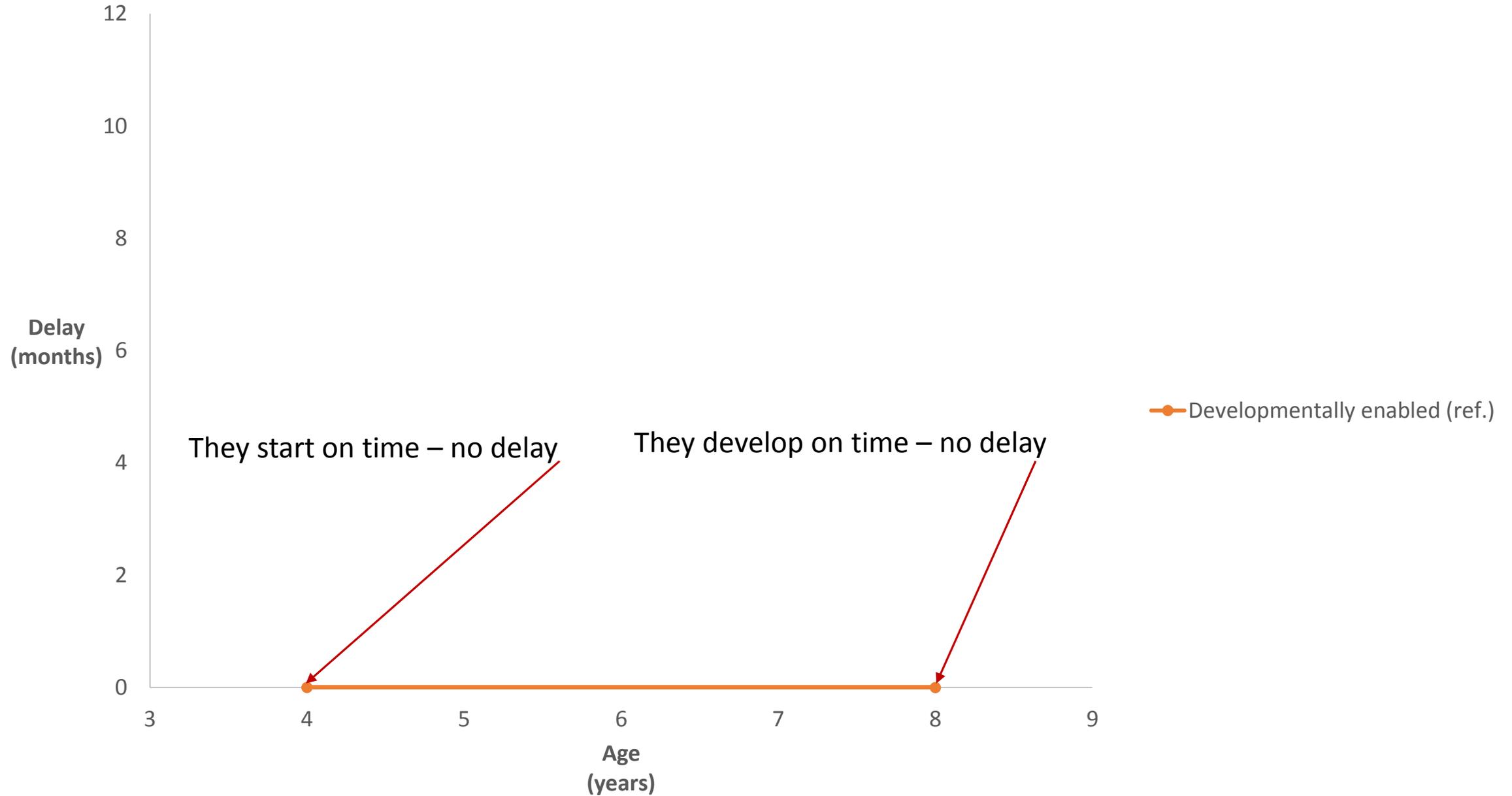
Provide light-touch universal interventions



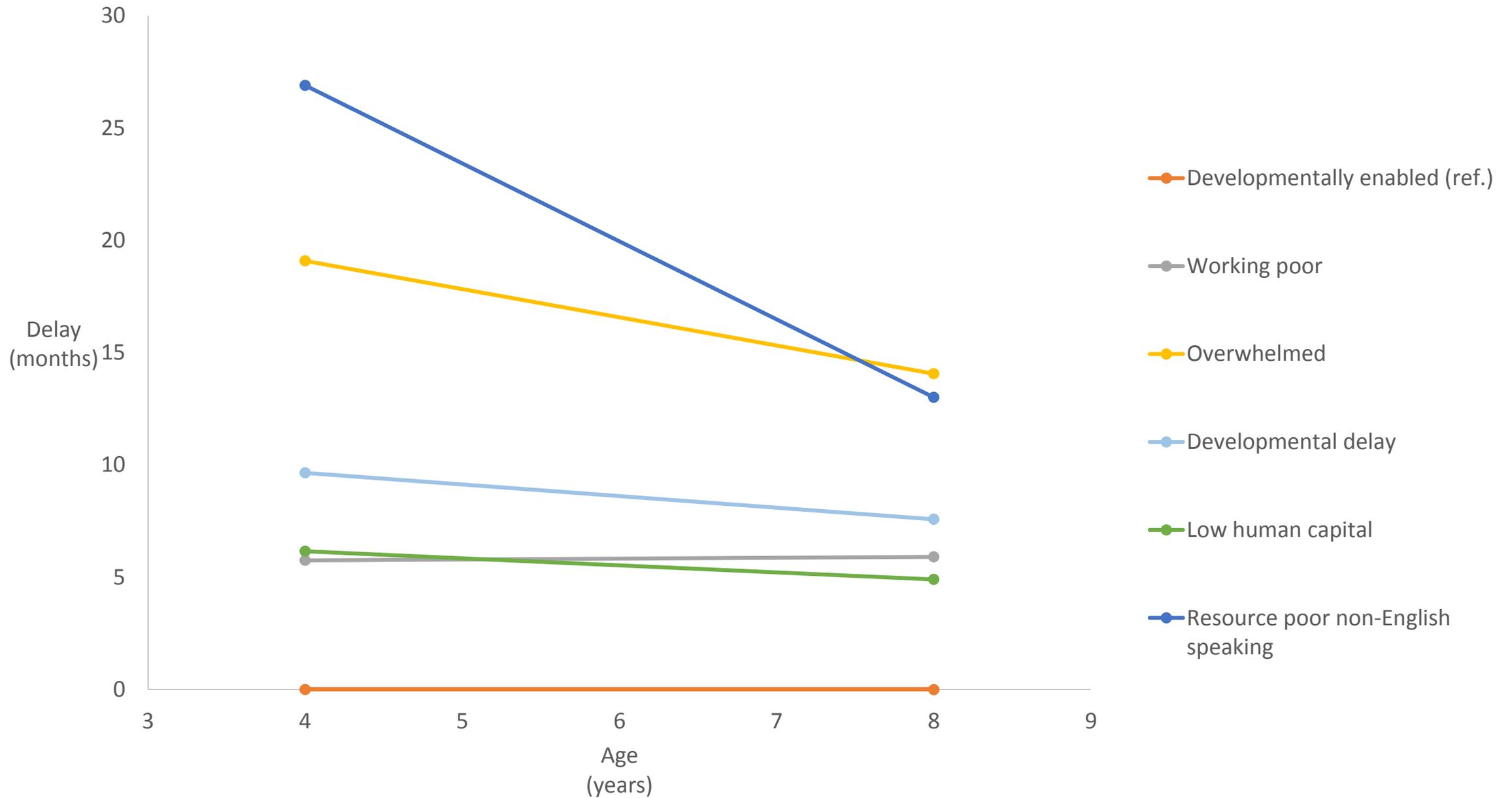
Risks for poor outcome by developmental circumstance



Developmental growth from age 4 to 8: Developmentally enabled

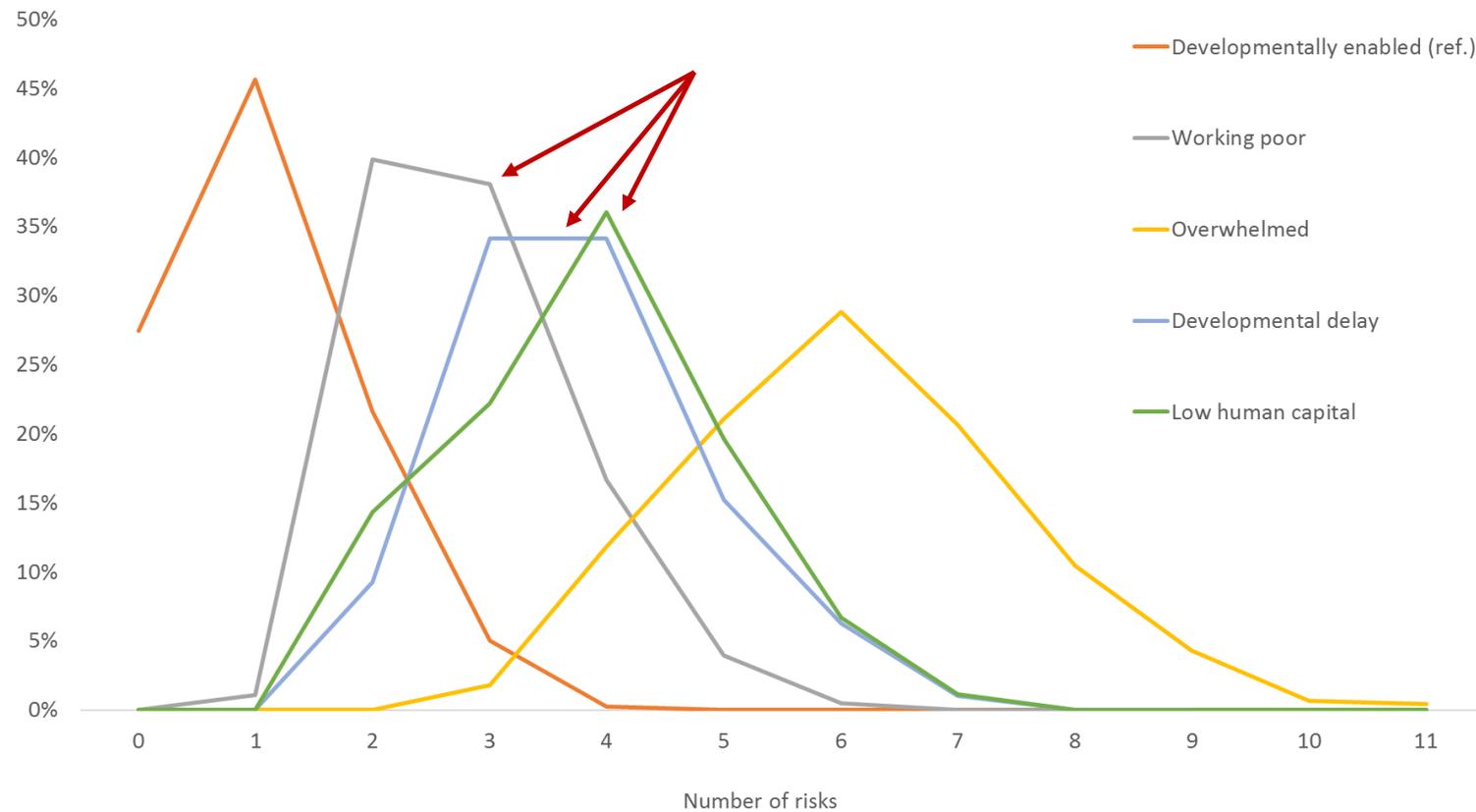


This is what their growth looks like from age 4 to 8

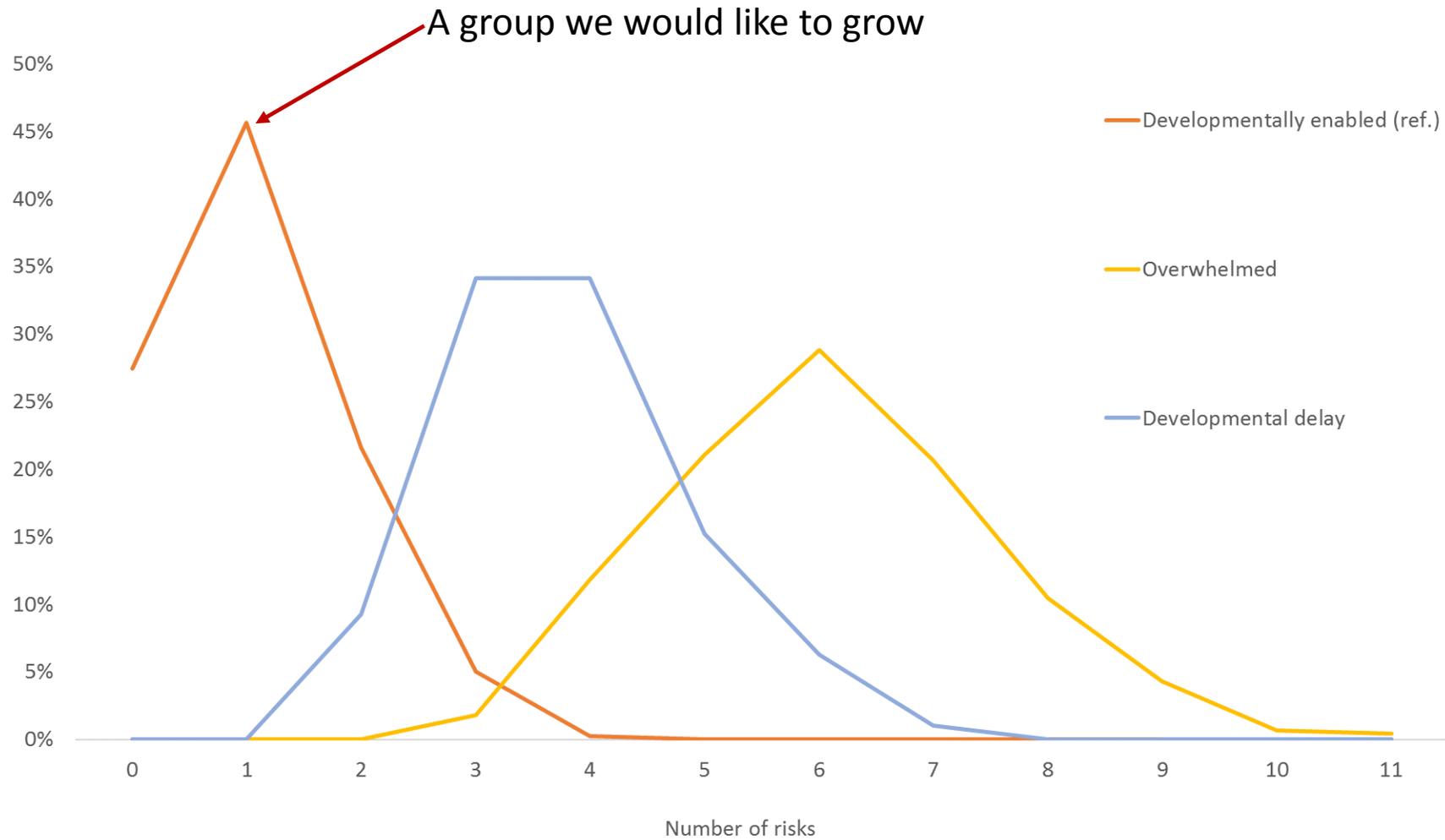


General points to remember

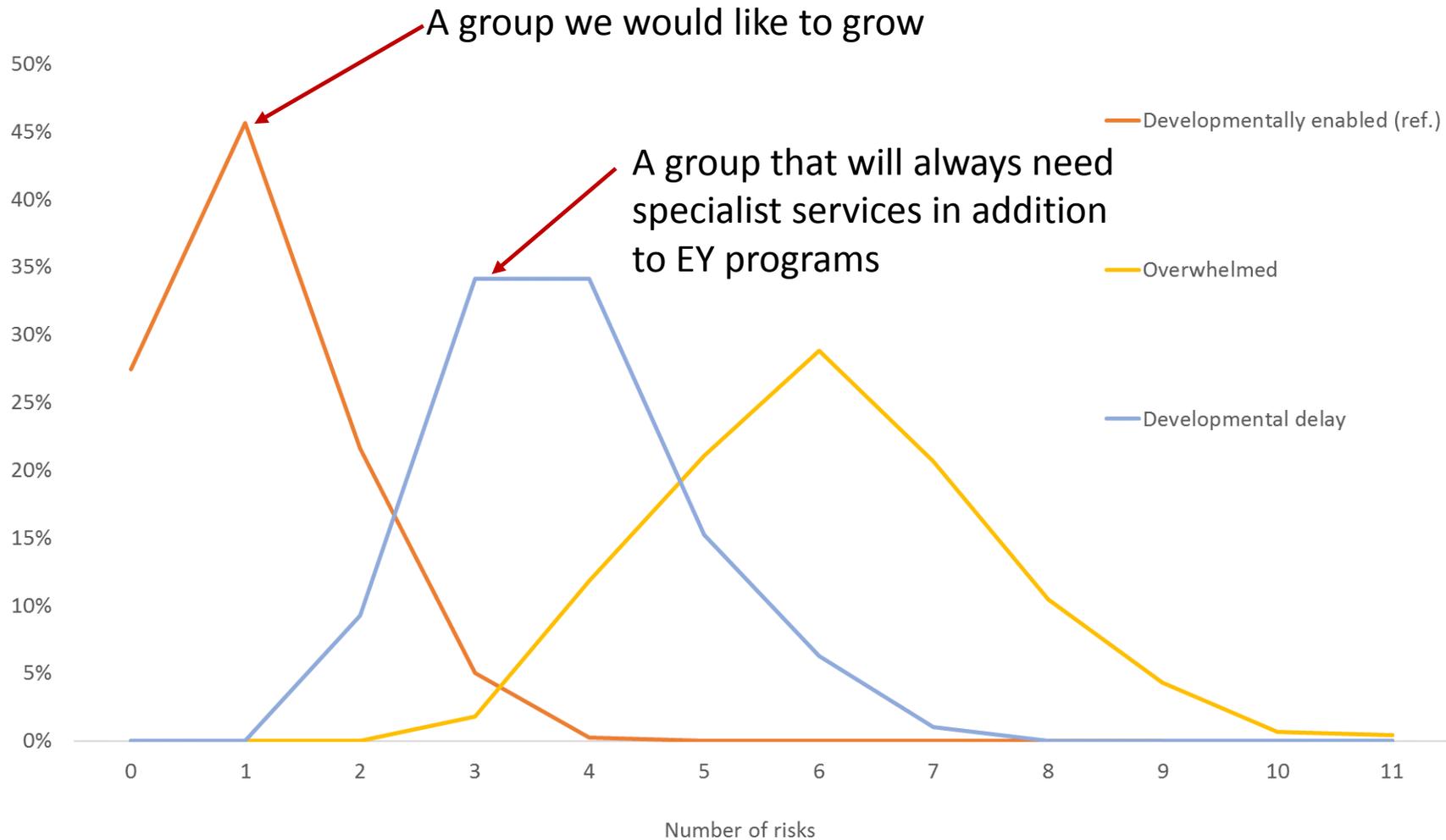
- Merely “counting” risks is misleading
- These circumstances are different



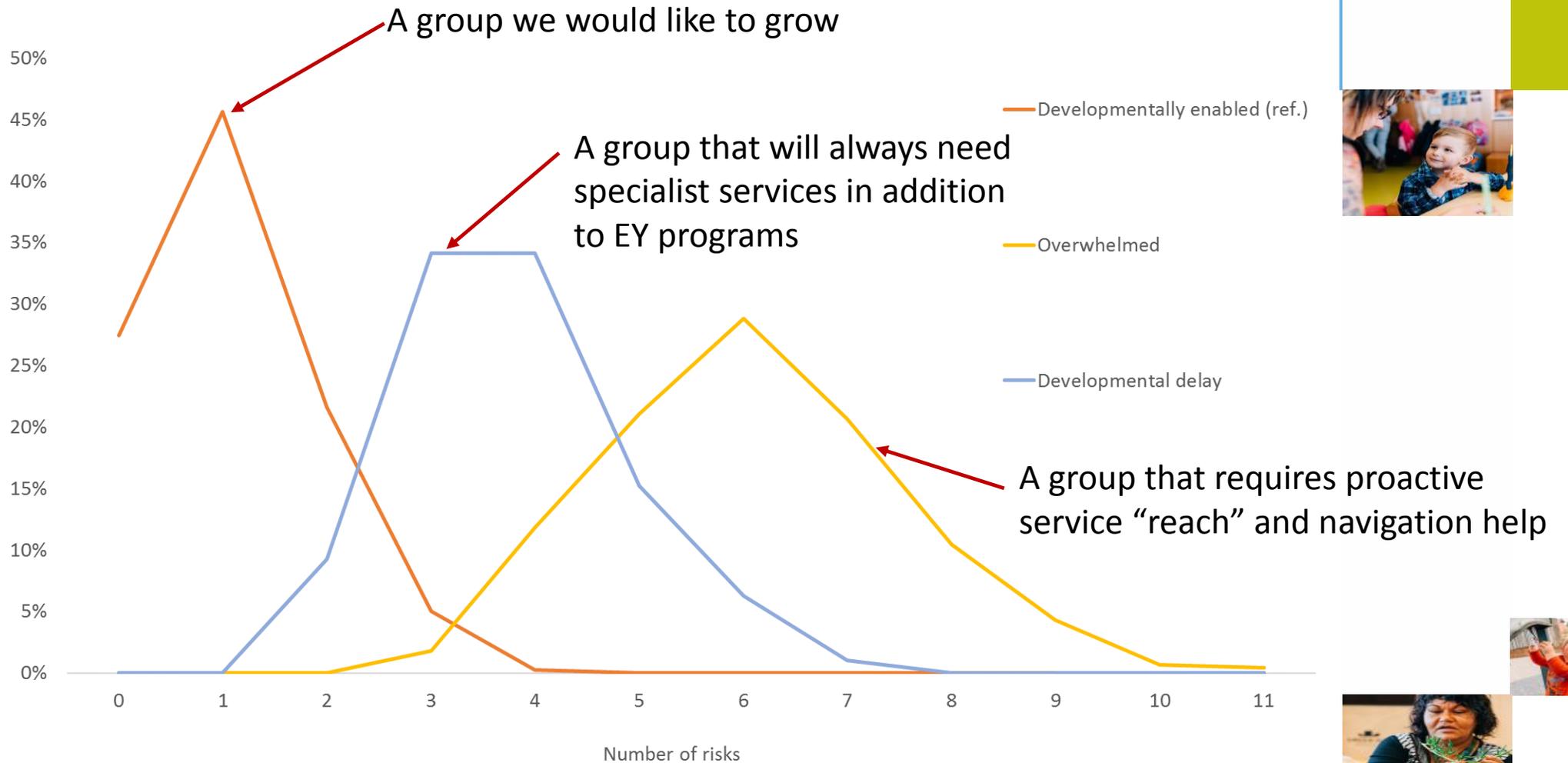
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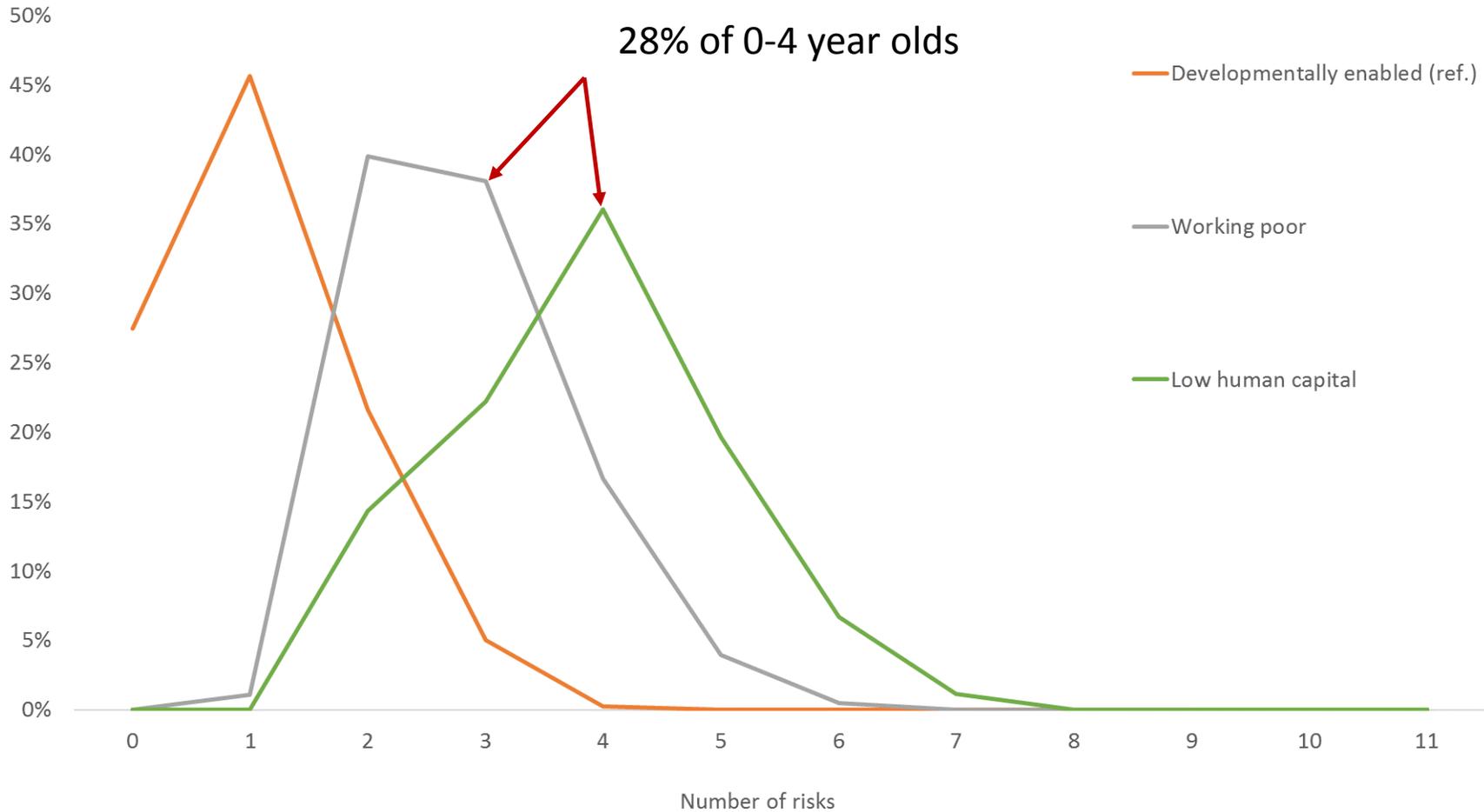
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General points to remember

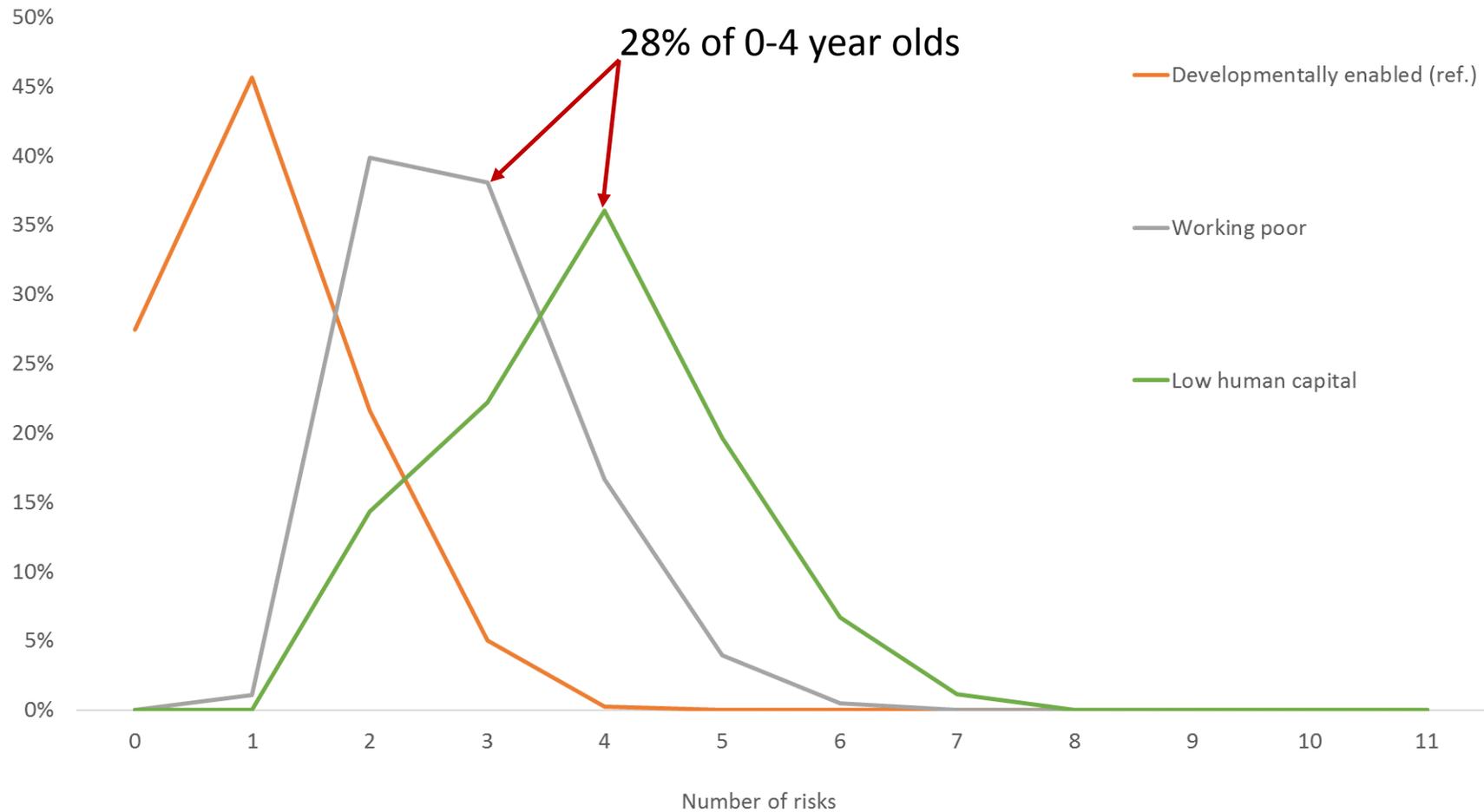
These children are about 6 months behind at age 8 and will be 2.5 years behind their age peers by the time they reach year 9 in school

(Taylor, Zubrick and Christensen, 2019)



General points to remember

Greatest marginal gains to increase pool of developmentally enabled are with the working poor families and families with low human capital



Part 4

Conclusions



Where we started

How realistic are our expectations about the identification of children in need of early childhood enrichment?



Expectations about early identification

Developmental growth from 4-8 is characterised by striking positional movement

Individual prediction from one point in time is *very poor*
Positive predictive value = .28



Expectations about early identification of individual children

When we focus on individual risks of children *becoming* vulnerable:

- It lacks reliability and has very low utility

- It doesn't take you very far in policy terms

- It doesn't allow service design or redevelopment

- It rarely matches what people experiencing adversity and poor outcomes actually talk about

- It aims too firmly at individuals and leaves out "system" and structural approaches



Where we started

What does the growth of their development tell us about how we should view prevention and intervention opportunities?



What does growth suggest about early years strategies?

- Avoid targeting specific children as vulnerable too early
- Commence with relatively “light touch” universal approaches
- Arrange evidence based universal developmental opportunities “in place”
- Capture multiple opportunities to observe/assess child capabilities
- Address structural inequalities with policies to improve parent/carer skills/education and social benefits



Developmental circumstances

What and for who



Tier 1 universal	Enabled	Overwhelmed	Low human capital	Working poor	Child developmental delay	NESB
Provide and promote light-touch universal interventions ^a	*	*	*	*	*	*
Provide family support and navigation pathways to child development services	*	*	*	*	*	*
Monitor population progress ^b	*	*	*	*	*	*



a. Parenting programs, local mother’s groups, play groups, community development aimed at quality opportunities for children/families, recreation facilities, safety and area enhancements, library programs (book sharing), uptake of preschool and K provision, social marketing

b. Decennial child development surveys, broad-based child development report-card based on administrative data, census estimates, AEDC, NAPLAN



Developmental circumstances

What and for who



Tier 2 indicated	Enabled	Overwhelmed	Low human capital	Working poor	Child developmental delay	NESB
Early, repeated, sustained developmental support – delivered differently (e.g. Child and Family Centres)		*				
Mental health treatment and support		*				*



Developmental circumstances

What and for who



Tier 3 Structural	Enabled	Overwhelmed	Low human capital	Working poor	Child developmental delay	NESB
Family planning			*	*		
Optimise maternal education			*	*		
Parental occupational training opportunities			*			
Family benefit increases/better pay				*		
Enriched early education and child care			*	*		
Family friendly workplace arrangements and services				*		



Developmental circumstances

What and for who



Policy prerogative	Enabled	Overwhelmed	Low human capital	Working poor	Child developmental delay	NESB
Provide and promote light-touch universal interventions ^a	*	*	*	*	*	*
Provide family support and navigation pathways to child development services	*	*	*	*	*	*
Monitor population progress ^b	*	*	*	*	*	*
Early, repeated, sustained developmental support – delivered differently (e.g. Child and Family Centres)		*				
Mental health treatment and support		*				*
Family planning			*	*		
Optimise maternal education			*	*		
Parental occupational training opportunities			*			
Family benefit increases/better pay				*		
Enriched early education and child care			*	*		
Family friendly workplace arrangements and services				*		
Maintain diagnostic, treatment, management, and support services: health, home, school, lifecourse					*	
Culturally appropriate support						*



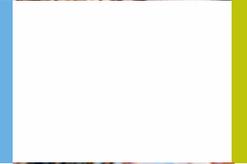
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Thank you



Supplementary details



Language growth how do children grow? 4-8 years



Risk factors	Age 4 Months behind in language growth	Age 8 Months behind in language growth
Maternal NESB	-16	-4
Low school readiness	-15	-6
Child not read to at all	-12	-7
Siblings 4+	-10	-8
Low family income	-7	-3
Low birthweight	-6	-4
Low maternal education	-6	-6
Maternal mental health distress	-5	-0.3
Low maternal parenting consistency	-5	-2
High child temperament reactivity	-3	-2
Area socio-economic disadvantage	0.30 ns	-8



Typical developmental growth

4-10 years (N =4332)



Summary of patterns

4-10 years (N =4332)

Examples of patterns

Age 4 Language	Age 6 Language	Age 8 Language	Age 10 Literacy
On-track	On-track	On-track	On-track
.	.	.	.
Low	Low	Low	Low



- On-track (69%)
- Improving (18%)
- Declining (12%)
- Low (1%)



Our attempts to predict these groups continued to produce poor predictive utility

