

AUTHOR QUERIES

- AQ1: The following citations do not have the complete reference details: Shepard (1997); Scottish Government, 2010; Elder, 2010; RCPCH, 2012; Ali (2019). Please provide the complete reference or consider deleting the citation or rephrasing the text to remove the citation.
- AQ2: Please check whether the edits made to the sentence 'Under current arrangements ...' are correct.
- AQ3: Please provide expansions for PE, PISA, GP, and NH.
- AQ4: Please check the sentence 'Hence, why the ...' for clarity.
- AQ5: Please check the sentence 'Given the compensatory ...' for clarity.
- AQ6: Please check the sentence 'For example, effects ...' for clarity.
- AQ7: Please provide the end page for [Oszwa, U., & Gajownik, E. (2015)].

3

POLICY OPTIONS AND RECOMMENDATIONS

3.1. INTRODUCTION

The systematic review presented in Chapter 2 identified a range of policy options to address RAEs in Scotland, drawing from international evidence and theoretical frameworks spanning public health, education, developmental psychology, and sports science. The evidence base reveals two distinct but interconnected challenges requiring coordinated policy responses: the structural problem of extended cohorts created by Scotland's current school commencement practices and the persistent RAEs that occur even within standard 12-month cohorts. Both issues demand attention, yet they require different analytical approaches and intervention strategies operating at multiple levels of the educational and health systems.

Scotland's extended cohorts, spanning up to 19 months, arise from the interaction between the legal school commencement age (the August after a child's fifth birthday) and widespread early commencement for children born from August to February but with increasing deferral of these children born from August to February. This creates cohorts substantially wider than the 12-month span typical in most developed nations and significantly wider than the biological and developmental variation that educational systems are designed to accommodate (Bedard & Dhuey, 2006; Crawford et al., 2013).

The evidence reviewed in Chapter 2 demonstrates that RAEs persist across multiple domains – academic attainment, physical development, mental health, attention-deficit hyperactivity disorder (ADHD) diagnosis rates, injury risk in sport, and long-term outcomes including educational attainment, earnings, and leadership positions (Cobley et al., 2008; Peña, 2017; Thompson et al., 1999). These effects are not merely statistical artefacts but represent

meaningful differences in children's lived experiences, opportunities, and outcomes. When cohorts are extended beyond 12 months, these effects are amplified proportionally, creating what Chapter 2 characterised as a public health issue with significant equity implications (Crawford et al., 2013; Sharp et al., 2009).

The policy challenge is further complicated by the demographic patterning of school commencement decisions in Scotland. As documented in Chapter 1, deferral rates vary systematically by socio-economic status (SES), with children from more affluent families significantly more likely to defer entry, while children from deprived communities, girls, and ethnic minority children are disproportionately likely to commence early (Scottish Government, 2023). This demographic bias transforms what might appear to be a neutral matter of parental choice into a mechanism that perpetuates and amplifies existing social inequalities, a phenomenon consistent with the theory of Effectively Maintained Inequality (Lucas, 2001), whereby advantaged groups utilise available mechanisms to preserve their relative advantage even as systems ostensibly become more equitable.

The structure of this chapter reflects the dual nature of the policy challenge. Section 3.2 describes the methodology and stakeholder engagement processes that informed the policy analysis. Section 3.3 assesses the suitability of various interventions to the Scottish context, considering the unique features of Scotland's devolved education system, existing policy frameworks, legal context, and political environment. Sections 3.4 and 3.5 present detailed evaluations of policy options for extended cohorts and RAEs within cohorts, respectively. Section 3.6 provides comparative international policy analysis, examining how other jurisdictions have addressed similar challenges and identifying lessons for Scotland. Section 3.7 synthesises the analysis into nine integrated policy recommendations that form a mutually supporting reform package. Section 3.8 provides a summary and key takeaways.

Throughout this chapter, the analysis is guided by several core principles. First, policy options must be evidence based, drawing on the robust international literature reviewed in Chapter 2 while being adapted to the Scottish context. Second, equity must be a primary consideration, with particular attention to how interventions affect girls and children from disadvantaged backgrounds who currently bear the greatest burden of extended cohorts and RAEs. Third, interventions must be feasible within Scotland's existing institutional, legal, and resource constraints, though this does not preclude ambitious reform where the evidence justifies it. Fourth, the precautionary principle applies: where there is evidence of harm from current practices, the burden of proof lies with maintaining the status quo rather than with reform.

Finally, policy options should be mutually reinforcing, creating a comprehensive system of support rather than isolated interventions that may work at cross-purposes.

The urgency of policy action is underscored by several factors. First, the evidence of harm from extended cohorts and RAEs is substantial and growing, as documented in Chapter 2. Second, Scotland's current policy window, created by the 2023 expansion of funded childcare to fund preschool childcare until the legal commencement age and portrayed as including an additional year for children born from August to February, provides a unique opportunity for reform that may not persist indefinitely. Third, the demographic bias in current commencement patterns means that delay in addressing extended cohorts allows inequities to persist and potentially deepen. Fourth, children currently experiencing the harms of extended cohorts and RAEs cannot wait for perfect solutions; they require action based on the best available evidence. This chapter aims to provide the rigorous policy analysis necessary to support evidence-based reform that addresses these urgent challenges while minimising unintended consequences and maximising equity.

3.2. METHODOLOGY AND STAKEHOLDER INVOLVEMENT

The development and evaluation of policy options draw on multiple evidence sources: systematic review findings, stakeholder engagement, grey literature analysis, comparative policy analysis, and established policy evaluation frameworks. This multi-method approach ensures recommendations are grounded in robust international evidence while being adapted to Scotland's specific institutional, legal, and political context.

3.2.1. Evidence Base and Systematic Review

The primary evidence base is the systematic review presented in Chapter 2, which synthesised international research on RAEs across academic, health, sporting, and long-term outcome domains. Proposed, modelled, or trialled interventions were extracted and compiled in Table 8, forming the initial pool of policy options for consideration in the Scottish context.

The systematic review revealed five categories of interventions proposed or implemented internationally: structural (modifying cohort composition), awareness and education, support (additional resources for younger children), assessment (age-adjusted scoring), and sporting (modifying selection

and competition structures). Each was considered for its applicability to Scotland's challenges of extended cohorts and the global challenge of RAEs within cohorts.

3.2.2. Stakeholder Engagement

Stakeholder engagement was a central component of the methodology. Stakeholders were identified across strategic, tactical, and operational levels (Table 10), representing actors involved in children's education, health, and sporting experiences. The engagement process sought to understand awareness of RAE and extended cohorts, gather perspectives on policy feasibility and acceptability, identify implementation barriers, and surface concerns about unintended consequences.

Table 11 presents the stakeholders engaged and the level of engagement achieved. The process revealed significant variation in awareness of RAEs and extended cohorts across stakeholder groups, with important implications for policy design and implementation.

The stakeholder engagement process revealed widespread 'pluralistic blindness' to the harms of extended cohorts; individual stakeholders were aware that some children struggled with early commencement but did not recognise this as a systemic issue requiring policy intervention. This was particularly evident among parent groups and some education professionals, who framed early commencement challenges as individual child readiness issues rather than predictable consequences of a structural policy choice.

3.2.3. Grey Literature and Policy Context

Grey literature, including government reports, policy documents, consultation responses, and advocacy materials, was analysed to provide a comprehensive understanding of the Scottish context. Grey literature and stakeholder website searches identified official open-source data and additional potential stakeholders and helped to identify stakeholder perspectives and research.

Open-source data show that the practice of deferring in Scotland is increasing (Scottish Government Statistics, 2020, 2023) and that this is at odds with other UK nations (Fleming et al., 2022). The limited research identified in the Scottish context implied a gap in the scientific literature regarding RAE in the Scottish context. A stakeholder lobby group, 'Give Them Time', identified through Google searches, contained links to the research that they had presented to the

Table 10. Policy Options to Address Public Health Effects of Relative Age in Scotland by Bronfenbrenner Level.

Policy Option	Bronfenbrenner Level	Description	Evidence Base
1. Correct legal default	Macro/exo	Designate August after turning five as default	Education (Scotland) Act (1980)
2. Extend funded childcare	Macro/exo	Universal funded childcare year for all January–February born	Pilot evaluation data
3. Age-adjusted assessment	Meso/micro	Adjust assessments for relative age	Multiple systematic reviews
4. Delayed streaming	Meso	Delay selection/streaming decisions	Schneeweis and Zweimüller (2014)
5. Teacher training	Meso/micro	RAE awareness in teacher education	Lynch and Soukup (2016)
6. Rotating cut-off dates	Macro	Change school entry cut-off date	Musch and Grondin (2001)
7. Flexible entry	Micro	Individual assessment for school readiness	Shepard (1997)
8. Parent education	Exo/meso	Inform parents about RAE	Stakeholder consultation
9. Research investment	Macro	Fund Scottish-specific RAE research	Evidence gap analysis

AQ1

Note: Bronfenbrenner levels: macro = national policy; exo = local authority; meso = school; micro = classroom/individual.

Table 11. Stakeholders and the Level of Engagement.			
Stakeholder Group	Specific Organisations/Roles	Level of Engagement	Key Insights
Government	Scottish Government Directorate of Education	Responded in writing to policy proposals	Awareness of deferral trends; concern about equity implications; openness to evidence-based reform
Statistical agencies	National Records of Scotland	Responded in writing; provided data on birth patterns and school commencement	Confirmed extended cohort spans; provided demographic data on commencement patterns
Local authority leadership	Association of Directors of Education Scotland	Think Piece drafted 2010 (not published); informal consultations	Recognition of extended cohort issue; concern about resource implications; emphasis on parental choice
Academic researchers	Researchers in RAEs, child development, educational psychology	Literature review; informal consultations	Strong evidence base for RAE harms; support for structural reform; emphasis on equity
Parent groups	Parent councils; advocacy groups	Informal consultations; review of position statements	Variable awareness of RAE; strong attachment to deferral as parental right; concern about school readiness
School leadership	Head teachers (primary and secondary)	Semi-structured interviews; review of professional association positions	Awareness of RAE in practice; concern about transition management; emphasis on individual child needs
Sport governing bodies	Scottish Football Association; Scottish Rugby Union; others	Review of policy documents; informal consultations	Growing awareness of RAE in talent identification; some interventions already implemented; concern about competitive implications
Health professionals	General practitioners; health visitors; paediatricians	Informal consultations; review of professional guidance	Limited awareness of RAE in health contexts; interest in ADHD diagnosis implications; concern about developmental assessment

Scottish Government. This research was used to successfully lobby for automatic funding for an additional year of childcare for those choosing to defer their children to start in line with the legal commencement age. These data were analysed, and despite the argument they presented being framed as concerns over ‘school readiness’, the higher quality evidence was predominantly about the harms of RAE in 12-month cohorts, while that relating to school readiness was found to be principally based on grey literature, Facebook posts, and commercial websites. Despite the weak evidence for school readiness and conflation with RAE, the lobby group successfully highlighted the commencement age discrepancy and helped raise both awareness and access to deferral, creating the window of opportunity for policy action to resolve extended cohorts but preserve parental choice for children born between August and February to advance, ideally based on an informed decision.

Analysing the evidence helped develop understanding of the international context and identified the term ‘redshirt’, helping to identify international research. Researchers including Albanesi, Fleming, Rose, and Hanly were contacted and confirmed that they perceived a gap in the literature.

3.2.4. Policy Evaluation Framework

Possible harms were assessed by considering unintended consequences, implementation challenges, and potential negative effects on different groups of children or stakeholders. Particular attention was paid to children who had already commenced school early, children with additional support needs, and families who had made commencement decisions based on current policy frameworks. In many cases, advancement decisions were uninformed, passive decisions imposed by the local authority, while other advancement decisions included requests to defer to the legal commencement age that were declined by local authorities.

Equity impacts were assessed across socio-economic backgrounds, gender, ethnicity, disability, and rural/urban location, informed by the theory of effectively maintained inequality (Lucas, 2001). Particular attention was paid to whether policy options would reduce the demographic bias in current school commencement patterns.

Costs were assessed across direct financial costs, opportunity costs, transition costs, and political costs. While detailed cost–benefit analysis was beyond the scope of this work, the assessment aimed to identify policy options with favourable benefit-to-cost ratios and to flag options requiring substantial resources or political investment.

3.2.5. Comparative Policy Analysis

Comparative analysis was conducted of how other jurisdictions have addressed school starting age and RAEs. Presented in detail in Section 3.6, this analysis examined policy approaches in Scandinavia, England, and Wales, New Zealand, Japan, Poland, and Australia (particularly New South Wales (NSW)). The analysis identified policy options successfully implemented elsewhere, revealed implementation challenges and unintended consequences to learn from, and situated Scotland's extended cohorts in international context, confirming that 19-month cohorts are internationally unusual and that most developed nations maintain 12-month cohorts.

3.2.6. Integration and Synthesis

The final stage integrated evidence from all sources – systematic review, stakeholder engagement, grey literature, policy evaluation framework, and comparative analysis – to develop policy recommendations that are evidence based, contextually appropriate, feasible, equitable, and mutually reinforcing. The synthesis was guided by principles of evidence-based effectiveness, equity prioritisation (particularly reducing demographic bias), feasibility within existing constraints, mutual reinforcement across recommendations, and clear allocation of responsibilities with realistic timelines. The resulting recommendations, presented in Section 3.7, address both extended cohorts and within-cohort RAEs at multiple system levels; these latter within-cohort measures may have global applicability.

3.3. ASSESSING SUITABILITY TO THE SCOTTISH CONTEXT

Translating international evidence into recommendations suitable for Scotland requires consideration of its specific institutional, legal, and political context. Scotland's devolved education system creates both opportunities and constraints for addressing extended cohorts and RAEs. This section assesses the key contextual factors shaping the suitability and feasibility of policy options.

3.3.1. Devolved Education System and Policy Frameworks

Scotland's education system has been independent of the rest of the United Kingdom since its inception but formally devolved since the creation of the Scottish Parliament in 1999. Full control over policy, curriculum, and school

organisation rests with the Scottish Government. This autonomy creates a policy window for addressing extended cohorts without requiring UK Parliament approval. The Scottish Government has demonstrated willingness to pursue distinctive education policies through the Curriculum for Excellence (CfE), abolition of national testing at the primary level, and expansion of funded early learning and childcare.

Within this devolved system, the Getting It Right for Every Child (GIRFEC) framework – Scotland’s national approach to improving outcomes for children since 2006 – emphasises that children’s wellbeing should be at the centre of all decisions, with support proportionate to need (Scottish Government, 2022). GIRFEC provides a strong foundation for policy interventions that prioritise children’s wellbeing and recognise the need for additional support for disadvantaged children, including, therefore, those disadvantaged by relative age.

The CfE, Scotland’s national curriculum framework introduced in 2010, emphasises child-centred learning, play-based approaches in early years, and flexibility in how children progress through their education (Scottish Government, 2010). Particularly relevant is CfE’s emphasis on play-based learning in early years settings and the early primary stages, with formal academic instruction not expected to begin until Primary 2 (ages 6–7). This framework suggests that concerns about ‘school readiness’ for relatively younger children may be misplaced, as the curriculum is designed to accommodate developmental variation through play-based approaches rather than requiring all children to be ready for formal instruction at school entry. Indeed, the perceived lack of readiness for schooling may be underpinned by the extended cohorts and, specifically, inter-child and teacher–child relationship dynamics.

Scotland’s commitment to reducing inequalities, enshrined in the Fairer Scotland Duty and the National Performance Framework, provides another important policy context. The Scottish Government has made reducing the poverty-related attainment gap a key priority, with substantial investment in initiatives such as the Scottish Attainment Challenge and Pupil Equity Funding (Scottish Government, 2023). The evidence that extended cohorts and RAEs disproportionately harm children from disadvantaged backgrounds aligns directly with these equity priorities and provides a strong policy rationale for reform. Addressing extended cohorts can be framed not as an isolated technical adjustment but as an essential component of Scotland’s broader equity agenda.

3.3.2. Legal Context and Leverage Points

The legal framework governing school commencement in Scotland provides a crucial leverage point for policy reform. The Education (Scotland) Act (1980),

which remains the primary legislation governing school attendance, specifies that the school commencement age is ‘the beginning of the school year which falls not earlier than the beginning of the term next following that in which the child attains the age of five years’ (Education (Scotland) Act, 1980, Section 32). In practice, this means the August after a child’s fifth birthday, as Scottish schools operate on a single commencement-term per year, beginning in August.

This legal designation of the school commencement age is often misunderstood or misrepresented in current practice. Many parents, education professionals, and even some local authority guidance documents incorrectly present early commencement (starting school in the August before turning five, for children born from March to August) as the default or expected option, with the legal commencement age treated as ‘deferral’. This misrepresentation has significant consequences, as it frames starting at the legal age as an exception requiring justification rather than as the legal default.

The legal framework thus provides a clear pathway for reform: rather than requiring new primary legislation, addressing extended cohorts could be achieved by correctly implementing existing law and treating the legal commencement age as the default, with early commencement (termed ‘advancement’ in the legislation) available as an option requiring informed parental request and professional assessment. This approach has the advantage of aligning practice with existing law rather than requiring controversial new legislation, potentially reducing political barriers to reform.

The legal framework’s provisions for flexibility have been interpreted broadly to allow widespread early commencement. Section 32(3) of the Education (Scotland) Act (1980) allows education authorities to ‘make arrangements for the admission to schools under their management of children who have not attained school age’, and this provision has been used to justify routine early commencement for August- to February-born children. Reform would need to clarify that this provision is not to create a parallel default system that contradicts the legal commencement age but is intended to allow for the retaining of the element of parental choice that stakeholders value highly through allowing exceptional early admission where appropriate.

3.3.3. Cultural Context and Social Norms

Scotland’s cultural context around childhood, education, and parenting shapes the feasibility and acceptability of various policy options. Scottish culture places high value on education, with strong expectations that children

will succeed academically and that parents will support their children's educational progress. This cultural emphasis on education can manifest in concerns about 'school readiness' and anxiety about whether children are adequately prepared for the demands of school, potentially driving decisions to defer in the belief that an additional year will better prepare children.

However, Scottish culture also values fairness and equality, with strong social norms around ensuring that all children have equal opportunities regardless of their background. When the equity implications of extended cohorts are made explicit, particularly the demographic bias whereby affluent families use deferral to gain advantages for their children, this often resonates with Scottish values and can shift opinion in favour of reform. Framing reform as a matter of fairness and equity, rather than as a restriction on parental choice, aligns with these cultural values and may increase acceptability.

The cultural context also includes professional norms among teachers, health professionals, and other practitioners who work with children. Many of these professionals have internalised current practices as normal and may not recognise extended cohorts as problematic. Professional development and education on RAEs, as discussed in Section 3.5, will be essential for shifting these professional norms and building support for reform among those responsible for implementation.

3.3.4. Existing Additional Support Structures

Scotland's existing structures for providing additional support to children with additional needs provide an important foundation for addressing RAEs within cohorts. The Education (Additional Support for Learning) (Scotland) Act 2004, as amended in 2009, establishes a framework for identifying and supporting children who require additional help to benefit from education, whether due to disability, learning difficulties, family circumstances, or other factors (Scottish Government, 2017). This framework could be extended to recognise relative age as a factor that may require additional support, particularly for children in extended cohorts who are substantially younger than their peers.

The Additional Support for Learning framework includes mechanisms such as Coordinated Support Plans for children with complex needs, Individualised Education Plans for children requiring targeted support, and universal approaches such as differentiated instruction and flexible grouping. These existing mechanisms could be adapted to provide age-appropriate support for relatively younger children, such as age-adjusted assessment, flexible grouping

in physical education, and monitoring of developmental progress relative to age rather than relative to cohort. Quality physical education that accounts for developmental differences is fundamental to equitable outcomes (Lynch, 2016; Lynch & Soukup, 2016).

However, there is a risk that framing relative age as an additional support need could stigmatise relatively younger children or create a deficit narrative around their development. Policy design must carefully balance the need to provide appropriate support with the importance of maintaining high expectations and avoiding labelling children as deficient simply because they are younger than their peers. The emphasis should be on recognising that developmental variation is normal and expected, and that educational systems should accommodate this variation rather than expecting all children to conform to a single developmental trajectory.

3.3.5. Summary of Contextual Assessment

The assessment of Scotland's specific context reveals several key conclusions that shape the evaluation of policy options in subsequent sections. First, Scotland's devolved education system and existing policy frameworks (particularly GIRFEC and CfE) provide a strong foundation for reform that prioritises children's wellbeing and equity. Second, the legal framework already designates the legal commencement age as the default, providing a clear leverage point for reform without requiring new primary legislation. Third, the 2023 expansion of funded childcare removes the primary financial barrier to adopting the legal commencement age as default and creates a natural policy window for reform.

Fourth, pilot schemes in several local authorities have demonstrated that adopting the legal commencement age as default is feasible within existing resources and is generally accepted by families when clearly communicated. Fifth, the political context presents both opportunities (government emphasis on equity and evidence-based policy) and challenges (parental attachment to choice which can be retained through the extant legislation as a choice to advance and concerns about school readiness which may be mitigated by reducing cohort age spread and reverting back to the older age in the legislation). Sixth, cultural values around fairness and equality can be leveraged to build support for reform when the equity implications of extended cohorts are made explicit. Seventh, existing additional support structures provide mechanisms for supporting relatively younger children within cohorts, though care must be taken to avoid stigmatisation.

These contextual factors inform the detailed evaluation of policy options in the following sections, shaping assessments of feasibility, acceptability, and likely effectiveness in the Scottish context.

3.4. POLICY OPTIONS FOR EXTENDED COHORTS

Extended cohorts, defined as school year groups spanning more than 12 months from youngest to oldest child, represent the most distinctive and problematic feature of Scotland's current school commencement system. As documented in Chapters 1 and 2, Scotland's extended cohorts can span up to 19 months, substantially wider than the 12-month cohorts typical in most developed nations and significantly wider than the developmental variation that educational systems are designed to accommodate. This section evaluates two principal policy options for addressing extended cohorts: maintaining the current system (status quo) or adopting the legal commencement age as the default starting point. Each option is assessed using the framework of intended benefits, possible harms, equity impacts, and costs.

3.4.1. Policy Option 1: No Change (Status Quo)

The first policy option is to maintain Scotland's current system of school commencement, in which early commencement (starting school in the August before turning five, for children born from August to February) is presented as the default or expected option, with deferral to the legal commencement age (the August after turning five) available as a parental choice. Under this system, children born between August and February typically commence school at ages 4.5–4.9 years or may defer to commence at ages 5.5–6 years, while children born between March and August may commence at ages 5–5.7 years. The resulting cohorts span from approximately 12 months (if no children defer) to 19 months (if some August-born children defer and some February-born children do not defer).

3.4.1.1. *Intended Benefits*

The primary argument in favour of maintaining the status quo is that it preserves parental choice and autonomy in making decisions about their children's education. Under current arrangements, parents can choose whether to commence their child early or to defer for August- to February-born children, no choice exists for March- to July-born children, and until funding exten-

sion decisions, this was usually preserved for January-and February-born children. This allowed parents to take into account their individual child's development, family circumstances, and their own assessment of school readiness. Proponents of the status quo argue that parents are best placed to make these decisions and that removing or restricting this choice would be paternalistic and potentially harmful to children whose parents have made careful, informed decisions about the optimal starting age.

A second benefit of the status quo is that it avoids transition costs and disruption. Changing to a new system would require communication with all families, retraining of education professionals, adjustment of school planning and resource allocation, and management of mixed cohorts during a transition period that could last up to 13 years. Maintaining current arrangements avoids these transition costs and allows schools and families to continue with familiar practices.

A third benefit is that the status quo avoids potential political controversy. School commencement is an emotionally charged issue for many parents, and reforms that are perceived as restricting choice for parents of August- to February-born children may generate significant political opposition. Parent advocacy groups have been vocal in defending deferral rights, and media coverage has sometimes portrayed deferral as essential for children's wellbeing. Maintaining the status quo avoids this political conflict and allows the Scottish Government to focus political capital on other priorities.

A fourth benefit is that the status quo maintains current childcare provision arrangements. Many families have made childcare arrangements based on the assumption that their child will commence school at a particular age, and changing these arrangements could cause disruption and additional costs for families, though a discrepancy in school commencement and therefore childcare costs of almost 12 months is a normal feature of a cohort system. Nurseries and childcare providers have planned their capacity based on current commencement patterns, and changes could affect their financial viability.

3.4.1.2. Possible Harms

Despite these claimed benefits, maintaining the status quo perpetuates substantial and well-documented harms. The most significant harm is the continuation of 19-month cohorts with their associated negative effects on health, academic attainment, and equity. As documented in Chapter 2, extended cohorts amplify RAEs proportionally, meaning that the harms experienced by relatively younger children in 12-month cohorts are intensified in

19-month cohorts. These harms include lower academic attainment, higher rates of ADHD diagnosis and medication, increased risk of physical injury in sport, lower self-esteem and confidence, reduced likelihood of accessing gifted and talented programmes, and long-term effects on educational attainment, leadership positions, and earnings (Cobley et al., 2008; Crawford et al., 2013; Peña, 2017).

A second harm is the continued misrepresentation of the law. Current practice often presents early commencement as the default or expected option, when in fact the Education (Scotland) Act (1980) designates the legal commencement age (the August after turning five) as the default. This misrepresentation has consequences for parental decision-making, as parents may commence children early believing it is expected or required, when in fact it is an option that should be carefully considered. Maintaining the status quo perpetuates this misrepresentation and the confusion it creates.

A third harm is the continued demographic bias in deferral. As documented in Chapter 1, deferral rates vary systematically by SES, with children from affluent families significantly more likely to defer than children from deprived communities. This demographic bias means that extended cohorts function as a mechanism for perpetuating and amplifying social inequalities, with advantaged families using deferral to gain relative age advantages for their children, while disadvantaged families' children disproportionately experience the harms of being relatively younger in extended cohorts. Maintaining the status quo allows this inequitable mechanism to continue operating.

A fourth harm is the missed opportunity to correct an inequitable system during a favourable policy window. The 2023 expansion of funded child-care creates a natural opportunity for reform, as the funding structure now aligns with the legal commencement age. If this policy window closes without action, reform may become more difficult in the future, particularly if deferral rates continue to increase and extended cohorts become even more entrenched. Children currently experiencing the harms of extended cohorts cannot wait indefinitely for reform.

3.4.1.3. Equity Impacts

The equity impacts of maintaining the status quo are strongly negative. Extended cohorts perpetuate and amplify existing social inequalities through multiple mechanisms. First, the demographic bias in deferral means that children from disadvantaged backgrounds are disproportionately likely to be among the youngest in their cohorts, experiencing the greatest relative age disadvantages in academic attainment, health, and sporting contexts.

Children from affluent families, by contrast, are more likely to defer and thus to be among the oldest in their cohorts, experiencing relative age advantages.

Second, this demographic patterning creates a mechanism consistent with the theory of Effectively Maintained Inequality (Lucas, 2001), whereby advantaged groups utilise available mechanisms to preserve their relative advantage even as systems ostensibly become more equitable. As deferral becomes more common among affluent families, it functions as a form of ‘educational arms race’, with each family’s decision to defer creating pressure on other families to defer as well, so their children will not be disadvantaged. However, families with fewer resources – whether financial, cultural, or informational – are less able to participate in this arms race, resulting in a widening gap between advantaged and disadvantaged children.

Third, the status quo perpetuates inequities in how RAEs manifest across different groups. As documented in Chapter 2, girls experience greater RAEs than boys in some domains, children from ethnic minority backgrounds experience compounded disadvantages, and children with additional support needs may be particularly vulnerable to the challenges of being relatively younger in extended cohorts. Maintaining the status quo allows these inequities to persist.

Fourth, the status quo fails to address the opportunity costs of extended cohorts for disadvantaged children. Children who commence school early and struggle due to relative age may be labelled as having learning difficulties, behaviour problems, or developmental delays, when in fact their challenges are predictable consequences of their relative age. These labels can follow children throughout their educational careers, affecting their self-concept, their access to opportunities, and their ultimate educational attainment. For children from disadvantaged backgrounds who already face multiple barriers to educational success, these additional relative age disadvantages can be particularly consequential. Meanwhile for girls, this may represent continued competition for hegemonic masculinity (Albanesi, 2019).

3.4.1.4. *Cost*

The immediate financial cost of maintaining the status quo is zero, as no changes to current systems or practices are required. However, this apparent cost advantage is misleading, as it ignores the substantial long-term costs of continuing to allow extended cohorts with their associated harms.

The long-term costs include health costs from increased rates of ADHD diagnosis and medication, mental health challenges, and physical injuries in sport; educational costs from lower attainment, higher rates of additional

support needs, and reduced likelihood of progressing to higher education; social costs from reduced self-esteem, lower rates of leadership and civic participation, and reduced social mobility; and economic costs from lower lifetime earnings and reduced economic productivity. While these costs are difficult to quantify precisely, the evidence reviewed in Chapter 2 suggests they are substantial and fall disproportionately on children from disadvantaged backgrounds and on society as a whole.

3.4.2. Policy Option 2: Adopting the Legal Commencement Age as Default

Adopting the legal commencement age as default represents realignment with the Education (Scotland) Act (1980) as it is written – using direction at the strategic level, implementation at the tactical level, and application at the operational level. The aim is to achieve nationwide presumption of default enrolment at the later age unless an active and informed choice is made to advance under extant provisions within ‘The Act’.

3.4.2.1. *Intended Benefits*

The intended benefits are those derived from both raising the school entry age and reducing the age difference from 19 to 12 months (less those actively electing to advance) and, as evidenced earlier, are holistic benefits. Potential additional benefits are illustrated in Table 12.

3.4.2.2. *Possible Harms*

A potential harm is that children currently in extended cohorts, particularly those who commenced early and are among the youngest in their cohorts, may not benefit from the reform and may continue to experience relative age disadvantages throughout their school careers. While the reform would prevent new extended cohorts from forming, it does not directly help children already in the system nor adults that have passed through this system. This suggests the need for complementary interventions, discussed in Section 3.5, to support relatively younger children within existing cohorts.

3.4.2.3. *Equity Impacts*

The equity impacts of adopting the legal commencement age as default are strongly positive. This policy option directly addresses the mechanism whereby current practices perpetuate and amplify social inequalities, removing the

Table 12. Additional Benefits of Policy Option 2.

Benefit Category	Specific Benefit	Evidence
Health equity	Reduces socio-economic gradient in deferral	Scottish Government pilot data
Child development	Additional year of play-based learning	CfE early years framework
Parental choice	Preserves option for parents who want to defer	Pilot evaluation
Cost-effectiveness	Prevents downstream health and educational costs	Economic modelling
Equity of access	Extends benefit to all January- to February-born children	Universal entitlement model

demographic bias in school commencement that allows affluent families to gain advantages for their, predominantly male, children at the expense of disadvantaged and female children.

Table 13 presents an assessment of the viability of this policy option compared to alternatives, considering equity impacts alongside other factors.

By making the legal commencement age the default, this policy option ensures that all children, regardless of their sex, their family's SES, cultural background, or parental knowledge, start school at the same age unless there is a specific, assessed reason for early commencement. This removes the mechanism whereby affluent families use deferral strategically to gain relative age advantages, while disadvantaged families' children disproportionately commence early and experience relative age disadvantages.

The equity impact is further enhanced by the fact that narrower cohorts reduce the magnitude of RAEs for all children but particularly for those who would otherwise be among the youngest in extended cohorts. Children from disadvantaged backgrounds, who are disproportionately likely to be relatively younger under current arrangements, would benefit most from the reduction in cohort spans.

Moreover, adopting the legal commencement age as default addresses the informational inequity in current arrangements. Under the status quo, families with greater cultural and social capital are more likely to be aware of RAEs, to understand the implications of school commencement timing, and to make strategic decisions about deferral. Families with less cultural capital, including migrant families, may not be aware of these issues and may commence children early simply because they believe it is correct. By making the legal commencement age the default, the policy removes this informational advantage and ensures that all families start from the safer baseline by default.

Table 13. Viable Policy Options for Extended Cohorts.					
Policy Option	Equity Impact	Feasibility	Resource Requirements	Political Viability	Overall Assessment
Status quo	Strongly negative: perpetuates demographic bias and Effectively Maintained Inequality	High: no change required	None	High: avoids controversy	Not recommended: harms outweigh benefits
Legal commencement age as default	Strongly positive: removes demographic bias and addresses early mandatory intake mechanism	High: pilot evidence demonstrates feasibility; aligns with existing law	Low: funded childcare expansion provides necessary support; transition costs are manageable	Moderate: requires political will but has a strong evidence base and equity rationale	Strongly recommended
Eliminate all flexibility	Positive: removes all variations in commencement age	Low: would require new legislation; removes provision for exceptional cases	Low	Low: likely to face strong opposition	Not recommended: inflexible and politically unfeasible, removes parental choice

Table 14 presents policy options that were considered but assessed as non-viable, including options that would reduce cohort spans below 12 months.

3.4.2.4. *Cost*

The cost of adopting the legal commencement age as default is low, particularly when compared to the long-term costs of maintaining extended cohorts. The primary cost is the transition cost of moving from the current system to the new default, including communication with families, training for education professionals, and management of mixed cohorts during the transition period. These transition costs are time limited and manageable within existing budgets.

Crucially, the funding for the additional year of childcare for children born from August to February has already been agreed and implemented as of August 2023. This means that the primary financial barrier that might prevent families from keeping their children in early years settings until the legal commencement age has been removed. Families will not face additional childcare costs if their children commence at the legal age rather than early, as the additional year is fully funded.

Table 14. Non-viable Policy Options for Extended Cohorts.

Policy Option	Why Non-viable
Grade retention (holding back relatively younger children)	Strong evidence of harm from grade retention; stigmatising; does not address root cause; internationally recognised as a harmful practice (Jimerson, 2001)
Reducing age spread below 12 months across all settings	Operationally complex in most school settings; not feasible in single-class schools (most Scottish primary schools); may exacerbate attainment gaps by creating more homogeneous groups; very high-resource requirements (Borghans & Diris, 2012)
Eliminating age-based cohorts entirely	Would require complete restructuring of the education system; no evidence base for feasibility or effectiveness at scale; very high-resource requirements; politically unfeasible
Mandatory deferral for all children	Would create new inequities for children who are developmentally ready for school; removes parental choice; removes flexibility for exceptional cases; very high cost (additional year of funded childcare for all); does not address RAEs within cohorts
Flexible entry throughout the school year	Creates administrative complexity; disrupts cohort formation and peer relationships; evidence from New Zealand suggests this does not eliminate RAEs (Fortner & Jenkins, 2017)

The ‘additional’ wrap-around childcare costs for families are acknowledged; however, there is a discrepancy of up to almost one year between two children (siblings) regarding how long childcare is offered. This is based on month of birth and is an inherent consequence of any cut-off date.

Pilot schemes in several Scottish local authorities have demonstrated that existing school resources are sufficient to accommodate the change. Schools do not require additional classrooms or substantial increases in staffing, as the total number of children entering school each year remains the same; what changes is the timing of entry. Some schools may need to adjust class sizes or configurations during the transition period, but these adjustments are manageable within existing resources and flexibility. Some authorities have chosen to defer almost all children.

The administrative costs of the transition include developing and disseminating clear guidance for families and education professionals, updating local authority policies and procedures, training staff on the new default and the process for assessing requests for early commencement, and monitoring implementation to ensure consistency and equity. These costs are modest and can be absorbed within existing education administration budgets.

Against these modest transition costs must be weighed the long-term savings from reduced health, educational, and social costs. As documented in Chapter 2, extended cohorts are associated with increased rates of ADHD diagnosis and medication, mental health challenges, physical injuries, lower academic attainment, reduced likelihood of progressing to higher education, and lower lifetime earnings. While these costs are difficult to quantify precisely, they are substantial and fall disproportionately on disadvantaged children and on society as a whole. Reducing cohort spans from 19 months to 12 months would proportionally reduce these costs, generating long-term savings that far exceed the modest transition costs.

From a cost-effectiveness perspective, adopting the legal commencement age as default represents a highly favourable investment. The intervention requires minimal additional resources, leverages existing legal frameworks and funding structures, and addresses a systemic problem with substantial documented harms. Few education interventions offer such a favourable benefit-to-cost ratio.

3.5. POLICY OPTIONS FOR RAE WITHIN COHORTS

Even when cohorts are reduced from 19 months to 12 months through adoption of the legal commencement age as default, RAEs will persist within these

narrower cohorts. A 12-month age span represents substantial developmental variation, particularly in early childhood when children are developing rapidly across cognitive, physical, social, and emotional domains. Hence, the desire from parents for their children, especially boys, not to be among the youngest of the cohort. This section evaluates policy options designed to mitigate RAEs within standard 12-month cohorts as well as extended cohorts, recognising that these interventions are complementary to, rather than substitutes for, addressing extended cohorts. Five principal policy options are examined: education on RAE at all levels, smaller class sizes, reducing age spread below 12 months, age-adjusted scoring, and measures limited to PE and school-based sports.

3.5.1. Policy Option 3: Education on RAE at All Levels Including Recipients

This policy option involves developing and implementing a comprehensive educational programme on RAEs for all stakeholders involved in children's education, health, and sporting experiences. Target audiences include parents (to enable informed decision-making about school commencement and to help them interpret their children's development and attainment in context), teachers (to enable age-appropriate assessment and support), PE and sport professionals (to enable age-adjusted selection and coaching), health professionals (to reduce ADHD over-diagnosis and enable age-appropriate developmental assessment), and children themselves (to help relatively younger children understand their situation and maintain self-esteem).

3.5.1.1. *Intended Benefits*

The primary intended benefit of education on RAE is to enable informed decision-making and appropriate professional practice across all contexts where RAEs manifest. For parents, awareness of RAE can help them understand that their child's relative performance or behaviour compared to peers may reflect age differences rather than ability or character. This understanding can reduce anxiety about development, help parents make informed decisions about school commencement, and enable them to provide appropriate support and encouragement to relatively younger children.

For teachers, awareness of RAE can fundamentally change how they interpret children's development and attainment. Teachers who understand RAE are less likely to attribute relatively younger children's lower attainment or less mature behaviour to lack of ability or effort and more likely to provide

age-appropriate support and maintain high expectations. This awareness can reduce the risk that relatively younger children are inappropriately labelled as having learning difficulties or behaviour problems and can help teachers use age-adjusted assessment and differentiated instruction appropriately.

For health professionals, particularly those involved in ADHD assessment and diagnosis, awareness of RAE can reduce over-diagnosis of relatively younger children. The evidence reviewed in Chapter 2 demonstrates that ADHD diagnosis rates vary systematically by birth month within cohorts, with relatively younger children significantly more likely to be diagnosed and medicated (Elder, 2010). This pattern suggests that some proportion of ADHD diagnoses reflect age-appropriate behaviour that is misinterpreted as pathological when compared to older peers. Education on RAE can help health professionals consider age within cohort as a factor in developmental and behavioural assessment, potentially reducing inappropriate diagnosis and medication.

For PE teachers and sports coaches, awareness of RAE can enable age-adjusted selection and assessment, reducing the systematic exclusion of relatively younger children from talent pathways and representative teams. Coaches who understand RAE are more likely to recognise that relatively younger children's lower performance may reflect physical maturity differences rather than lower potential and to provide opportunities and support that allow relatively younger children to develop their abilities.

For children themselves, particularly relatively younger children, education on RAE can provide a framework for understanding their experiences and maintaining self-esteem. Children who understand that they are younger than many of their peers, and that this age difference affects their relative performance, may be less likely to internalise negative self-perceptions or to disengage from academic or sporting activities. This understanding can be empowering, helping children recognise that their current relative position does not determine their ultimate potential.

3.5.1.2. Possible Harms

Harm can be anticipated for children when the level of advantage/disadvantage is explained to them. Parents of the children who have deferred may feel targeted – perceived as benefitting their child at the expense of others. Hence, why the opportunity in Scotland to carefully reframe deferral, as commencing in line with the law is an opportunity that may maintain wider support. **AQ4** There may systematically have been harm caused to disadvantaged groups by failures to fully inform parents of their rights under the Education Act and the lifelong consequences of inadvertently advancing their child while others

deferred. Delivery of RAE education will, therefore, be required to be sensitive to evoking guilt and anger in parents that did not defer with this issue, needing to be tailored carefully for different groups.

3.5.1.3. Equity Impacts

A positive impact upon equity may be anticipated through education as a cornerstone of informed decision-making. Education may facilitate increasing decisions to defer by disadvantaged groups such as military children, prior to any formal change to default deferral, then subsequently ensuring advancement decisions are informed. Initial programmes should therefore be targeted towards historically low-deferring groups: low SES, girls, minority ethnicities/migrants, and parents with communication challenges.

3.5.1.4. Cost

No costing of educational programmes has been undertaken, but they are assessed as cost-effective; they may be targeted towards typical placement planning times and included in information provided to parents at those points. It can be expected to increase deferral rates and may have an associated financial/resource cost to the government.

3.5.2. Policy Option 4: Smaller Class Sizes

Smaller class sizes have been shown to be an effective intervention to address the RAE in academic settings (Dhuey et al., 2019). Scottish class sizes increased slightly between 2020 and 2021 but have been relatively stable since 2015 according to official statistics (Scottish Government Statistics, 2020). However, grey literature portrays a scenario of increasing class sizes.

3.5.2.1. Intended Benefits

The intended benefit is to reduce the RAE with the mechanism presumed to be able to give greater attention per child with the flexibility to give proportionally greater relative to need.

3.5.2.2. Possible Harms

Harm is not anticipated from reducing class sizes. There is general grey literature support for smaller class sizes, and it has not been shown to have negative effects.

3.5.2.3. Equity Impacts

Equity is anticipated to be promoted through proportionally greater time with each child based on need. However, this may only be attainable in better-resourced schools such as independent schooling, making it a possible mechanism of inequity.

3.5.2.4. Cost

Costs may be unaffordable as they were pledged in the 2007 manifesto but have not materialised. Conversely, in independent school settings, it may be considered cost-effective in their business plan.

3.5.3. Policy Option 5: Reducing Age Spread Below 12 Months

Reducing the age spread of classes is based on the logic that this will reduce the age difference between the oldest and youngest, thus reducing RAE. To attain smaller age spread, it may result in smaller class sizes or may be attainable within resources in more populous areas through organising classes based on month/quarter of birth.

3.5.3.1. Intended Benefits

The intended benefit is to reduce ability and maturity spread through reducing chronological age difference below the standard 12 months, preventing what Musch and Grondin (2001) refer to as ‘nonsense conditions of development’ and invalid comparisons.

3.5.3.2. Possible Harms

Harm may be caused by potential widening of attainment between the relatively older and relatively younger groups akin to the effect seen in selective sporting programmes.

3.5.3.3. Equity Impacts

Equity may be inadvertently threatened by widening attainment between groups – this may especially be the case if there is compounding inequity between groups. This may change the learning environment if a class becomes heavily dominated by one gender, SES group, or race.

3.5.3.4. *Cost*

Costs may be similar to smaller class sizes and narrow age spreads. Smaller class sizes may be more difficult to resource. Whereas narrower age-band classes can be achieved within structures such as multi-class cohorts, representing a cost-neutral option.

3.5.4. Policy Option 6: Age-adjusted Scoring

Age-adjusted scoring involves employing age-adjusted metrics to track development against predicted levels of performance. It is already used for growth charts (RCPCH, 2012), in skiing (De Larochelambert et al., 2023), and some academic settings. However, these are not generally used in national-level exams or sports competitions, nor can they be directly applied outside of individual sports measured objectively, the so-called Centimetre, Grams, Seconds sports.

3.5.4.1. *Intended Benefits*

Benefits of age-adjusted scoring include allowing children to recognise their progress against age-adjusted parameters rather than younger and older being compared against a norm that artificially creates ‘winners and losers’ (Peña, 2017). The older for the cohort may also benefit through increased challenge to avoid complacency. Due to the complexity of introducing this for national exams, it is proposed to initially introduce or expand this for within-school tests in primary school, with a period of time to transition back to standard testing at the national level.

3.5.4.2. *Possible Harms*

Harm may be caused to the relatively older when adjusted down, especially if the spillover effect (Fig. 12) has led to grade convergence (Huertas et al., 2019) where the young for the cohort generally perform above age expectations but below average, while the old for the cohort perform below age adjustment but still outscore the younger children and remain more likely to be considered gifted or above the line of excellence. Students may struggle to adjust if they find that rather than gifted, they are in reality behind. This potential harm would be reasonable to predict to be more consequential if applied to formal, summative national-level exams.

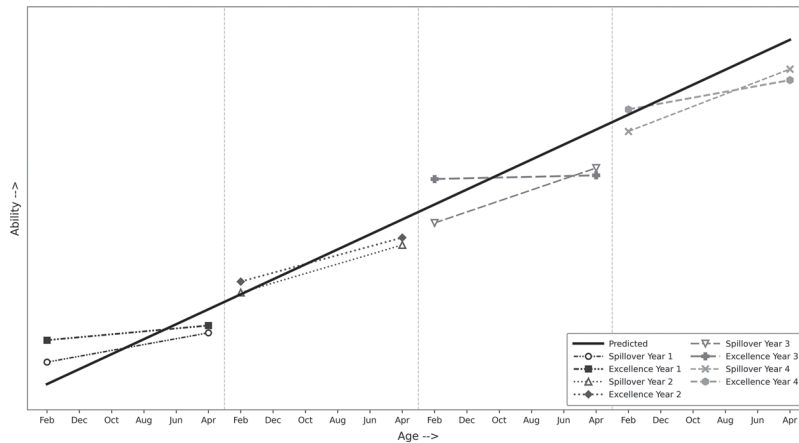


Fig. 12. Illustrative Example of Cohorting Effect Upon Academic Performance Versus Predicted.

Note: Illustrates the divergence between actual academic performance of relatively younger children and predicted performance based on ability, demonstrating the convergence effect within cohorts.

3.5.4.3. Equity Impacts

Age-adjusted scoring is particularly important during the transition period while extended cohorts persist. Children who are currently in extended cohorts and experiencing substantial relative age disadvantages would benefit immediately from age-adjusted scoring, even before structural reforms to eliminate extended cohorts take full effect.

The equity impact is enhanced if age-adjusted scoring is combined with other interventions such as education on RAE and support for relatively younger children, creating a comprehensive system that recognises and responds to RAEs across multiple domains.

3.5.4.4. Cost

The cost of age-adjusted scoring is low to moderate, depending on the complexity of implementation. For simple interventions such as age-ordered numbering, the cost is minimal, essentially just the cost of communicating the approach to teachers and parents. For more sophisticated age-adjusted scoring in formative assessments, the cost is moderate, requiring development of age-adjustment algorithms and training for teachers on how to interpret and use age-adjusted scores.

For high-stakes examinations, the cost would be higher, requiring technical work to develop and validate age-adjustment procedures, modifications to

examination systems and reporting, and communication with all stakeholders about how age-adjusted scores are calculated and interpreted. However, even these costs are modest compared to the potential benefits of reducing the systematic disadvantage experienced by relatively younger children.

Age-adjusted scoring can be piloted in primary school formative assessments at low cost, allowing the approach to be tested and refined before considering wider implementation. This phased approach reduces risk and allows for learning and adaptation based on early experience.

Age-adjusted scoring is recommended as a viable and important component of a comprehensive reform package, particularly for primary school and formative assessments. It provides immediate benefits for relatively younger children, including those in existing extended cohorts, and complements structural reforms to eliminate extended cohorts.

3.5.5. Policy Option 7: Measures Limited to PE and School-based Sports

This policy option involves targeted interventions within PE and school sport to address physical mismatch and injury risk, recognising that RAEs are particularly pronounced in physical and sporting contexts where size, strength, and physical maturity confer significant advantages. Interventions in this domain include bio-banding (grouping children by physical maturity rather than age), discrete performance banding (grouping by ability within age cohort), age-adjusted selection (ensuring relatively younger children are not systematically excluded from teams and talent pathways), and modified competition structures that reduce the advantage of relative age.

3.5.5.1. *Intended Benefits*

The primary intended benefit of PE and sport-specific interventions is that they directly address physical injury risk from physical mismatch. As documented in Chapter 2, relatively younger children in contact sports face higher injury rates due to competing against larger, stronger, more physically mature opponents (Wattie et al., 2015). Interventions that reduce physical mismatch, such as bio-banding or weight-based grouping, can reduce this injury risk, protecting relatively younger children from harm.

A second major benefit is that these interventions can disrupt perception biases (self, coach, parents, and teacher) in a setting that is highly influential upon sport participation and physical activity and therefore lifelong health behaviours (Malm et al., 2019). Children who are systematically excluded

from sport and PE success due to relative age may develop negative self-perceptions about their physical abilities and may disengage from physical activity, with long-term consequences for health and wellbeing. Interventions that provide more equitable opportunities for relatively younger children can help maintain engagement and develop positive physical activity habits.

A third benefit is that sporting participation and prowess have crossover effects into other aspects of school life, including popularity (van Aalst & van Tubergen, 2021) and leadership opportunities (Dhuey & Lipscomb, 2008; Kuhn & Weinberger, 2005). Children who are successful in sport often gain social status and confidence that benefits them in academic and social contexts, including the playground. By providing more equitable sporting opportunities for relatively younger children, these interventions may have benefits that extend beyond sport itself.

Multiple intervention systems are available, and even intermittent implementation may disrupt self and external perceptions of ability. For example, if children experience bio-banded training sessions where they compete successfully against physically similar opponents or reduced-age-spread sports days or swim galas, this may change their self-perception and their coaches' perception of their potential, even if most competition remains age based. This suggests that PE and sport interventions need not be implemented universally to have beneficial effects.

Some sport governing bodies in Scotland already have policies or frameworks that can be adapted for these purposes. For example, Scottish Rugby has experimented with weight-based grouping for youth rugby, and some football clubs have implemented bio-banding in talent development programmes. Building on these existing initiatives may be more feasible than creating entirely new systems.

3.5.5.2. Possible Harms

The primary concern about PE and sport-specific interventions is the risk of stigmatisation if banding is not sensitively implemented. Children who are placed in groups based on physical maturity or ability may feel labelled or may experience social consequences if grouping is perceived as indicating lower status. This risk can be mitigated by careful communication about the purpose of banding, by rotating grouping systems so that children experience different grouping structures, and by emphasising that different grouping systems serve different purposes (skill development vs competition, for example).

A second concern is that PE and sport interventions do not directly address academic or health harms of RAEs. While these interventions may be valuable in their specific domain, they are not sufficient to address the full range of RAEs documented in Chapter 2. They must be part of a comprehensive package that includes structural reforms and interventions in academic contexts where they can reasonably be expected to have a synergistic effect.

A third concern is that implementing these interventions requires training of PE teachers and coaches, who may not currently be aware of RAEs or may not have the skills to implement bio-banding or other modified grouping systems. Professional development and ongoing support will be necessary to ensure effective implementation.

3.5.5.3. Equity Impacts

The equity impacts of PE and sport-specific interventions are positive, as they directly address the physical disadvantage experienced by relatively younger children in sport. Given that children from disadvantaged backgrounds are disproportionately likely to be relatively younger in extended cohorts, these interventions would particularly benefit disadvantaged children, helping to maintain their engagement in physical activity and sport.

The equity impact is particularly important given evidence of lifelong reduced physical activity participation among relatively younger children (Malm et al., 2019). If PE and sport interventions can help maintain engagement in physical activity during childhood, this may have long-term health benefits that are especially important for children from disadvantaged backgrounds who face multiple intersecting health inequities.

However, there is a risk that PE and sport interventions could be implemented more effectively in well-resourced schools or clubs, potentially creating new inequities. Ensuring equitable implementation across all schools and communities will require attention to resource allocation and support for schools and clubs serving disadvantaged communities.

3.5.5.4. Cost

The cost of PE and sport-specific interventions is low to moderate, primarily requiring training and awareness rather than substantial new resources. Some interventions, such as age-ordered numbering or age-adjusted selection, require minimal resources beyond communication and training and may be all that is required during primary school and especially during younger primary school when onset of puberty contributes less to physical development. Other interventions, such as bio-banding, require more sophisticated

implementation, including assessment of physical maturity and modified grouping structures, but these costs are manageable within existing PE and sport budgets.

Some sport governing bodies already have frameworks that can be adapted, reducing the cost of development and implementation. For example, if rugby's weight-based grouping system can be extended or if clubs' bio-banding approaches can be shared with schools, the cost of implementation is reduced.

The cost-effectiveness of PE and sport interventions is enhanced by their potential to reduce injury rates (with associated healthcare costs) and to maintain physical activity engagement (with long-term health benefits) as well as their potential to increase the pool of players for professional, representative, and national sport teams. While these cost savings and benefits are difficult to quantify precisely, they are likely to be substantial.

PE and sport-specific interventions are recommended as a viable component of a comprehensive reform package, providing targeted benefits in a domain where RAEs are particularly pronounced and where interventions can be implemented at relatively low cost.

3.6. COMPARATIVE INTERNATIONAL POLICY ANALYSIS

Examining how other jurisdictions have addressed school starting age and RAEs provides valuable insights for Scotland, revealing both successful approaches that might be adapted and implementation challenges that should be anticipated. This section reviews policy approaches in several countries and regions, considering their legal frameworks, typical cohort spans, documented RAEs, policy interventions, and outcomes where evidence is available.

3.6.1. Scandinavian Countries: Norway, Sweden, and Finland

The Scandinavian countries are often held up as models of equitable, high-quality education systems, and their approaches to school starting age offer important lessons for Scotland. In Norway, the legal school starting age is the calendar year in which a child turns six, with school beginning in August. This means children start school at ages 5.8–6.8 years, substantially older than Scotland's current practice. Sweden has a similar system, with school starting in the autumn of the year a child turns seven, meaning children start at ages 6.8–7.8 years. Finland's school starting age is seven, with children starting in August of the year they turn seven (ages 6.8–7.8 years).

Crucially, all three countries maintain strict 12-month cohorts with very limited flexibility for early or delayed entry. Parents do not have the option to defer or advance their children except in exceptional circumstances with professional assessment. This strict adherence to 12-month cohorts means that RAEs exist but are not amplified by extended cohorts as in Scotland.

Research on RAEs in Scandinavian countries shows that they exist but are generally smaller than in countries with younger starting ages or wider cohorts. Fredriksson and Öckert (2014) found RAEs on academic attainment in Sweden but noted that these effects were smaller than in many other countries and diminished over time. The later starting age and emphasis on play-based learning in early years may contribute to these smaller effects, as children have more time to develop before formal academic instruction begins. Aune et al. (2017) documented RAEs in physical education attainment among Norwegian schoolchildren, confirming that even within well-managed Scandinavian systems, within-cohort age differences shape outcomes across multiple domains. The quality of PE implementation is further mediated by teacher expertise and pedagogical approach (Lynch & Soukup, 2016). Bjerke et al. (2022) similarly reported a relationship between birth month and mathematics performance in Norway, while Oterhals et al. (2023) demonstrated that RAEs persist in educational streaming decisions, suggesting that cohort position influences tracking as well as attainment.

The Scandinavian approach offers several lessons for Scotland. First, later school starting ages are feasible and are associated with good educational outcomes and high equity. Second, strict 12-month cohorts can be maintained without allowing widespread deferral or early commencement. Third, play-based approaches in early years can accommodate developmental variation without requiring formal academic instruction at young ages. Fourth, cultural norms around school starting age can be different from Scotland's current norms, suggesting that change is possible with appropriate communication and stakeholder engagement.

However, the Scandinavian approach also presents challenges for direct transfer to Scotland. The later starting ages (6–7 years) would appear to require substantial changes to Scotland's education system and childcare provision and would likely face significant political opposition from parents who believe earlier starting ages are beneficial. The cultural context in Scandinavia, with strong social norms around equality and collective provision, may make strict cohort management more acceptable than it would be in Scotland's more individualistic culture. However, adoption of the legal commencement age as the default together with the play-based focus for Primary 1, recommended by CfE, caters to an older commencement age of 6–7 for formalised

education. Taken together with the Scandinavian example, this demonstrates that alternatives to Scotland's current system are both feasible and can be associated with excellent educational outcomes.

3.6.2. England and Wales

England and Wales have school systems similar to Scotland's in many respects but with important differences in school starting age policies. The legal school starting age in England is the term after a child's fifth birthday, but in practice, most children start a 'Reception' year of school in the September (autumn term) of the school year in which they turn five. This means children born from September to August start school at ages 4.0–5.0 years, younger than Scotland's legal commencement age but without the extended cohorts created by widespread deferral.

England does have a system where 'summer-born' children (born from April to August) could start school in the term after their fifth birthday, effectively deferring entry. However, this was not a universal right, and many local authorities required summer-born children to start in the September before their fifth birthday or to skip the Reception year entirely if they deferred. This created inequities and confusion, with different local authorities applying different policies, but prevented extended cohorts.

3.6.3. New Zealand

New Zealand's approach to school entry stands apart from most Organisation for Economic Co-operation and Development systems through its rolling admissions framework, which permits children to begin school at any point after their fifth birthday rather than at a single annual intake. This institutional arrangement creates cohorts that are not tied to a fixed cut-off date, producing month-by-month variation in the amount of early schooling that children receive before reaching later assessment points. The statutory framework allows most children to start school throughout the year once they turn five, although those whose fifth birthday falls during a school holiday typically wait until the next teaching term begins. This rolling-entry rule generates what researchers have recognised as a valuable natural experiment: because the timing of school start varies continuously with birth date but is largely independent of family background or child ability, the resulting variation in months of primary schooling can be exploited to estimate causal effects

of early schooling exposure that are distinct from simple RAEs. The New Zealand setting thus offers an unusual opportunity to separate the impact of additional time in formal education from the confounding influence of chronological age at the point of testing, a distinction that proves difficult to achieve in systems with rigid annual cohorts.

Empirical work exploiting this institutional feature has documented substantial long-term benefits associated with additional months of early schooling. Using microdata covering all New Zealand high-school leavers from 2009 to 2016, Ali and Menclova (2024) found that each additional month of early primary schooling increased the probability of achieving a top high-school certificate by approximately 6% and the probability of qualifying for university entrance by about 5%. These estimates, derived from population-level administrative records rather than small experimental samples, suggest that early schooling exposure in the New Zealand context carries meaningful consequences for later educational attainment. The magnitude of these effects is noteworthy: a child who starts school several months earlier than a peer accumulates a measurable advantage in high-stakes credentials by the end of secondary education. Complementary evidence from earlier work by Ali (2019), comparing New Zealand outcomes with those observed in the Netherlands, indicates that date-of-birth effects on later achievement in New Zealand are qualitatively similar to patterns documented in other countries, confirming that detectable birth-month or relative age patterns exist within New Zealand data as well. Taken together, these findings emphasise that the rolling-entry setting not only permits cleaner identification of causal effects but also reveals that additional early-school exposure in New Zealand is associated with sizeable gains in high-school attainment metrics.

The New Zealand literature does not, however, document large-scale policy interventions or randomised trials designed to test alternative entry-age regimes or to mitigate RAEs. The studies reviewed exploit existing variation under the rolling admissions system rather than evaluating a nationwide legislated shift in minimum entry age or a mandated preparatory year whose causal effects could be assessed through policy-change designs. This absence of trialled national interventions means that evidence on the outcomes of deliberate policy experiments within New Zealand is not available in the current corpus. Cross-country reviews emphasise that the desirability and effects of entry-age reforms depend heavily on institutional features such as the quality and availability of early childhood provision, retention and tracking policies, and the timing and stakes of standardised testing, all of which vary considerably across jurisdictions (Dhuey et al., 2019). Consequently, the transferability of New Zealand's findings to other settings remains an open question that requires careful attention to local context.

For policymakers in Scotland and elsewhere, the New Zealand experience offers several practical lessons. First, institutional design can facilitate robust causal inference: New Zealand's rolling-entry rule produces exogenous month-by-month variation in time-in-school that permits researchers and policymakers to separate the effects of early schooling exposure from those of chronological age at test, a methodological advantage that can inform evidence-based policy development. Second, outcomes are context dependent: the positive long-term associations between extra early-school months and high-school attainment in New Zealand imply that increasing early schooling exposure can improve later credentials in this particular institutional setting, but cross-country reviews warn that effects vary with early-childhood provision, retention and tracking rules, and testing practices (Martins & Pereira, 2017). Transfers of New Zealand findings to other countries should therefore be conditional on these factors. Third, careful replication is essential before reform: policymakers should not assume that delaying or advancing school entry will produce the same outcomes as observed in New Zealand. Instead, they should use institutional features – such as whether cohorts are rigidly defined by age cut-offs, the prevalence of redshirting or grade retention, and the timing of high-stakes assessments – to assess likely impacts before implementing reforms. The New Zealand case thus underscores both the value of natural experiments in understanding the causal effects of early schooling and the importance of institutional context in determining whether those effects can be generalised to other educational systems.

3.6.4. Japan

Japan's legal framework for school entry establishes a strict April 1 cut-off that fixes cohort membership by birthdate: children must reach the specified age by April 1 to start a given grade, and the school year runs from April 1 to March 31. This arrangement means that children born in April are the oldest in their cohort, while those born in March are the youngest, creating a full 12-month age span within each grade. Japanese schools seldom allow skipping or repeating grades, producing highly age-homogeneous cohorts in which birth month maps directly onto relative age in class. Because compulsory schooling length does not vary by birth month and grade progression is nearly universal, the Japanese setting isolates RAEs with unusual clarity, making it a valuable natural laboratory for studying the consequences of within-cohort age differences. Early empirical work exploited this institutional rigidity to estimate RAEs on educational attainment and labour-market outcomes, and

subsequent research has extended these analyses to mental health, physical development, and elite sports selection. The system's transparency has also revealed behavioural responses among parents: using national birth data from 1974 to 2010, researchers estimated that more than 1,800 births per year were shifted from the week before to the week after the April 1 cut-off, with higher-skilled mothers more likely to time births so that their children would be among the oldest rather than the youngest in their cohort. This strategic fertility timing introduces an additional layer of socio-economic heterogeneity into the distribution of relative age advantages.

The documented effects of relative age in Japan span academic, social, and health domains, with consistent evidence that being relatively younger within a cohort is associated with poorer outcomes. In a large Japanese labour-force sample, Kawaguchi (2002) found that April-born individuals, those who were oldest in their cohorts, had on average 0.15 more years of education than March-born peers, a difference that translated into higher test scores and higher annual earnings among males. A community survey of 4,478 ten-year-olds in Tokyo reported that relative birthdate, measured continuously through the school year, was negatively associated with World Health Organization-5 wellbeing scores, with path analysis indicating that academic performance and experiences of bullying mediated this relationship. Further work on cognitive and non-cognitive skills showed that younger students in a grade cohort scored lower on both dimensions and had poorer peer and teacher relationships, with compensatory parental investment observed for cognitive skills but not for social outcomes. Perhaps most strikingly, a regression-discontinuity analysis of national vital statistics covering deaths from 1989 to 2010 found that individuals born just before the April 1 cut-off, and thus youngest in their cohorts, exhibited higher suicide mortality between ages 15 and 25 than those born just after the cut-off (Matsubayashi & Ueda, 2015). This finding suggests that the disadvantages associated with relative age in Japan extend beyond academic underperformance to encompass serious mental-health consequences, raising urgent questions about the life-course implications of cohort position.

RAEs in Japan are equally pronounced in physical development and sports. Nakata et al. (2017) documented significant RAEs for boys aged 7–15 on both anthropometric measures and multiple fitness tests, while girls showed smaller or age-limited effects. Among 384 male and 360 female elementary pupils, early-born children scored significantly higher across physical size and motor-ability variables. In elite sports, an analysis of 4,318 Japanese male top-level athletes across 12 sports found significant RAEs in baseball, soccer, volleyball, Ekiden, basketball, sumo, and horse racing, though not uniformly

across all sports (Nakata & Sakamoto, 2011). A parallel study of 1,335 elite female athletes in six sports found a significant effect only in volleyball, indicating sex-specific patterns in selection. Data from 4,464 Japanese junior baseball players revealed that effect sizes for relative age grew with grade among recreational players and were larger, though sometimes decreasing with age, among elite players. These findings demonstrate that the April 1 cut-off shapes not only academic trajectories but also physical development and access to elite sporting pathways, with implications for talent identification and youth development policies.

The supplied literature does not document a nationwide or rigorously trialled Japanese policy intervention designed to eliminate RAEs, and therefore, evidence on the outcomes of such trials in Japan is not available. The absence of policy experiments reflects both the institutional rigidity of the Japanese system and, perhaps, a lack of political momentum for reform despite the accumulating evidence of harm. Nevertheless, the Japanese experience yields important lessons for other countries. First, parental behaviour matters: evidence that more than 1,800 births per year were shifted around the April 1 cut-off implies that where other methods to attain advantage are not available, parents, healthcare workers, and/or administrators in the birth registry system are willing to be complicit in strategic fertility or birth timing. This introduces socio-economic heterogeneity in who benefits from relative age advantage, potentially exacerbating inequalities. Second, mental-health impacts warrant monitoring: the association between relative age disadvantage and lower wellbeing, as well as higher suicide risk, indicates that health monitoring and early support for younger-in-cohort students are essential components of any policy response. Third, sports selection needs safeguards: large RAEs in many Japanese sports and differing patterns by sex and competitive level argue for selection and development policies, such as grouping by maturation stage or rotating cut-offs, to avoid systematically excluding later-born youths from elite pathways.

For Scotland, the Japanese case underscores the importance of considering discretion and some flexibility. Offering the choice to advance, with limited sharing of expertise, encourages illegitimate deferral – risking perverse behaviour. Peer effects must be considered during the policy design process.

Cross-country work and policy reviews argue that teacher and school discretion about retention and placement, along with policies that allow flexible or delayed entry, can reduce relative age harms and may produce positive peer spillovers without harming others. Given the compensatory parental investment observed for cognitive skills in Japan but the persistent social harms, practical measures might include raising teacher awareness, implementing

anti-bullying efforts, providing targeted support for younger-in-cohort pupils, and delaying high-stakes tracking until later grades. The Japanese evidence demonstrates that RAEs are widely known in some societies or segments of societies and actively planned against, with the consequences not confined to academic achievement but permeate physical, social, and mental-health domains, and that the cumulative disadvantage can have life-altering consequences. Any Scottish reform must therefore adopt a holistic view of child development and consider how cohort structures interact with selection, tracking, and support systems across multiple dimensions of wellbeing.

3.6.5. Poland

Poland's experience with school-entry reform offers a cautionary tale about the political, practical, and institutional challenges of changing statutory starting ages. Between 2012 and 2014, Poland implemented a policy that lowered the statutory school-entry threshold to age 6, allowing six-year-olds to enter Grade 1 and actively inviting parents to enrol eligible children during a transitional period. The reform was designed as a gradual rollout rather than an abrupt, single-cohort shock, with compulsory six-year entry scheduled for September 2014 as the culmination of the phased introduction. During the transitional period, enrolment choices were effectively left to parents, producing variation in take-up that researchers later exploited to assess the reform's effects. This design reflected both a pragmatic recognition of the need for system capacity to adjust and an implicit acknowledgement that parental readiness and buy-in would be critical to successful implementation. However, the reform's gradual nature also created ambiguity and uneven uptake, setting the stage for the political contestation that would ultimately lead to its reversal (Herbst & Strawiński, 2016).

The Polish literature provides limited large-scale causal evidence on long-run RAEs within Polish cohorts, and the supplied corpus does not contain a clear, nationally representative study isolating these effects over the life course. International patterns documented in multi-country analyses using PISA and other large datasets consistently show that being relatively younger within a school year is associated with lower achievement at age 15 in many countries, and that much of the disadvantage stems from being the youngest in class rather than from absolute age at school start (Sprietsma, 2010). A recent systematic review covering 21 articles, 24 countries, and 32 assessments concluded that relatively younger children tend to obtain lower mean scores, have higher grade-repetition rates where this practice occurs, and

show weaker socialisation measures across many contexts (Urruticoechea et al., 2021). Within Poland, small-scale readiness studies produced mixed results: Oszwa and Gajownik (2015) comparing 35-year-olds with 36-year-olds found no statistically relevant differences in measured mathematical competences between the groups. This limited and inconclusive evidence base meant that the reform proceeded without robust, Poland-specific data on the magnitude or persistence of RAEs, a gap that would later complicate efforts to defend the policy against political opposition.

Implementation challenges emerged quickly and proved difficult to resolve. Analyses by Herbst and Strawński (2016) highlight that parental heterogeneity in enrolment decisions, local capacity constraints, and communication problems were central obstacles. Parents' choices to enrol six-year-olds reflected a complex mix of objective readiness signals, socio-economic gradients in investment motives, and cost considerations, producing uneven early take-up across families. Wealthier and more educated parents were more likely to enrol their children late, raising concerns about equity and the potential for the reform to widen rather than narrow achievement gaps. At the same time, the shift from preschool and preparatory classes to primary schools strained workforce and classroom capacity, with unintended consequences for early childhood provision. Evaluations noted that the reform disrupted established early childhood education and care (ECEC) arrangements, as spaces and staff were reallocated to accommodate the new cohorts of six-year-olds in primary schools, sometimes at the expense of preschool places for younger children. These capacity and coordination problems were compounded by inadequate communication with parents and practitioners, leaving many families uncertain about the rationale for the change and the support available to ease the transition. Wojniak and Majorek (2018) describe how the policy was gradually introduced over several years and was later cancelled amid political opposition and public debate, with critics arguing that the reform had been poorly planned and insufficiently resourced.

Empirical evaluations of the reform's outcomes are limited and mixed. Researchers evaluated early cohorts and parental take-up during the reform period, but the supplied empirical work focuses on immediate enrolment decisions and readiness measures rather than long-run achievement impacts. The small-scale readiness study by Oszwa and Gajownik (2015) found no significant difference in assessed mathematical competence between the five-year and six-year groups, but this result is based on a sample of only 60 children and cannot support strong conclusions about the reform's broader effects. The supplied Poland studies do not present large-scale, long-run causal estimates, such as nationally representative longitudinal impacts on PISA-age

outcomes, that would definitively quantify the reform's long-term academic or labour-market effects within Poland. In the absence of such evidence, the policy debate was dominated by anecdotal reports, political rhetoric, and concerns about implementation failures rather than by rigorous outcome data. Ultimately, the reform was rolled back, with the statutory entry age returned to seven. This reversal underscores the fragility of education reforms that lack both a strong evidence base and broad stakeholder support, and it highlights the risks of proceeding with major policy changes in the face of unresolved practical and political obstacles.

For Scotland and other countries considering changes to school-entry age, the Polish experience yields several important lessons. First, policymakers must design for the effect of any element of parental choice: research shows that parental enrolment decisions vary by perceived child readiness and SES, and policy design should anticipate heterogeneous take-up and provide clear information and guidance to families on the process and the limits of choice available to them. Also, how to exercise these choices in order to ensure informed decision-making and avoid uneven advantages that could exacerbate inequalities. Second, capacity and service links must be carefully planned: implementation must align school capacity, preschool and preparatory class provision, and teacher preparation, as Polish analyses document unintended ECEC consequences when these elements were not synchronised. Third, political sensitivity should be expected: the Polish case illustrates that even gradual rollouts can become politicised and reversible, and securing broad stakeholder buy-in and clear communication reduces the risk of reversal. Fourth, relative age caution is warranted: international evidence suggests that merely changing the statutory start age does not automatically remove relative age disadvantages, because relative position within cohorts and in-class practices such as tracking and grouping continue to matter for outcomes. Finally, wider socio-economic considerations must be taken into account: changes to school-entry age interact with family labour supply and equity questions. For example, effects on maternal employment and disadvantaged families, so

AQ6 cross-sector analysis is important in policy planning (Akgündüz et al., 2015). The Polish reform's failure was not inevitable, but it was predictable given the combination of weak evidence, uneven implementation, inadequate communication, and insufficient attention to the broader institutional and political context. Scotland can learn from these mistakes by ensuring that any reform is grounded in robust local evidence, supported by adequate resources and clear communication, and designed with careful attention to equity, capacity, and the complex interplay between school entry, early childhood provision, and family circumstances and behaviours.

3.6.6. Australia (NSW)

Research in NSW has documented patterns similar to those in Scotland: delayed entry is more common among affluent families, boys, and children born in the latter part of the school year; children who start school younger experience relative age disadvantages in academic attainment and other outcomes; and the demographic bias in delayed entry creates equity concerns (Dockett & Perry, 2013). Hanly et al. (2019) conducted a population-level cohort study of children in their first year of school in NSW and found that school starting age was significantly associated with child developmental outcomes, with younger-starting children showing greater vulnerability across multiple developmental domains. These parallels suggest that Scotland's extended cohort problem is not unique and that other jurisdictions are grappling with similar challenges.

NSW has not yet implemented comprehensive reform to address extended cohorts, though there have been policy discussions about restricting delayed entry or making the standard starting age clearer. The NSW experience demonstrates that without policy intervention, extended cohorts can persist and widen over time as more families choose and indeed feel forced to choose delayed entry, creating a worsening problem that becomes progressively more difficult to address. Dockett and Perry (2013) noted that trends and tensions in Australian school starting practices reflect broader international debates about the optimal age for school entry and the role of early childhood education, suggesting that the challenges faced in NSW are not unique to Australia but reflect a global policy dilemma.

3.6.7. Key Lessons for Scotland

Several key lessons emerge from this comparative international analysis:

- *Later starting ages and strict 12-month cohorts are feasible and associated with good outcomes.* Scandinavian countries demonstrate that school starting ages of 6–7 years with strict 12-month cohorts can be associated with excellent educational outcomes and high equity (Fredriksson & Öckert, 2014; Schneeweis & Zweimüller, 2014).
- *Flexible entry systems do not eliminate RAEs and may create additional problems.* New Zealand's experience suggests that allowing entry throughout the school year creates administrative complexity without solving the underlying problem and possibly exacerbates it for younger

cohort children who remain the youngest in the cohort but are deprived of months of schooling compared to their older peers and must enter as small groups or individuals into established groups of older children, perhaps unsurprisingly still producing detectable birth-month effects on attainment (Ali & Menclova, 2024).

- *RAEs persist even in well-managed systems, requiring multiple interventions.* Japan's experience shows that strict cohort management reduces but does not eliminate RAEs, suggesting the need for complementary interventions such as age-adjusted assessment and support for relatively younger children (Kawaguchi, 2002; Matsubayashi & Ueda, 2015).
- *Successful reform requires extensive stakeholder engagement and clear communication.* Poland's failed reform demonstrates the dangers of top-down implementation without adequate preparation and stakeholder buy-in (Herbst & Strawinski, 2016; Wojniak & Majorek, 2018).
- *Extended cohorts created by widespread deferral or delayed entry amplify RAEs and create equity concerns.* NSW's experience parallels Scotland's, demonstrating that this is a problem that requires policy intervention rather than allowing market-like dynamics to continue (Hanly et al., 2019).
- *Clear national guidance is essential for equitable implementation.* Scotland shows that without clear national guidance, local authorities may implement policies inconsistently, creating inequities between areas.
- *Parent advocacy can be a powerful force for change, but parent preferences may not always align with equity considerations.* England's reform was driven by parent advocacy for summer-born children, but Scotland's reform must balance individual parent preferences with systemic equity concerns.
- *Perverse responses.* Japan's experience of birth timing suggests that as redshirting (the United States) or deferral (in Scotland) for advantage becomes limited, parents may continue to seek innovative means to gain or maintain advantage.

These lessons inform the integrated policy recommendations presented in the following section, emphasising the need for structural reform to eliminate extended cohorts, complementary interventions to mitigate RAEs within 12-month cohorts, comprehensive stakeholder engagement, clear communication, careful transition planning, and awareness of the potential to see perverse behaviours.

3.7. INTEGRATED POLICY RECOMMENDATIONS

The analysis presented in this chapter – drawing on systematic review evidence, stakeholder engagement, comparative international policy analysis, and assessment of the Scottish context – supports nine integrated policy recommendations that form a mutually supporting and reinforcing package. These recommendations address both the structural problem of extended cohorts and the persistent challenge of RAEs within standard 12-month cohorts, operating at strategic, tactical, and operational levels and requiring coordinated action by multiple stakeholders.

The recommendations are presented as a package rather than as isolated interventions because they are designed to be mutually reinforcing. Structural reform to eliminate extended cohorts (Recommendations 1–3) provides the foundation by reducing cohort spans from 19 months to 12 months, proportionally reducing the magnitude of RAEs. Education and support interventions (Recommendations 4–6) ensure that stakeholders understand RAEs and that relatively younger children receive appropriate support. System-level reforms (Recommendations 7–9) address funding, international alignment, and conceptual frameworks, creating an environment that supports rather than undermines the other recommendations.

3.7.1. Recommendation 1: Treat Extended Cohorts as an Urgent Public Health Priority

Rationale: Scotland's extended cohorts, which can span up to 19 months from youngest to oldest child, represent a public health issue with significant documented harms across multiple domains including academic attainment, physical health and injury risk, mental health, ADHD diagnosis rates, and long-term outcomes. The demographic bias in school commencement, whereby children from disadvantaged backgrounds are disproportionately likely to be relatively younger in extended cohorts, makes this an equity issue as well as a health issue. The evidence reviewed in Chapter 2 demonstrates that these harms are substantial, predictable, and preventable through policy reform.

Action: The Scottish Government should formally designate extended cohorts as a public health priority, with responsibility assigned to the Directorate of Education in coordination with NHS Scotland and Public Health Scotland. This designation should trigger a coordinated response, including policy reform, stakeholder engagement, public communication, and monitoring of outcomes. The urgency of the issue should be communicated clearly,

emphasising that children currently in extended cohorts are experiencing harms that could be prevented through timely action.

Responsible parties: Scottish Government, Directorate of Education, NHS Scotland, and Public Health Scotland.

Timeline: Immediate designation as priority; coordinated response to be developed within six months.

Success indicators: A formal policy statement designating extended cohorts as a public health priority; allocation of responsibility and resources; development of an action plan with clear timelines.

3.7.2. Recommendation 2: Adopt the Legal Commencement Age as Default

Rationale: The Education (Scotland) Act (1980) already designates the legal commencement age, the August after a child's fifth birthday, as the default school starting age. Current practice, which often presents early commencement as the default, represents a misrepresentation of the law that has contributed to the creation of extended cohorts. Adopting the legal commencement age as the actual default in practice would correct this misrepresentation, reduce cohort spans from up to 19 months towards 12 months, remove the demographic bias in school commencement, and align Scotland with international norms.

Action: The Scottish Government should issue clear national guidance stating that the legal commencement age is the default starting age for all children, with early commencement (advancement) available as an option for families who make an informed request supported by professionals (see Recommendation 3). 'True' deferral beyond the legal commencement age should only be permitted after professional assessment of the child's need and suitability for delayed entry and with appropriate measures in place to protect children in the year to which they defer from physical, emotional, or mental health harms or loss of opportunity. This guidance should be mandatory for all local authorities, ensuring consistent implementation across Scotland. The guidance should clarify that the legal commencement age has always been the default in law and that this policy represents a correction of practice to align with existing legislation rather than a new restriction on parental choice with choice preserved through the option to advance as originally intended by the Act.

Responsible parties: Scottish Government, Directorate of Education, local authorities, and Education Scotland.

Timeline: National guidance to be issued within 12 months; implementation to begin in the following school year; full implementation within 3 years.

Success indicators: Clear national guidance issued and disseminated; all local authorities update policies to align with guidance; reduction in early commencement rates; reduction in cohort spans; monitoring data showing demographic bias in commencement is reduced.

3.7.3. Recommendation 3: Reframe Early Commencement as Informed Request

Rationale: Under current arrangements, early commencement is often presented as the default or expected option, with little scrutiny of whether it is in the best interests of individual children or of the cohort as a whole. The evidence reviewed in Chapter 2 demonstrates that early commencement creates extended cohorts with documented harms, and that these harms fall disproportionately on children from disadvantaged backgrounds. While parental choice is important, choice that causes undue harm to others cannot be permitted without scrutiny. The Education (Scotland) Act (1980) already provides for early commencement (termed ‘advancement’) as an option, but this option should be exercised as an informed request rather than as an automatic right.

Action: Local authorities should develop structured processes for assessing requests for early commencement, including consideration of the child’s developmental readiness, the potential benefits and harms of early commencement for that individual child, and the implications for the cohort as a whole. The assessment should involve education professionals (such as early years practitioners and educational psychologists) and should be based on clear criteria that prioritise children’s wellbeing. Parents should be provided with comprehensive information about RAEs, extended cohorts, and the evidence base for the legal commencement age as default, enabling them to make truly informed requests.

Responsible parties: Local authorities, head teachers, early years practitioners, and educational psychologists.

Timeline: Assessment processes to be developed within 12 months of national guidance being issued; implementation to begin in the following school year.

3.7.4. Recommendation 4: Develop Comprehensive RAE Education for All Stakeholders

Rationale: The evidence reviewed in Chapter 2 demonstrates that RAE is poorly understood among the professionals and parents who make decisions about school commencement. Parents, teachers, and health professionals routinely make consequential decisions – about when children start school, whether to defer, how to interpret developmental assessments – without awareness of how relative age influences the outcomes they observe. This knowledge gap is not merely an inconvenience; it is a structural barrier to reform. Parents who do not understand RAE cannot give meaningful informed consent to early commencement. Teachers who attribute RAEs to individual ability differences cannot mitigate their consequences. Health professionals who are unaware of the evidence on ADHD over-diagnosis cannot provide balanced guidance. Addressing this knowledge gap is therefore a prerequisite for the effectiveness of all other recommendations and remains vital even after extended cohorts are corrected.

Action: Education Scotland, in collaboration with NHS Scotland and Public Health Scotland, should develop a comprehensive, evidence-based education programme on RAE for all relevant stakeholders. This programme should include accessible public information materials for parents and families; professional development resources for teachers, school leaders, and early years practitioners; guidance for health professionals, particularly GPs, paediatricians, and educational psychologists; and training materials for local authority staff responsible for school commencement decisions. All materials should be grounded in the evidence base presented in Chapter 2, should be reviewed by independent experts, and should be made freely available through existing professional development channels.

Responsible parties: Education Scotland, NHS Scotland, Public Health Scotland, and General Teaching Council for Scotland.

Timeline: Development of materials within 12 months; integration into professional development programmes within 24 months; review and update every 3 years.

Success indicators: Proportion of teachers, health professionals, and local authority staff who have accessed RAE education materials; measured improvement in knowledge and awareness; reduction in early commencement decisions based on misunderstanding of RAE.

3.7.5. Recommendation 5: Commission Research on Extended Cohort Health Effects

Rationale: As demonstrated in Chapter 2, the evidence base on the health effects of extended cohorts – as distinct from standard 12-month cohorts – is critically limited. While the international literature provides robust evidence of RAE harms within standard cohorts, the specific health and developmental consequences of Scotland’s unique 19-month cohort structure have not been directly studied in the peer-reviewed literature, except for Stuart et al. (2026). This evidence gap is not merely academic; it represents a significant barrier to policy action, as it allows those who oppose reform to argue that the specific harms of Scotland’s extended cohorts have not been proven. Commissioning targeted research to fill this gap would both strengthen the evidence base for reform and fulfil Scotland’s obligation to understand the health consequences of its own educational policies. The expert consultation findings reported in Chapter 2 confirm that leading international researchers in the field regard this as a priority research question.

Action: The Scottish Government, through the Chief Scientist Office and in partnership with Scottish universities, should commission a programme of research specifically examining the health and developmental consequences of Scotland’s extended school cohorts. Priority research questions should include the association between relative age within extended cohorts and physical injury rates; rates of ADHD diagnosis and medication in Scotland; the relationship between cohort position and mental health outcomes, including anxiety, depression, and self-harm; the impact of extended cohorts on educational attainment and streaming decisions; and the long-term career and economic consequences of extended cohort membership. Research designs should include record linkage studies using Scotland’s existing administrative data infrastructure, prospective cohort studies, and qualitative research with affected families. The challenge inherent in establishing position in a cohort with the significant overlap is noted, and therefore, it is further recommended that position in a cohort is routinely recorded in educational records and at every healthcare contact.

Responsible parties: Scottish Government Chief Scientist Office, NHS Scotland, Education Scotland, Scottish universities, and Public Health Scotland.

Timeline: Research programme commissioned within 12 months; initial findings within 3 years; ongoing monitoring programme established.

Success indicators: Peer-reviewed publications on health effects of extended cohorts in Scotland; evidence base sufficient to inform policy decisions; integration of RAE monitoring into existing health and education data collection.

3.7.6. Recommendation 6: Identify and Support Children Who Advanced Inadvertently

Rationale: Scotland's current system of early commencement has resulted in a substantial number of children – particularly those born in the August–February window – commencing school before the legal commencement age, often without their parents having been made aware that this represented advancement of the evidence on RAE or the alternative of waiting until the legal commencement age. Those that were aware of 'deferral' often did not know that this meant starting in line with the law and often thought it was preserved for children who were disadvantaged or developmentally delayed. These children are now progressing through the school system as the youngest and most developmentally disadvantaged members of extended cohorts. While systemic reform will prevent future children from experiencing this disadvantage, it will not address the needs of children already affected. The evidence reviewed in Chapter 2 demonstrates that the harms of relative youth are not confined to early childhood but persist across the life course, affecting academic attainment, mental health, and career outcomes. A proactive identification and support programme is therefore both an ethical obligation and a practical necessity.

Action: The Scottish Government should establish a programme to identify children who commenced school early and are consequently among the youngest in extended cohorts and to ensure that these children receive appropriate targeted support. This programme should include systematic identification of children in extended cohorts using existing school roll data; development of targeted support packages for schools, including additional learning support, pastoral care, and monitoring of developmental progress; guidance for teachers on recognising and mitigating the effects of relative youth in their classrooms; and communication with parents of affected children explaining the evidence on RAE and the support available. Support should be proportionate to the degree of disadvantage, with particular attention to the youngest children and those from socio-economically disadvantaged backgrounds who are disproportionately represented among early commencers.

Responsible parties: Scottish Government, Directorate of Education, local authorities, Education Scotland, and NHS Scotland.

Timeline: Identification programme established within 12 months; support packages developed and deployed within 24 months; ongoing monitoring and review.

Success indicators: All children in extended cohorts identified and their relative age position recorded; targeted support packages in place in all Scottish schools; reduction in attainment gap between oldest and youngest children in extended cohorts; teacher confidence in addressing RAE effects improved.

3.7.7. Recommendation 7: Review Funding Decisions With Equity as Primary Consideration

Rationale: Funding decisions related to school commencement and childcare have inadvertently exacerbated inequities by making deferral more accessible to affluent families while children from disadvantaged backgrounds disproportionately commence early. The 2023 expansion of funded childcare to include an additional year for children born from August to February creates an opportunity to address these inequities, but only if funding decisions are explicitly guided by equity considerations. The transition period created by high deferral rates provides a window for definitive reform that should be utilised strategically.

Action: The Scottish Government should review all funding decisions related to school commencement and childcare with equity as the primary consideration, ensuring that funding structures support rather than undermine the goal of eliminating extended cohorts and reducing demographic bias in school commencement. The transition period should be used strategically to formally adopt the legal commencement age as default, with clear communication that the funded childcare expansion is designed to support children until the legal commencement age rather than to facilitate deferral. Future funding decisions should be assessed for their equity impacts before implementation.

Responsible parties: Scottish Government, Directorate of Education, and Finance Directorate.

Timeline: Review of funding decisions to be completed within 12 months; equity impact assessment to be integrated into all future funding decisions.

Success indicators: Funding structures align with the goal of eliminating extended cohorts; equity impact assessments are conducted for all relevant funding decisions; demographic bias in school commencement reduced.

3.7.8. Recommendation 8: Align with International Standards

Rationale: Scotland's current practice of allowing children to start school at age 4.5 years is internationally anomalous, with most developed nations having school starting ages of 5–7 years and maintaining strict 12-month cohorts. This international context is relevant for several reasons: it demonstrates that later starting ages are feasible and associated with good outcomes; it provides evidence that Scotland's current practices are outliers rather than norms, and it offers models that Scotland can learn from. Adopting the legal commencement age as default would bring Scotland closer to international norms, though still with a younger starting age for formal education than some Scandinavian countries and depending upon the interpretation of P1 under CfE where possibly aligning with these. Realignment with the default starting age will also simplify international comparisons, competition, and transitions. Especially for the relatively common transition between England/English-based school systems and Scotland that is often faced by already disadvantaged groups such as military children.

Action: The Scottish Government and Education Scotland should update guidance and communications to reflect the international context of school starting ages, making clear that Scotland's legal commencement age (the August after turning five) aligns with international practice while early commencement at age 4.5 is internationally anomalous. International evidence on school starting ages and RAEs should be incorporated into educational materials for parents and professionals. Scotland should engage with international networks on early years education and school readiness to learn from other countries' experiences and to contribute Scottish evidence to the international literature.

Responsible parties: Scottish Government, Education Scotland, and universities.

Timeline: Updated guidance and communications to be developed within 12 months; ongoing engagement with international networks.

Success indicators: Guidance and communications reflect international context; stakeholders are aware of international norms; Scotland contributes to international literature on school starting ages and RAEs.

3.7.9. Recommendation 9: Reconceptualise School Readiness

Rationale: Current discourse frames readiness as a property of the child – placing the burden on families – and increasing the likelihood a child will be viewed as not ready by parents, subsequently encouraging deferral. Deferral results in

a spiral of wider age spread, leading to greater challenges for teachers to create age-appropriate settings. However, CfE advises play-based learning in early years and requires no formal academic instruction until Primary 2, indicating that schools should be ready for children rather than the reverse.

Action: Education Scotland and the Scottish Government should update school readiness guidance to reflect CfE principles – clarifying that play-based learning is the appropriate response to developmental variation, that formal instruction is not expected until Primary 2, and that schools should accommodate the full developmental range within age-appropriate cohorts. This reconceptualisation should be integrated into initial teacher education, professional development, and parent communications.

Responsible parties: Education Scotland, Scottish Government, and universities (initial teacher education).

Timeline: Updated guidance within 12 months; integration into teacher education within 18 months.

Success indicators: Guidance reflects reconceptualised school readiness; teachers use play-based approaches in early years; parents report reduced readiness anxiety; school readiness is less frequently cited as a reason to request deferral (if deferral is required).

3.8. SUMMARY

This chapter has developed and evaluated evidence-based policy options to address the harms of extended cohorts and RAEs in Scotland. The analysis, drawing on systematic review evidence, stakeholder engagement, comparative international policy analysis, and assessment of the Scottish context, reveals that Scotland faces two interconnected challenges: the structural problem of extended cohorts created by current school commencement practices and the persistent challenge of RAEs within cohorts.

For extended cohorts, two principal policy options were evaluated: maintaining the status quo or adopting the legal commencement age as default. Maintaining the status quo perpetuates documented harms (lower attainment, higher ADHD diagnosis, increased injury risk), disproportionately affecting disadvantaged children, and allows demographic bias to function as a mechanism of Effectively Maintained Inequality. Adopting the legal commencement age as default reduces cohort spans towards 12 months, aligns with existing law, removes demographic bias, and is consistent with GIRFEC and CfE principles. The 2023 expansion of funded childcare removes the primary financial barrier, and pilot evidence from several Scottish local

authorities demonstrates feasibility. Transition challenges are manageable and time limited.

These recommendations require coordinated action across the Scottish Government, local authorities, schools, and health services. They are evidence based, contextually appropriate, feasible within existing institutional constraints, and explicitly designed to promote equity. The recommended policy package prioritises adoption of the legal commencement age as default as the primary structural intervention, supported by comprehensive RAE education, age-adjusted scoring, and sport-specific measures. Implementation is the subject of Chapter 4.

KEY TAKEAWAYS

- Scotland's extended cohorts (up to 19 months) are a public health and equity issue requiring urgent policy action. The evidence demonstrates substantial harms across academic, health, and long-term outcome domains, with children from disadvantaged backgrounds bearing the greatest burden.
- Adopting the legal commencement age as default corrects a misrepresentation of existing law and provides the foundation for addressing extended cohorts. The Education (Scotland) Act (1980) already designates the August after turning five as the legal commencement age; current practice misrepresents this as 'deferral' rather than as the legal default.
- International evidence demonstrates that later starting ages and strict 12-month cohorts are feasible and associated with good outcomes. Scandinavian countries provide models of equitable, high-quality education systems with later starting ages and strict cohort management, while cautionary tales from Poland emphasise the importance of stakeholder engagement and clear communication in reform processes.

REFERENCES

Akgündüz, Y. E., Van Huizen, T., & Plantenga, J. (2015). *Childcare prices and maternal employment: A meta-analysis* [Working Paper No. 16/26]. Central Bank of the Republic of Turkey. <https://www.tcmb.gov.tr/wps/wcm/connect/EN/TCMB+EN/Main+Menu/Publications/Research/Working+Papers/2016/16-26>

- Albanesi, H. P. (2019). Tilting the playing field: 'Redshirting' kindergarten boys in the US and the competition for hegemonic masculinity. *Gender and Education*, 31(2), 240–257. <https://doi.org/10.1080/09540253.2017.1309009>
- Ali, A. I., & Menclova, A. K. (2024). Schooling opportunities for 5-year-olds: Some early origins of high school achievement. *New Zealand Economic Papers*, 58(2), 179–196. <https://doi.org/10.1080/00779954.2024.2330897>
- Aune, T. K., Pedersen, A. V., Ingvaldsen, R. P., & Dalen, T. (2017). Relative age effects and gender differences in physical education attainment in Norwegian schoolchildren. *Scandinavian Journal of Educational Research*, 61(3), 369–375. <https://doi.org/10.1080/00313831.2016.1148073>
- Bedard, K., & Dhuey, E. (2006). The persistence of early childhood maturity: International evidence of long-run age effects. *The Quarterly Journal of Economics*, 121(4), 1437–1472.
- Bjerke, A. H., Smestad, B., Eriksen, E., & Rognes, A. (2022). Relationship between birth month and mathematics performance in Norway. *Scandinavian Journal of Educational Research*, 66(6), 1038–1048.
- Borghans, L., & Diris, R. (2012). An economic analysis of the optimal school starting age. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2022360>
- Cobley, S., Abraham, C., & Baker, J. (2008). Relative age effects on physical education attainment and school sport representation. *Physical Education & Sport Pedagogy*, 13(3), 267–276.
- Crawford, C., Dearden, L., & Greaves, E. (2013). *When you are born matters: Evidence for England*. Institute for Fiscal Studies. <https://ifs.org.uk/publications/when-you-are-born-matters-evidence-england>
- De Laroche Lambert, Q., Barlier, K., Hamri, I., Difernand, A., Sedeaud, A., Toussaint, J. F., Antero, J., Louis, P. Y., & Coulmy, N. (2023). Potential estimation model in French alpine skiing – Individual evolution curve and progression typology. *Frontiers in Physiology*, 13, 1082072. <https://doi.org/10.3389/fphys.2022.1082072>
- Dhuey, E., Figlio, D., Karbownik, K., & Roth, J. (2019). School starting age and cognitive development. *Journal of Policy Analysis and Management*, 38(3), 538–578. <https://doi.org/10.1002/pam.22135>

Dhuey, E., & Lipscomb, S. (2008). What makes a leader? Relative age and high school leadership. *Economics of Education Review*, 27(2), 173–183. <https://doi.org/10.1016/j.econedurev.2006.08.005>

Dockett, S., & Perry, B. (2013). Trends and tensions: Australian and international research about starting school. *International Journal of Early Years Education*, 21(2–3), 163–177. <https://doi.org/10.1080/09669760.2013.832943>

Education Scotland. (2010). *Curriculum for excellence*. Scottish Government. <https://education.gov.scot/curriculum-for-excellence/>

Education (Scotland) Act. (1980). c. 44. <https://www.legislation.gov.uk/ukpga/1980/44>

Fleming, M., Bandyopadhyay, A., McLay, J. S., Clark, D. A., King, D., Mackay, F., Lyons, R. A., Sayal, K., Brophy, S., & Pell, J. P. (2022). Age within schoolyear and attention-deficit hyperactivity disorder in Scotland and Wales. *BMC Public Health*, 22(1). <https://pmc.ncbi.nlm.nih.gov/articles/PMC9150337/>

Fortner, C. K., & Jenkins J. M. (2017). Kindergarten redshirting: Motivations and spillovers using census-level data. *Early Childhood Research Quarterly*, 38, 44–56. <https://doi.org/10.1016/j.ecresq.2016.09.002>

Fredriksson, P., & Öckert, B. (2014). Life-cycle effects of age at school start. *Economic Journal*, 124(579), 977–1004. <https://doi.org/10.1111/eoj.12047>

Hanly, M., Edwards, B., Goldfeld, S., Craven, R. G., Mooney, J., Jorm, L., & Falster, K. (2019). School starting age and child development in a state-wide, population-level cohort of children in their first year of school in New South Wales, Australia. *Early Childhood Research Quarterly*, 48, 325–340.

Herbst, M., & Strawiński, P. (2016). Early effects of an early start: Evidence from lowering the school starting age in Poland. *Journal of Policy Modeling*, 38(2), 256–271.

Huertas, F., Ballester, R., Gines, H.J., Hamidi, A.K., Moratal, C., & Lupiáñez, J. (2019, August 8). Relative age effect in the sport environment. Role of physical fitness and cognitive function in youth soccer players. *International Journal of Environmental Research and Public Health*, 16(16), 2837.

Jimerson, S. R. (2001). Meta-analysis of grade retention research: Implications for practice in the 21st century. *School Psychology Review*, 30(3), 420–437. <https://doi.org/10.1080/02796015.2001.12086124>

- Kawaguchi, D. (2002). *Peer effects on substance use among American teenagers*. <http://dx.doi.org/10.2139/ssrn.318119>
- Kuhn, P., & Weinberger, C. (2005). Leadership skills and wages. *Journal of Labor Economics*, 23(3), 395–436. <https://doi.org/10.1086/430282>
- Lucas, S. R. (2001). Effectively maintained inequality: Education transitions, track mobility, and social background effects. *American Journal of Sociology*, 106(6), 1642–1690. <https://doi.org/10.1086/321300>
- Lynch, T. (2016). *The future of health, wellbeing and physical education: Optimising children's health and wellbeing through local and global community partnerships*. Palgrave Macmillan. <https://doi.org/10.1007/978-3-319-31667-3>
- Lynch, T., & Soukup, G. J. (2016). “Physical education”, “health and physical education”, “physical literacy” and “health literacy”: Global nomenclature confusion. *Cogent Education*, 3(1), 1217820. <https://doi.org/10.1080/2331186X.2016.1217820>
- Malm, C., Jakobsson, J., & Isaksson, A. (2019). Physical activity and sports – Real health benefits: A review with insight into the public health of Sweden. *Sports*, 7(5), 127. <https://doi.org/10.3390/sports7050127>
- Martins, L., & Pereira, M. C. (2017). *Disentangling the channels from birthdate to educational attainment* [Working Paper No. w201706]. Banco de Portugal. <https://mpira.ub.uni-muenchen.de/80607/>
- Matsubayashi, T., & Ueda, M. (2015). Relative age in school and suicide among young individuals in Japan: A regression discontinuity approach. *PLoS ONE*, 10(8), e0135349. <https://doi.org/10.1371/journal.pone.0135349>
- Musch, J., & Grondin, S. (2001). Unequal competition as an impediment to personal development: A review of the relative age effect in sport. *Developmental Review*, 21(2), 147–167. <https://doi.org/10.1006/drev.2000.0516>
- Nakata, H., Akido, M., Naruse, K., & Fujiwara, M. (2017). Relative age effect in physical fitness among elementary and junior high school students. *Perceptual and Motor Skills*, 124(5), 900–911. <https://doi.org/10.1177/0031512517722284>
- Nakata, H., & Sakamoto, K. (2011). Relative age effect in Japanese male athletes. *Perceptual and Motor Skills*, 113(2), 570–574. <https://doi.org/10.2466/05.10.11.PMS.113.5.570-574>

- Oszwa, U., & Gajownik, E. (2015). Gotowość szkolna dzieci 5-letnich do podjęcia edukacji matematycznej [School readiness of 5-year-old children for undertaking mathematical education]. *Lubelski Rocznik Pedagogiczny*, AQ7 34(2), 167–End page. <https://doi.org/10.17951/lrp.2015.34.2.167>
- Oterhals, G., Bachmann, K. E., Bjerke, A. H., & Pedersen, A. V. (2023). The relative age effect shifts students' choice of educational track even within a school system promoting equal opportunities. *Frontiers in Psychology*, 13, 1066264. <https://doi.org/10.3389/fpsyg.2022.1066264>
- Peña, P. A. (2017). Creating winners and losers: Date of birth, relative age in school, and outcomes in childhood and adulthood. *Economics of Education Review*, 56, 152–176. <https://doi.org/10.1016/j.econedurev.2016.12.001>
- Schneeweis, N., & Zweimüller, M. (2014). Early tracking and the misfortune of being young. *Scandinavian Journal of Economics*, 116(2), 394–428. <https://doi.org/10.1111/sjoe.12046>
- Scottish Government. (2017). *Supporting children's learning: Statutory guidance on the Education (Additional Support for Learning) (Scotland) Act 2004 (as amended)* (3rd ed.). Scottish Government.
- Scottish Government. (2022). *Getting it right for every child (GIRFEC): Policy statement*. The Scottish Government.
- Scottish Government. (2023). *Summary statistics for schools in Scotland*. Scottish Government. <https://www.gov.scot/news/summary-statistics-for-schools-in-scotland-2023/>
- Scottish Government Statistics. (2020). *Summary statistics of schools in Scotland*. <https://www.gov.scot/publications/summary-statistics-schools-scotland/pages/5/>
- Scottish Government Statistics. (2023). *Summary statistics for schools in Scotland 2023*. <https://www.gov.scot/publications/summary-statistics-for-schools-in-scotland-2023/pages/early-learning-and-childcare-elc/>
- Sharp, C., George, N., Sargent, C., O'Donnell, S., & Heron, M. (2009). *International thematic probe: The influence of relative age on learner attainment and development*. National Foundation for Educational Research.
- Sprietsma, M. (2010). Effect of relative age in the first grade of primary school on long-term scholastic results: International comparative evidence using PISA 2003. *Education Economics*, 18(1), 1–32. <https://doi.org/10.1080/09645290802201961>

Stuart, A., Lynch, T., Hamilton, X., Goff, W., & Liu, Q. (2026). Systemic review of the relative age effect in Scottish schooling: A public health imperative for policy reform and equity. *BMJ Public Health*, 4(2), Article e003676. <https://bmjpublichealth.bmj.com/content/4/2/e003676>

Thompson, A. H., Barnsley, R. H., & Dyck, R. J. (1999). A new factor in youth suicide: The relative age effect. *Canadian Journal of Psychiatry*, 44(1), 82–85.

Urruticoechea, A., Oliveri, A., Vernazza, E., Giménez-Dasí, M., Martínez-Arias, R., & Martín-Babarro, J. (2021). The relative age effects in educational development: A systematic review. *International Journal of Environmental Research and Public Health*, 18(17), 8966. <https://doi.org/10.3390/ijerph18178966>

van Aalst, D. A. E., & van Tubergen, F. (2021). More popular because you're older? Relative age effect on popularity among adolescents in class. *PLoS ONE*, 16(5), Article e0249336. <https://doi.org/10.1371/journal.pone.0249336>

Wattie, N., Schorer, J., & Baker, J. (2015). The relative age effect in sport: A developmental systems model. *Sports Medicine*, 45(1), 83–94.

Wojniak, J., & Majorek, M. (2018). Polish education system under 2017 reform: Assumptions, aims and controversies. *SHS Web of Conferences*, 48, Article 01043. <https://doi.org/10.1051/shsconf/20184801043>

