

Beyond Universal Basic Income: Age-Indexed Basic Income as a Life-Cycle Approach to Welfare Sustainability

Dr. Joni Askola

Charles University (Prague), Faculty of Social Science
Email: 87680683@fsv.cuni.cz

Summary. This paper introduces Age-Indexed Basic Income (AIBI) as an original institutional design and evaluates it as a life-cycle-sensitive alternative to Universal Basic Income (UBI) for welfare states facing demographic ageing and technological disruption. While UBI promises administrative simplicity, its flat-rate structure generates fiscal pressures when set at poverty-reducing levels. Drawing on an illustrative fiscal exercise of the Finnish welfare state, the study examines whether an age-indexed universal transfer can consolidate existing categorical programmes while remaining financially viable. The analysis shows that AIBI aligns redistribution with predictable life-cycle needs, reduces exposure to non-take-up and administrative complexity, and can replace fragmented minimum-income schemes without abandoning unconditional access. The findings suggest that AIBI offers a more fiscally sustainable universal floor than flat-rate models, though its implementation raises political and institutional challenges related to programme consolidation and the protection of groups whose needs are not fully captured by age.

Keywords: Age-Indexed Basic Income; Universal Basic Income; Non-Take-Up Rate; Universalism; Lifecycle.

Už universalių bazinių pajamų: pagal amžių indeksuojamos
bazinės pajamos kaip principas kurti gyvenimo ciklo požiūriu
grįstą tvarią gerovę

Santrauka. Straipsnyje vertinamos pagal amžių indeksuojamos bazinės pajamos (angl. *Age-Indexed Basic Income*, AIBI) kaip gyvenimo ciklo poreikiams jautri universaliųjų bazinių pajamų (angl. *Universal Basic Income*, UBI) alternatyva gerovės valstybėms, susiduriančioms su visuomenės senėjimu ir technologiniais pokyčiais. Nors universaliosios bazinės pajamos

Received: 15/08/2025. **Accepted:** 18/06/2026

Copyright © 2026 Joni Askola. Published by Vilnius University Press. This is an Open Access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

pasizymi administraciniu paprastumu, vienodo dydžio išmokų modelis sukuria didelį fiskalinį spaudimą, kai išmokų dydis nustatomas toks, kad reikšmingai mažintų skurdą. Remiantis iliustraciniu Suomijos gerovės valstybės fiskaliniu modeliavimu, tyrime nagrinėjama, ar pagal amžių indeksuotas universalus pervedimas galėtų sujungti esamas kategorines programas ir kartu išlikti finansiškai tvarus. Analizė rodo, kad AIBI leidžia geriau suderinti perskirstymą su prognozuojamais gyvenimo ciklo poreikiais bei sumažina riziką, kad teisę į paramą turintys asmenys ja nepasinaudos, supaprastina administravimą ir gali pakeisti fragmentuotas minimalių pajamų užtikrinimo schemas neatsisakant besąlyginės prieigos principo. Rezultatai leidžia teigti, kad AIBI gali užtikrinti fiskaliniu požiūriu tvaresnį universalų pajamų minimumą negu vienodo dydžio išmokomis grindžiami modeliai, tačiau jo įgyvendinimas kelia politinių ir institucinių iššūkių, susijusių su programų konsolidavimu ir tų grupių, kurių poreikius amžiaus kriterijus nepakankamai atspindi, apsauga.

Reikšminiai žodžiai: pagal amžių diferencijuotos bazinės pajamos, universaliosios bazinės pajamos, nepasinaudojimo išmokomis rodiklis, universalizmas, gyvenimo ciklas.

Introduction

Welfare states are entering a period of structural stress which challenges the institutional foundations on which postwar redistribution systems were built. Demographic aging, rapid technological change and rising inequality are reshaping the economic and social environment in ways that strain the fiscal and institutional capacity of existing welfare arrangements. Between 1994 and 2024, the old age dependency ratio in OECD countries increased from 21 to 33 per 100 working age adults and is projected to reach 55 by 2054¹. By 2060, nearly one in two adults in advanced economies will be over 65, which will place unprecedented pressure on pension systems, as well as health care and long-term care structures². At the same time, automation and artificial intelligence are transforming labor markets, driving job polarization and intensifying structural mismatches between worker skills and shifting market demands³. These developments raise con-

¹ OECD, *Society at a Glance 2024: OECD Social Indicators* (Paris: OECD Publishing, 2024).

² Axel Börsch-Supan, "Challenges for European Welfare States," *International Tax and Public Finance* 22, no. 4 (2015).

³ ILO: International Labour Organization (ILO), *World Employment and Social Outlook Trends 2024* (International Labour Organization, 2024); Rasim Özcan, "Robotların Yükselişi! İşsizlik ve Gelir Üzerine Etkileri," *Öneri Dergisi* (2019).

cerns about the long-term sustainability and legitimacy of welfare systems that rely on stable employment and contributory financing.

Existing redistribution models are struggling to adapt to these pressures. Means-tested programmes remain dominant in most OECD countries, yet they suffer from high administrative costs, complex eligibility criteria and persistent non-take-up rates that range from 20 percent in the United States to more than 50 percent in parts of Europe⁴. Complexity and stigma discourage eligible households from claiming benefits, which undermines poverty reduction goals and weakens trust in public institutions. Income inequality has reached its highest level in half a century. Advanced welfare states are facing severe macro-demographic pressures, characterized by rapidly climbing dependency ratios and an aging population that tests traditional fiscal boundaries⁵. These structural weaknesses have renewed interest in universal approaches that promise simplicity and inclusivity.

Universal Basic Income (UBI) has become the most prominent alternative of these proposals. Defined as a regular, unconditional cash payment to all individuals regardless of the employment status, UBI aims to reduce poverty, enhance financial security and simplify social protection systems⁶. Advocates argue that UBI can eliminate welfare stigma, reduce administrative complexity, and empower individuals to make choices about work and education without fear of economic insecurity⁷. Evidence from pilot programmes, including Finland's basic income experiment, suggests that recipients experience an improved well-being and reduced stress, even if employment

⁴ Carlos Andrade, "The Economics of Welfare Participation and Welfare Stigma: A Review," *Public Finance and Management* 2, no. 2 (2002).

⁵ OECD (Income Database): OECD, "Income and Wealth Distribution Database" (OECD, 2023).

⁶ Juliana Uhuru Bidadanure, "The Political Theory of Universal Basic Income," *Annual Review of Political Science* 22 (2019).

⁷ Paul Redmond et al., "A Universal Basic Income for Ireland: Lessons from the International Literature" (2022).

effects remain limited⁸. However, UBI faces significant criticisms. Fiscal simulations show that a poverty-level UBI would require major tax increases or deep cuts to existing programmes⁹. A budget-neutral UBI would likely provide payments below the poverty threshold, which limits its effectiveness in reducing poverty¹⁰. Critics also argue that universal schemes may be less efficient than targeted programmes in addressing poverty because they allocate resources to individuals who do not need assistance¹¹.

These challenges have renewed interest in alternative models that retain the advantages of universality while addressing the fiscal and distributional limitations of UBI. *Age-Indexed Basic Income* (AIBI) is one such proposal. AIBI maintains universal eligibility but calibrates payments to predictable lifecycle needs. Childhood, education and early adulthood, prime working years, and older age are associated with distinct patterns of costs, risks and earnings capacity. Indexing benefits to age allows redistribution to reflect these differences without introducing means testing. This approach promises to reduce non-take-up, simplify administration and consolidate overlapping programmes such as child allowances, student benefits, minimum unemployment support, and minimum pensions. At the same time, age indexing may reduce aggregate costs relative to flat-rate universal schemes by concentrating higher payments where needs are greatest and lower payments where earnings capacity is higher.

The fiscal and institutional context in which these reforms would occur is central to their feasibility. Evaluating a country's baseline macro-fiscal capacity alongside its established welfare outcomes helps

⁸ Heikki Hiilamo, "The Basic Income Experiment in Finland Yields Surprising Results" (University of Helsinki, 2020), <https://www.helsinki.fi/en/news/nordic-welfare-news/the-basic-income-experiment-in-finland-yields-surprising-results>.

⁹ Luke Martinelli, "Assessing the Case for a Universal Basic Income in the UK," *IPR Report* (Institute for Policy Research, University of Bath, 2017).

¹⁰ James Browne and Herwig Immervoll, "Basic Income as a Policy Option: Technical Background Note Illustrating Costs and Distributional Implications for Selected Countries" (OECD, 2017).

¹¹ Ravi Kanbur, "Transfers, Targeting and Poverty," *Economic Policy* 2, no. 4 (1987).

identify where universal reforms are most constrained by public debt and demographic pressures. Countries with strong welfare outcomes but a limited fiscal space face difficult trade-offs between maintaining adequacy and ensuring long-term sustainability. Younger or lower-income countries may have more fiscal space but weaker administrative capacity. Understanding these structural conditions is essential for evaluating whether AIBI can serve as a viable alternative to UBI.

The central research question is whether an AIBI can consolidate existing redistribution schemes more affordably than a UBI while preventing an increase in poverty across age groups. The analysis evaluates AIBI as a life-cycle-sensitive model that seeks to reconcile universality with fiscal sustainability. By using Finland as a case study, the paper explores how age-indexed payments could replace selected categorical programmes, and how this consolidation affects net costs, administrative complexity, and distributional outcomes. The study also considers the political and institutional challenges associated with consolidating social bureaucracies and restructuring existing benefit systems.

This article introduces AIBI as an original institutional formulation developed by the author, combining consolidation logic with an age-graded universal schedule to operationalize a non-contributory floor. The paper's original contributions are threefold: (1) it formalizes AIBI as an institutional design that synthesises universal child benefits, participation income thinking and age-graded minima into a coherent package; (2) it links age-calibrated transfers to fiscal sustainability in ageing welfare states by showing how lifecycle reallocation can reduce aggregate cost pressure relative to flat-rate universal schemes while preserving unconditional access; and (3) it provides a Finland-grounded illustrative fiscal exercise, an arithmetic proof-of-concept that maps existing programme budgets into cohort envelopes and tests sensitivity to alternative assumptions. The empirical tables and arithmetic cells are constructed from official Finnish programme totals and the country's population; exact source lines and the calculation spreadsheet are reported in Appendix A.

The remainder of the paper is organized as follows. Section 1 reviews the challenges facing welfare states, the limitations of means-tested redistribution, and the promises and pitfalls of UBI. Section 2 introduces the concept of AIBI and outlines its theoretical rationale. Section 3 presents the methodological approach. Section 4 includes a illustrative fiscal exercise. Section 5 discusses the implications of AIBI for fiscal sustainability, administrative efficiency, and equity.

1. Literature Review

This section reviews the main challenges confronting contemporary welfare states, the limitations of existing redistribution schemes, the promises and shortcomings of UBI, and, on these grounds AIBI is situated within that broader debate. It summarizes evidence on demographic and fiscal pressures that are reshaping public expenditure needs, highlights empirical findings on administrative design and non-take-up that constrain the effectiveness of means-tested minima, and outlines the principal arguments and empirical results from recent unconditional cash experiments. The aim is not to offer an exhaustive survey but, instead, to clarify the strands of evidence and argument most relevant to a life-cycle-calibrated universal floor and to identify the specific gaps that AIBI seeks to address.

1.1 Structural Pressures on Welfare States

Welfare states in the twenty-first century are facing demographic, technological and economic pressures that undermine the sustainability of traditional redistribution systems. Demographic aging is among the most significant of these pressures. Between 1994 and 2024, the old age dependency ratio in OECD countries rose from 21 to 33 per 100 working age adults and is projected to reach 55 by 2054¹². By 2060, nearly half of adults in advanced economies will be

¹² OECD, *Society at a Glance 2024: OECD Social Indicators* (Paris: OECD Publishing, 2024).

over 65, increasing demand for pensions, health care and long-term care, and placing pressure on contributory systems that depend on stable employment and a broad tax base¹³. The literature consistently highlights that these demographic shifts challenge the long-term balance between revenue generation and expenditure commitments.

These demographic trends have two implications that are central to the argument to be developed below. First, ageing raises predictable, long-run expenditure commitments concentrated in pensions, health and long-term care¹⁴. Second, slower labor-force growth reduces the scope for revenue expansion without raising tax rates or altering benefit entitlements¹⁵. Together, these effects tighten the fiscal trade-offs available to welfare states and increase the political salience of reforms that can contain aggregate cost while preserving legitimacy¹⁶.

Technological change compounds these demographic pressures. Automation and artificial intelligence are reshaping labour markets, reducing demand for middle-skill jobs and increasing job polarization¹⁷. The ILO estimates that up to 30 percent of working hours could be automated by 2030, which will intensify skill mismatches and create new forms of income insecurity¹⁸. While technological progress has historically improved productivity and living standards, its benefits are increasingly unevenly distributed, contributing to widening inequality and structural unemployment¹⁹. These develop-

¹³ Axel Börsch-Supan, "Challenges for European Welfare States," *International Tax and Public Finance* 22, no. 4 (2015).

¹⁴ United Nations, Department of Economic and Social Affairs, Population Division, *World Population Prospects 2024*, online database: <https://population.un.org/wpp/>.

¹⁵ David E. Bloom, David Canning, and Günther Fink, "Implications of Population Ageing for Economic Growth," *Oxford Review of Economic Policy* 26, no. 4 (2010).

¹⁶ Axel Börsch-Supan, "Challenges for European Welfare States," *International Tax and Public Finance* 22, no. 4 (2015).

¹⁷ Rasim Özcan, "Robotların Yükselişi! İşsizlik ve Gelir Üzerine Etkileri," *Öneri Dergisi* (2019).

¹⁸ ILO: *International Labour Organization (ILO), World Employment and Social Outlook Trends 2024* (International Labour Organization, 2024).

¹⁹ Giovanni Dosi and Maria Enrica Virgillito, "Whither the Evolution of the Contemporary Social Fabric? New Technologies and Old Socio-Economic Trends," *International Labour Review* 158, no. 4 (2019).

ments raise questions about how welfare systems can adapt to more volatile earnings and less predictable employment trajectories.

Economic trends further constrain the welfare state capacity. GDP per capita growth across OECD countries is projected to slow down from around 1.0 percent between 2006 and 2019 to 0.6 percent between 2024 and 2060, largely due to aging populations²⁰. Income inequality has reached its highest level in half a century. Across the OECD, the richest 10 percent earn nearly nine times more than the poorest 10 percent, and relative poverty remains above 11 percent²¹. These pressures have intensified debates about the long-term viability of existing redistribution systems and the need for institutional adaptation.

Assessing these pressures requires analyzing how a state's fiscal capacity interacts with its welfare outcomes. Tools such as the *Welfare State Scattergram* provide a way to assess these pressures by positioning countries according to their fiscal capacity and welfare outcomes²². Countries with strong outcomes but limited fiscal space, such as the Nordic states, face difficult trade-offs between maintaining adequacy and ensuring sustainability. Countries with a greater fiscal space but weaker outcomes face different constraints. Understanding these structural conditions is essential for evaluating the feasibility of universal reforms and the institutional space available for models such as AIBI.

1.2 Limitations of Existing Redistribution Schemes

Most OECD welfare states rely heavily on means-tested programmes. Although these programmes target resources to those with

²⁰ OECD, *Society at a Glance 2024: OECD Social Indicators* (Paris: OECD Publishing, 2024).

²¹ OECD (Income Database): OECD, "Income and Wealth Distribution Database" (OECD, 2023).

²² Joni Askola and Benjamin Davison, "The Welfare State Scattergram," *Politologija* 110, no. 2 (2023).

the greatest need, they suffer from persistent operational weaknesses. Administrative complexity, extensive documentation requirements and stigma contribute to high non-take-up rates. Studies show that between 40 and 80 percent of eligible individuals fail to claim social assistance or housing benefits, and between 20 and 50 percent do not claim employment-related transfers²³. These gaps undermine the effectiveness of redistribution and weaken the legitimacy of welfare institutions. The literature consistently links these outcomes to structural features of means-testing rather than to isolated implementation failures.

Means-tested programmes also create work disincentives and welfare traps, particularly when benefit withdrawal rates are high. The complexity of these systems increases administrative costs and contributes to errors in eligibility determination²⁴. Some scholars argue that inefficient redistribution can mask policy aims and costs when there is asymmetric information about policy efficiency and political preferences²⁵. Others note that bureaucratic expansion can occur even when it is not cost-minimizing, due to institutional incentives and political constraints²⁶. These dynamics suggest that the limitations of means-tested systems are embedded in their design, which has motivated interest in simpler universal approaches, but several practical constraints must be considered before universal options can be judged feasible.

Fragmentation across programmes and levels of government builds on these administrative weaknesses by raising coordination costs and creating gaps that are difficult to close through incremental

²³ Carlos Andrade, "The Economics of Welfare Participation and Welfare Stigma: A Review," *Public Finance and Management* 2, no. 2 (2002).

²⁴ Diwakar Vadapalli, "Barriers and Challenges in Accessing Social Transfers and Role of Social Welfare Services in Improving Targeting Efficiency: A Study of Conditional Cash Transfers," *Vulnerable Children and Youth Studies* 4, no. S1 (2009).

²⁵ Carl Andreas Claussen, "Persistent Inefficient Redistribution," *Working Paper* 11/2002 (Oslo: Norges Bank, 2002).

²⁶ Morris P. Fiorina and Roger G. Noll, "Voters, Bureaucrats and Legislators: A Rational Choice Perspective on the Growth of Bureaucracy," *Journal of Public Economics* 9, no. 2 (1978).

reform. Behavioral barriers such as limited information, transaction costs and stigma interact with administrative complexity to make outreach and enrolment expensive and unevenly effective. These interactions mean that reforms focused solely on improving the administrative practice may yield only partial gains unless they also address programme architecture and the incentives that shape the claimant behavior²⁷. Measurement and evaluation challenges further complicate the reform: heterogeneity in the take-up, need and labor-market exposure means that average statistics can mask important subgroup variation, and weak monitoring systems make it hard to assess whether incremental changes actually improve coverage or adequacy. As a result, policymakers face uncertainty about the likely distributional and fiscal effects of reforms, which, in turn, raises the political cost of large-scale redesigns²⁸.

Universal approaches address some of these problems by reducing administrative barriers and stigma, and by providing predictable support across the lifecycle. However, universalism introduces its own challenges²⁹. Flat universal transfers can be fiscally costly and may deliver limited progressivity unless financed through redistributive taxation or reallocation of existing spending. Ensuring adequacy for groups with concentrated needs while preserving broad political support requires careful design choices about generosity, financing and complementarity with targeted services³⁰. These trade-offs explain why interest in universal models has grown alongside continued debate about how to reconcile universality, adequacy and sustainability.

²⁷ Hans Dubois and Anna Ludwinek, "Access to Social Benefits: Reducing non-take-up," *Eurofound* (2015).

²⁸ World Bank, *The State of Social Safety Nets 2018* (Washington, DC: World Bank Group, 2018), <https://openknowledge.worldbank.org/handle/10986/29115>.

²⁹ Philippe Van Parijs and Yannick Vanderborght, *Basic Income: A Radical Proposal for a Free Society and a Sane Economy* (Cambridge, MA: Harvard University Press, 2017).

³⁰ Stephen Devereux and Rachel Sabates-Wheeler, "Transformative Social Protection," *IDS Working Paper 232* (Brighton: Institute of Development Studies, 2004).

1.3 Universal Basic Income: Promises and Pitfalls

UBI has emerged as a prominent proposal for addressing the shortcomings of means-tested systems. UBI provides a regular, unconditional cash payment to all individuals, regardless of their income or employment status³¹. Advocates argue that UBI can reduce poverty, eliminate welfare stigma, simplify administration, and empower individuals to make choices about work, education and caregiving³². Evidence from pilot programmes, including Finland's basic income experiment, suggests that recipients experience an improved well-being and reduced stress³³. These findings indicate potential benefits for financial security and subjective well-being, even if labor market effects remain modest.

Despite these advantages, UBI faces significant criticisms. The most prominent concern is fiscal sustainability. A poverty-level UBI would require substantial public expenditure, often necessitating major tax increases or cuts to existing programmes³⁴. A budget-neutral UBI would likely provide payments below the poverty threshold, which would limit its effectiveness in reducing poverty³⁵. Critics also argue that universal schemes may be less efficient than targeted programmes because they allocate resources to individuals who do not actually need assistance³⁶. Uniform payments may disadvantage families with children, individuals with disabilities and

³¹ Juliana Uhuru Bidadanure, "The Political Theory of Universal Basic Income," *Annual Review of Political Science* 22 (2019).

³² Paul Redmond et al., "A Universal Basic Income for Ireland: Lessons from the International Literature" (2022).

³³ Olli Kangas et al., *Experimenting with Unconditional Basic Income: Lessons from the Finnish BI Experiment 2017–2018* (Cheltenham: Edward Elgar Publishing, 2021).

³⁴ Luke Martinelli, "Assessing the Case for a Universal Basic Income in the UK," IPR Report (Institute for Policy Research, University of Bath, 2017).

³⁵ James Browne and Herwig Immervoll, "Basic Income as a Policy Option: Technical Background Note Illustrating Costs and Distributional Implications for Selected Countries" (OECD, 2017).

³⁶ Hoynes, Hilary and Rothstein, Jesse. "Universal Basic Income in the United States and Advanced Countries," *Annual Review of Economics* 11 (2019).

other groups with higher needs unless complemented by additional programmes.

These limitations have prompted the development of hybrid and variant models that seek to retain the administrative and normative benefits of universality while improving fiscal targeting and adequacy. Examples include partial basic incomes that would top up existing transfers, negative income tax schemes that phase out support through the tax system, guaranteed minimum income floors combined with universal child or disability supplements, and time-limited or demographic-targeted universal payments³⁷. Each variant involves trade-offs: some reduce fiscal cost but reintroduce complexity and potential stigma; others preserve simplicity but require politically difficult revenue measures. Design choices about phasing, means of financing, and the interaction with existing social services determine whether a given model improves the overall equity and sustainability³⁸.

Implementation and political feasibility are decisive for whether UBI or its variants can deliver on their promises. Financing options matter not only for macro-fiscal balance but also for public acceptability; progressive taxation, base broadening, and reallocation of inefficient subsidies are common proposals but they differ in distributional consequences and political salience³⁹. Sequencing reforms, piloting complementary services, and investing in administrative modernization and data systems can reduce transition costs and improve evaluation. Finally, robust monitoring and evaluation frameworks are essential in an attempt to assess impacts on poverty, labor supply, health, and public finances, and to inform iterative redesign⁴⁰.

³⁷ Olli Kangas et al., *Experimenting with Unconditional Basic Income: Lessons from the Finnish BI Experiment 2017–2018* (Cheltenham: Edward Elgar Publishing, 2021).

³⁸ Nicholas Barr, *The Economics of the Welfare State*, 5th ed. (Oxford: Oxford University Press, 2012).

³⁹ International Monetary Fund, *Fiscal Monitor: Tackling Inequality* (Washington, DC: IMF, April 2017).

⁴⁰ Esther Duflo and Abhijit Banerjee, *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty* (New York: PublicAffairs, 2011).

1.4 Positioning Age-Indexed Basic Income in the Debate

AIBI is proposed as a model that combines universal eligibility with lifecycle sensitivity. AIBI calibrates payments to predictable patterns of costs, risks and earnings capacity across childhood, early adulthood, prime working years, and older age. This approach seeks to retain the inclusivity and administrative simplicity of universal schemes while reducing aggregate costs relative to flat-rate UBI. By linking benefit levels to demographic regularities rather than income tests, AIBI aims to preserve unconditional access while improving the alignment between redistribution and typical life-cycle needs. AIBI follows consolidation logic: it is a normative and administrative proposal to unify the non-contributory floor under a single age schedule, and the article specifies the institutional rules and procedures required to operationalize that consolidation.

Age-indexing offers several potential advantages. First, it aligns redistribution with lifecycle needs without introducing means testing, which reduces non-take-up and administrative complexity⁴¹. Second, it allows consolidation of overlapping programmes such as child allowances, student benefits, minimum unemployment support and minimum pensions. Third, it may improve fiscal sustainability by concentrating higher payments where the actual needs are greatest and lower payments where the earnings capacity is higher. Evidence from European welfare states shows that these advantages are not only theoretical. Studies of minimum income schemes in Belgium, France, and Germany report that between one third and one half of eligible households do not receive benefits because of documentation requirements and repeated eligibility checks, which confirms that the administrative burden is a structural feature of means-tested systems rather than an implementation failure⁴². Universal age-based

⁴¹ Bru Laín and Albert Julià, “Why Do Poor People Not Take Up Benefits? Evidence from the Barcelona’s B-MINCOME Experiment,” *Journal of Social Policy* (2022).

⁴² Carlos Andrade, “The Economics of Welfare Participation and Welfare Stigma: A Review,” *Public Finance and Management* 2, no. 2 (2002).

transfers avoid these frictions because eligibility is automatic. The experience of universal child benefits in the Nordic countries illustrates this dynamic. Garfinkel, Smeeding and Rainwater show that these programmes achieve take-up rates close to one hundred percent and administrative costs below one percent of the total expenditure, which suggests that age-indexed transfers can replicate these administrative advantages across the life course⁴³. These examples indicate that age-based universalism can deliver high coverage and low administrative costs when benefit levels are appropriately calibrated.

At the same time, age indexing raises important questions about equity, adequacy and political feasibility. Age is an imperfect proxy for vulnerability, and additional safeguards may be required for individuals with disabilities, chronic illness(es) or caregiving responsibilities. The consolidation of existing programmes also involves institutional restructuring and political negotiation. These concerns are consistent with findings from the literature on participation income and lifecycle investment, which emphasize that demographic regularities can guide universal benefit design but cannot fully capture heterogeneity in needs⁴⁴. As a result, the literature positions AIBI as a promising but only partial solution that addresses key limitations of flat-rate universalism while still requiring complementary measures for groups whose needs diverge from age-based averages.

AIBI's practical success depends on careful sequencing and institutional design. Pilot programmes, phased implementation and transparent fiscal modelling can reveal distributional impacts and transition costs before full consolidation, and targeted supplements or exemptions can be built in to protect groups for whom age is a poor proxy for the actual need. Equally important is the interaction between AIBI and contributory systems: aligning age-indexed universal payments with pensions, unemployment insurance and tax-ben-

⁴³ Irwin Garfinkel, Timothy M. Smeeding, and Lee Rainwater, *Wealth and Welfare States: Is America a Laggard or Leader?* (Oxford: Oxford University Press, 2010).

⁴⁴ James J. Heckman and Stefano Mosso, "The Economics of Human Development and Social Mobility," *Annual Review of Economics* 6 (2014).

efit rules reduces perverse incentives and simplifies administration, but it requires coordinated legal and fiscal adjustments.

The literature reviewed above demonstrates that contemporary welfare states operate under mounting demographic, technological and fiscal pressures that challenge the sustainability of traditional redistribution systems. Means-tested programmes struggle with administrative complexity, high non-take-up and limited effectiveness, while flat-rate universal schemes such as UBI face significant fiscal constraints, particularly in aging societies with limited revenue growth. Comparative social policy metrics illustrate that advanced OECD countries rarely combine exceptionally high welfare outcomes with unconstrained fiscal capacity, thus underscoring the structural tension between universality and long-term sustainability⁴⁵. Together, these findings suggest that the central challenge for welfare reform is not simply expanding the generosity or simplifying the administration, but, instead, identifying the institutional designs that can deliver broad coverage without overwhelming the fiscal capacity.

This tension has motivated a renewed interest in models that retain the advantages of universality while better aligning redistribution with predictable lifecycle needs. AIBI is one such proposal. Rather than providing a uniform payment to all individuals, AIBI calibrates benefit levels to the typical costs, risks and earnings capacities associated with different stages of life. This approach seeks to preserve the inclusivity and administrative simplicity of universal schemes while addressing the fiscal and distributional limitations identified in the literature. Evidence from universal child benefits and minimum pension schemes shows that age-based transfers can reduce poverty when benefit levels are calibrated to the cost structures of each age group. This suggests that the question is not whether age-indexed transfers can reduce poverty, but whether a consolidated schedule can maintain these effects while remaining fiscally sustainable. In this sense, AIBI emerges as

⁴⁵ Joni Askola and Benjamin Davison, “The Welfare State Scattergram,” *Politologija* 110, no. 2 (2023).

a response to the structural tension identified throughout this section: welfare states require broad coverage to maintain legitimacy, and yet they operate under tightening fiscal constraints that limit the feasibility of flat-rate universalism. These pressures create a need for models that would preserve universality while aligning redistribution with predictable patterns of need. The following section develops the conceptual foundations of AIBI and explains how age indexing functions as a mechanism for reconciling these competing demands.

2. Conceptual Framework: Age-Indexed Basic Income

Although debates on UBI and means-tested redistribution have expanded significantly in recent years, existing scholarship lacks a systematic framework for understanding how universal transfers can be aligned with predictable lifecycle needs while remaining fiscally sustainable in aging societies. This article contributes to welfare state theory by conceptualizing AIBI as a distinct model of universalism that departs from both flat-rate UBI and targeted schemes. AIBI introduces a form of structured universality, preserving unconditional access while varying benefit levels according to demographic regularities rather than income tests. This approach extends existing theories of lifecycle redistribution, clarifies the institutional mechanisms through which universal benefits can be recalibrated under demographic and technological pressures, and offers a new analytical lens for evaluating the trade-offs between adequacy, simplicity, and fiscal capacity.

In doing so, the article advances comparative welfare state research by proposing a universal model that is theoretically compatible with long-term sustainability constraints. AIBI draws on demographic regularities already embedded in existing welfare architectures, allowing universalism to be aligned with predictable patterns of need without requiring a full redesign of redistributive institutions. To operationalize this model, it is first necessary to define the structure of AIBI and clarify how its core components differ from both flat-rate UBI and existing categorical programmes.

2.1 Defining Age-Indexed Basic Income

AIBI is a universal cash transfer that provides all residents with an unconditional payment whose level varies across age groups. Unlike a flat-rate UBI, which applies a single payment to all individuals regardless of demographic variables, AIBI recognizes that human needs vary significantly across the life cycle and calibrates benefit levels to predictable requirements. Childhood, education, prime working years, and older age are associated with distinct patterns of costs, risks, and earnings capacity. This approach builds on the historical precedent of categorical benefits, such as the universal child allowances analyzed by Garfinkel et al.⁴⁶ and the age-graded participation income proposals of Atkinson.⁴⁷ By integrating these elements, AIBI serves as a consolidated institutional floor: a simplified and universal foundation that replaces fragmented, means-tested minimums including child benefits, student grants, and basic pensions. Crucially, this design leaves the institutional walls of the welfare state intact, namely, the contributory, earnings-related social insurance systems that provide higher-level security for individuals with established labor market attachment.

This model is designed to consolidate a range of existing categorical programmes that currently function as fragmented age-based transfers. These include child allowances, student benefits, minimum unemployment support for young adults, and minimum pensions for older adults. The age brackets used in AIBI, therefore, mirror the institutional boundaries already present in contemporary welfare states, although they should be understood as approximate rather than definitive. They represent a reasonable translation of existing programme structures into a unified schedule while still allowing for alternative bracket designs in different policy contexts. By replacing these distinct programmes with a single universal schedule, AIBI aims to sim-

⁴⁶ Irwin Garfinkel, Timothy M. Smeeding, and Lee Rainwater, *Wealth and Welfare States: Is America a Laggard or Leader?* (Oxford: Oxford University Press, 2010).

⁴⁷ Anthony B. Atkinson, *Inequality: What Can Be Done?* (Cambridge, MA: Harvard University Press, 2015).

plify administration, reduce bureaucratic fragmentation, and improve the transparency of the redistributive system.

To clarify how AIBI departs from flat-rate UBI, Table 1 summarizes the key structural differences between the two models.

Table 1. Structural Differences Between Universal Basic Income and Age-Indexed Basic Income

Dimension	UBI	AIBI
Payment structure	Flat-rate	Age-indexed
Cost	Very high	Lower
Administrative burden	Low	Low
Ability to replace programmes	Limited	High
Distributional adequacy	Uneven	Lifecycle-aligned
Winners	Gig workers, unstable earners	Children, students, elderly
Losers	None	Some working-age

Source: Author’s own work.

2.2 Comparative Institutional Advantages

While the comparative literature frequently contrasts UBI models against one another, it is equally critical to evaluate how AIBI improves upon the existing conditional welfare state. Current social protection systems typically rely on a complex patchwork of categorical, means-tested benefits. While these programmes successfully target distinct life-cycle needs, empirical evidence demonstrates that they inherently generate significant administrative friction and high marginal effective tax rates that trap individuals in poverty⁴⁸. Furthermore, navigating the bureaucratic complexity of fragmented systems systematically leads to delayed support and substantial non-

⁴⁸ European Commission, *Making Work Pay: A Conceptual Paper* (Directorate-General for Employment, Social Affairs and Inclusion, 2016).

take-up rates among the most vulnerable populations, with European non-take-up rates for minimum income schemes frequently exceeding 30 to 40 percent⁴⁹. These structural features limit the effectiveness of targeted systems even when fiscal investment is substantial.

An AIBI directly resolves these structural inefficiencies. By utilizing demographic age as the *sole* condition for benefit calibration, AIBI completely bypasses the bureaucratic apparatus of means-testing and behavioral conditionality. It retains the primary advantage of the existing welfare state, which is the precise targeting of resources to distinct life stages such as childhood, study, and old age, but delivers this support through a universal, unconditional mechanism. In this sense, AIBI functions as a structural synthesis that avoids the fiscal costs of a flat-rate UBI while dismantling the bureaucratic complexity, non-take-up issues and welfare traps characteristic of the current system. Since the age brackets used in AIBI broadly correspond to the life-course points at which existing programmes intervene, the model builds on familiar institutional boundaries rather than imposing an entirely new structure. These brackets are not fixed and could be adjusted in alternative designs, but they reflect a reasonable approximation of how welfare states already organize support across the life cycle.

To move beyond the hypothetical comparison with a flat-rate UBI, AIBI must be evaluated against the operational realities of the contemporary conditional welfare state. The primary limitation of the current Finnish social protection system is not a lack of fiscal investment, but, instead, the bureaucratic friction inherent in its high-resolution targeting. For example, the current administration of student benefits and basic unemployment security requires continuous verification of activity, income thresholds, and household composition. This creates what Besley⁵⁰ identifies as high asymmetric informa-

⁴⁹ Céline Marc, Mickaël Portela, Cyrine Hannafi, Rémi Le Gall, Antoine Rode, and Stéphanie Laguërodie, “Non-Take-Up of Minimum Social Benefits: Quantification in Europe” (DREES, 2022).

⁵⁰ Tim Besley, “Means Testing Versus Universal Provision in Poverty Alleviation Programmes,” *Economica* 57, no. 225 (1990).

tion costs, where the state must spend significant resources merely to identify who is eligible and who is not. AIBI replaces these high-information requirements with a low-information demographic proxy: age, which is simple, verifiable, and already recorded.

Furthermore, the transition from conditional to age-indexed transfers addresses the poverty trap created by the withdrawal of means-tested benefits. In the existing system, as a recipient's earned income increases, their benefits are tapered, often resulting in a marginal effective tax rate that discourages labor market entry⁵¹. By decoupling the transfer from income and anchoring it to age, AIBI ensures that every euro earned in the labor market provides a positive net return, thereby improving the economic activation goals of the modern welfare state without the punitive use of sanctions. While critics might argue that age is a noisy proxy for need, since wealthy seniors receive the same base amount as poor seniors, the efficiency of this model rests on the tax-back mechanism. It is administratively more efficient to provide a universal floor and recoup the surplus income through progressive taxation than to exclude high-income individuals at the point of delivery through complex means testing. This reinforces the conceptual logic of AIBI as a universal baseline aligned with broad demographic patterns, while leaving space for complementary programmes to address needs that age alone cannot capture. In this way, AIBI shifts the welfare state from a gatekeeping apparatus toward an automated infrastructure of life-cycle support.

2.3 The Rationale for Age Indexing

The rationale for age indexing rests on three core observations. First, lifecycle stages are associated with predictable variations in financial need and social investment requirements. Children require resources for care, nutrition, and cognitive development, while young adults

⁵¹ Herwig Immervoll, Henrik J. Kleven, Claus T. Kreiner, and Emmanuel Saez, "Welfare Reform in European Countries: A Microsimulation Analysis," *The Economic Journal* 117, no. 516 (2007).

face costs related to training, mobility, and early career instability. As noted in the life-cycle investment model by Heckman and Mosso⁵², the timing of these transfers is critical for long-term productivity and human capital formation. Conversely, older adults face rising health costs and declining labor income, requiring a different scale of support. These patterns are well documented in demographic research and international databases, such as the *OECD Family Database*⁵³, which tracks the varying cost patterns across different household types and age cohorts⁵⁴. While these patterns do not dictate a single correct set of age brackets, they provide a reasonable foundation for grouping individuals into broad stages of the life course when designing a universal schedule.

Second, age is a simple and verifiable criterion that avoids the administrative burdens associated with means testing. Means-tested programmes require constant income verification, documentation, and compliance checks, which contribute to high non-take-up rates and significant administrative overhead. By utilizing age as the primary eligibility filter, the system bypasses the ‘administrative hurdles’ identified by Herd and Moynihan⁵⁵ that often exclude the most vulnerable candidates. This preserves the universality that reduces stigma, simplifies the relationship between citizens and the state, and ensures high take-up through automated delivery.

Third, age indexing offers a way to reconcile universality with fiscal sustainability. Flat-rate UBI models require substantial public expenditure when set at poverty-reducing levels⁵⁶. By contrast, AIBI

⁵² James J. Heckman and Stefano Mosso, “The Economics of Human Development and Social Mobility,” *Annual Review of Economics* 6 (2014).

⁵³ OECD (Family Database): *OECD, Family Database* (OECD Publishing, 2021).

⁵⁴ Frank Vandenbroucke, *Solidarity Through Social Investment* (Oxford: Oxford University Press, 2021).

⁵⁵ Pamela Herd and Donald P. Moynihan, *Administrative Burden: Policymaking by Other Means* (New York: Russell Sage Foundation, 2018).

⁵⁶ James Browne and James Immervoll, “Basic Income as a Policy Option: Technical Background Note Illustrating Costs and Distributional Implications for Selected Countries” (OECD, 2017).

concentrates higher payments where needs are greatest and lower payments where earnings capacity is higher. This structure reduces aggregate costs while maintaining adequacy across the lifecycle, offering a viable path to a universal floor that does not require unrealistic increases in the tax-to-GDP ratio. The specific calibration of these age-linked amounts is not fixed and could vary across policy contexts, but the general principle of aligning support with broad lifecycle patterns remains consistent.

2.4 Mechanisms of Age-Indexed Basic Income: How the Model Operates

AIBI operates through three main mechanisms. The first is the consolidation of existing programmes. AIBI replaces categorical transfers such as child allowances, student benefits, minimum unemployment support and minimum pensions. These programmes already reflect age-based needs but are fragmented across administrative systems⁵⁷. Consolidation reduces duplication, simplifies delivery, and lowers administrative complexity⁵⁸. Although the precise set of programmes consolidated under AIBI may vary across countries, the underlying principle of unifying age-linked minimums remains consistent.

The second mechanism is the universal and unconditional access. AIBI retains the universalism of UBI. All individuals receive the age-indexed payment without income tests or behavioral conditions. This reduces non-take-up and eliminates the stigma associated with means-tested programmes⁵⁹. Automated delivery further strengthens accessibility by removing the procedural hurdles that often prevent eligible individuals from receiving support.

⁵⁷ Robert A. Moffitt, "The Deserving Poor, the Family, and the U.S. Welfare System," *Demography* 52, no. 3 (2015).

⁵⁸ Pamela Herd and Donald P. Moynihan, *Administrative Burden: Policymaking by Other Means* (New York: Russell Sage Foundation, 2018).

⁵⁹ Carlos Andrade, "The Economics of Welfare Participation and Welfare Stigma: A Review," *Public Finance and Management* 2, no. 2 (2002).

The third mechanism is the alignment of redistribution with predictable lifecycle needs. Payments are calibrated to reflect the typical needs at each stage of life. Higher payments during childhood and older age support dependents and retirees, while lower payments during prime working years reflect a higher earnings capacity. Although the exact calibration of these amounts is not fixed and could be adjusted in alternative designs, the underlying logic of aligning support with broad lifecycle patterns provides a coherent basis for structuring a universal schedule. This structure aligns redistribution with demographic realities and reduces the fiscal burden relative to flat-rate universal schemes.

2.5 Theoretical Advantages of Age-Indexed Basic Income

AIBI offers several theoretical advantages compared with both UBI and means-tested systems. Administrative simplicity is enhanced because age-based eligibility eliminates income verification and reduces casework, which lowers administrative costs and reduces errors in eligibility determination⁶⁰. Universal access ensures that eligible individuals receive support, thus addressing one of the most persistent weaknesses of means-tested programmes⁶¹. Lifecycle adequacy is improved because age indexing aligns payments with predictable needs without requiring the high expenditure associated with the flat-rate UBI. Fiscal sustainability is strengthened by concentrating resources where needs are highest, which reduces aggregate costs relative to UBI while maintaining universal coverage. This is particularly important in aging societies with a limited fiscal space⁶².

⁶⁰ Diwakar Vadapalli, “Barriers and Challenges in Accessing Social Transfers and Role of Social Welfare Services in Improving Targeting Efficiency: A Study of Conditional Cash Transfers,” *Vulnerable Children and Youth Studies* 4, no. S1 (2009).

⁶¹ Bru Lain and Albert Julià, “Why Do Poor People Not Take Up Benefits? Evidence from the Barcelona’s B-MINCOME Experiment,” *Journal of Social Policy* (2022).

⁶² Joni Askola and Benjamin Davison, “The Welfare State Scattergram,” *Politologija* 110, no. 2 (2023).

These advantages depend on the specific calibration of the age-indexed schedule, which can be adapted across policy contexts, but the general logic of aligning support with the broad lifecycle patterns remains consistent.

Finally, a single published schedule of age-indexed payments improves transparency and may strengthen political support by making redistribution more predictable and intuitive⁶³. The clarity of such a schedule can help citizens understand how support is structured across the life course, even if alternative bracket designs could be adopted in different institutional settings.

2.6 Limitations and Equity Concerns

Despite these advantages, AIBI raises important concerns that must be addressed. Age is an imperfect proxy for vulnerability, and individuals with disabilities, chronic illness(es) or caregiving responsibilities may have higher needs that are not captured by age alone⁶⁴. Complementary programmes may therefore be required to ensure adequacy. Distributional trade-offs also arise because lower payments for prime-age adults may disadvantage groups that benefit from UBI, such as gig workers, unstable earners and caregivers⁶⁵. These effects depend on how the age-indexed schedule is calibrated, and alternative bracket designs could mitigate or amplify such trade-offs.

Political and institutional challenges are significant as well. Consolidating multiple programmes into a single universal schedule requires administrative restructuring and political negotiation, and existing bureaucracies may resist reforms that reduce their scope or reallocate responsibilities. The extent of such resistance is likely to

⁶³ Walter Korpi and Joakim Palme, "The Paradox of Redistribution and Strategies of Equality: Welfare State Institutions, Inequality, and Poverty in the Western Countries," *American Sociological Review* 63, no. 5 (1998).

⁶⁴ Hilary Hoynes and Jesse Rothstein, "Universal Basic Income in the United States and Advanced Countries," *Annual Review of Economics* 11 (2019).

⁶⁵ Paul Redmond et al., "A Universal Basic Income for Ireland: Lessons from the International Literature" (2022).

vary across welfare states, depending on their administrative capacity and institutional path dependence.

Finally, AIBI must be coordinated with contributory systems such as pensions, unemployment insurance and health coverage to avoid duplication or unintended substitution effects⁶⁶. Effective coordination is therefore necessary to maintain the integrity of the broader welfare architecture.

2.7 Institutional Boundaries and Interaction with Existing Welfare Programmes

AIBI is not intended to replace the full architecture of contemporary welfare states. It consolidates a specific subset of age-linked categorical transfers while operating alongside contributory social insurance schemes and needs-based programmes that age alone cannot capture. The precise scope of consolidation is ultimately a policy choice. Countries may adopt a minimalist version that would replace only age-linked universal transfers and basic minimum income schemes, or they may choose a more expansive design that incorporates additional non-contributory benefits such as housing allowances. These choices depend on national preferences, fiscal capacity and existing institutional structures, which means that AIBI can be implemented in more or less expansive forms.

First, AIBI does not substitute for contributory social insurance schemes such as earnings-related pensions, unemployment insurance, sickness benefits, or parental leave. These programmes compensate for income loss linked to employment histories and remain essential for maintaining living standards across the life course. AIBI provides a universal floor, while contributory systems continue to provide earnings-related protection.

⁶⁶ James Browne and Herwig Immervoll, “Basic Income as a Policy Option: Technical Background Note Illustrating Costs and Distributional Implications for Selected Countries” (OECD, 2017).

Second, AIBI does not replace disability benefits or long-term care support. Age is an imperfect proxy for vulnerability, and individuals with disabilities or chronic illness(es) may require higher levels of support than age-indexed payments can provide. Complementary disability-specific programmes, therefore, remain necessary to ensure adequacy and equity.

Third, AIBI is designed as an individual-based scheme, providing an individual-level benefit rather than a household-level benefit. This avoids the administrative complexity and behavioral distortions associated with household means testing and aligns with the principle of unconditional universality. Household-level redistribution continues to occur through tax systems, housing allowances, and family-related services.

Finally, in its minimalist form, which is the version examined in this article, AIBI replaces categorical transfers that already vary by age, such as child allowances, student benefits, minimum unemployment support for young adults, and minimum pensions, while leaving other components of the welfare state intact. More expansive variants could incorporate additional non-contributory benefits, including housing allowances, but these lie outside the scope of the present analysis. This delineation reflects one plausible implementation rather than a fixed blueprint and aims to simplify the benefit landscape without undermining the broader architecture of social insurance and disability support.

Table 2. *Institutional Boundaries of Age-Indexed Basic Income*

Function	Welfare Programmes & Institutions	Rationale under AIBI Framework
Replaced by AIBI	• Child allowances • Student benefits • Minimum unemployment support (for young adults) • Minimum pensions	These are non-contributory, categorical transfers that already vary by age. Consolidating them into AIBI simplifies the benefit landscape and reduces fragmentation.

Function	Welfare Programmes & Institutions	Rationale under AIBI Framework
Complemented by AIBI	• Disability benefits • Long-term care support	Age is an imperfect proxy for vulnerability. Individuals with disabilities or chronic illnesses require higher, specific support beyond what an age-indexed baseline provides.
Unaffected by AIBI	• Earnings-related pensions • Earnings-related unemployment insurance • Sickness benefits • Parental leave • Housing allowances • Family-related services	Contributory schemes compensate for income loss linked to employment histories, while household-level redistribution handles specific needs (such as housing) that an individual flat-rate cannot capture.

Source: Author's own work.

Together, these elements establish AIBI as a coherent model of lifecycle-sensitive universalism. The next step is to examine how this model performs when applied to an actual welfare state. The following section outlines the methodological approach used to construct an illustrative fiscal exercise and evaluates how age indexing alters the cost structure and the distributional profile of a universal transfer.

3. Methodology

The methodological approach combines conceptual analysis with an illustrative fiscal exercise to assess whether an AIBI can provide a more fiscally sustainable universal floor than a flat-rate UBI while maintaining adequate support across the life course. The aim is not to produce a full microsimulation, which would require individual-level administrative data, but, rather, to construct a transparent, analytically grounded proof of concept that shows how age indexing alters the cost structure and distributional profile of a universal transfer.

The empirical component applies the author's consolidation rules to the Finnish programme parameters; Appendix A documents all assumptions and provides the line-by-line arithmetic.

The analysis begins by developing the conceptual foundations of AIBI. Since age-indexed universal transfers have not been formalized in the academic literature, it is necessary to articulate the mechanisms through which such a model differs from both flat-rate UBI and the existing categorical programmes. This conceptual stage examines how AIBI aligns benefits with predictable lifecycle needs, how it consolidates multiple age-specific schemes into a single universal schedule, and how it may reduce the administrative complexity and non-take-up. Establishing these mechanisms provides the analytical criteria used to evaluate the illustrative fiscal exercise.

The second component of the methodology consists of an illustrative fiscal exercise using publicly available Finnish social expenditure data. Finland is selected as a case study because it represents a high-outcome welfare state operating under constrained fiscal space, which is a combination that makes it particularly sensitive to the cost pressures associated with universal transfers. The illustrative fiscal exercise identifies the age-specific programmes that AIBI would plausibly replace, including child allowances, student benefits, minimum unemployment support for young adults, and minimum pensions. These programmes are selected because they are non-contributory, age-specific, and broadly universal within their respective target groups. They, therefore, represent the clearest candidates for consolidation under an age-indexed model.

For data and calibration, population counts by the single-year age and cohort were taken from *Statistics Finland* population tables for the year 2024; the programme expenditure and beneficiary totals were taken from *Kela* administrative statistics for 2022. The AIBI envelope and cohort allocations were computed in the manuscript by using straightforward cell formulas (e.g., $\text{programme_total} \times \text{non_take_up_rate} = \text{unreached_euros}$; $\text{cohort_allocation} \times \text{cohort_population} = \text{cohort_payout}$). The non-take-up scenarios, as reported in Section 4.4, apply

the stated percentage assumptions to the programme totals; all formula logic is described in Appendix A. The baseline and upper-bound envelopes and their translation into unit rates are described in Appendix A (Sections A.3–A.4) and discussed in Section 4.1 and Table 4.

Successful consolidation would require clear interagency coordination and sufficient administrative capacity to reassign the functions currently held by agencies that manage child benefits, student support, unemployment minima and minimum pensions. The simulation, therefore, assumes that such administrative reallocation is feasible in principle; detailed transition mechanisms and operational sequencing are outside the scope of this paper.

To operationalize the illustrative fiscal exercise of an AIBI in Finland, it is necessary to establish the baseline monthly benefit amounts for each demographic cohort. As this paper models a hypothetical system where the age brackets and funding levels can be configured in a multitude of ways, any applied illustration requires making specific and inherently arbitrary methodological choices to demonstrate how the system would fundamentally operate. Consequently, it must be explicitly stated that the financial figures utilized in this scenario (150 € for children, 320 € for youth, 60 € for working-age adults, and 310 € for the elderly) are illustrative proxies rather than exact empirical data drawn directly from an existing programme. These values are not intended as policy recommendations but, instead, they merely serve as a structured example for examining the mechanics of age-indexed consolidation.

However, in order to ensure that these methodological choices are structurally grounded rather than entirely random, the figures are strictly anchored within the baseline illustrative fiscal exercise of the aforementioned Finnish programmes. While the absolute numbers assigned to each cohort remain hypothetical, their relative proportions are deliberately calibrated to mirror distinct life-cycle needs while keeping the total cost constrained within the macro-fiscal boundaries of those four consolidated programmes. The moderate allocation for children functions as a theoretical proxy for early-life

rearing support. The higher youth allocation models the increased financial requirements associated with the transition into higher education and early independence. The minimal baseline for working-age adults serves as a universal anchor which preserves the unconditionality of the programme while deliberately suppressing the aggregate costs, while acknowledging that this cohort relies predominantly on the labor market or contributory social insurance. Finally, the elderly allocation simulates a non-contributory basic pension floor. This calibrated schedule is best understood as a heuristic device for isolating the structural effects of age indexing rather than as an empirically validated benefit design.

To evaluate the relative fiscal implications of AIBI, the illustrative fiscal exercise then compares the aggregate cost of this age-indexed schedule with two benchmark UBI scenarios. The first benchmark is a budget-neutral UBI that distributes the same total expenditure equally across all residents, thus illustrating the distributional consequences of flattening age-specific spending into a uniform transfer. The second benchmark is a poverty-line UBI set at the minimum income required to avoid poverty, highlighting the fiscal challenge associated with implementing a UBI at a level that meaningfully reduces poverty. A comparison of these three scenarios demonstrates how age indexing affects both aggregate cost and adequacy across age groups.

This study utilizes a macro-fiscal illustrative fiscal exercise rather than a household-level microsimulation. This approach is intentionally chosen to establish the broad fiscal boundaries of an age-indexed model before assessing individual behavioral responses. By aggregating the population data against the proposed transfer levels, the illustrative fiscal exercise provides a high-level feasibility baseline. It allows for a direct comparison between the total cost of AIBI and the existing €10.89 billion social protection envelope. This is a necessary first step in evaluating the structural welfare reform. It establishes fiscal envelopes that can later be refined through more granular household modeling.

The AIBI cohort rates reported in Section 5 are derived from a consolidated non-contributory programme envelope and the year 2024 cohort populations. The consolidated envelope equals the combined year 2022 expenditure for the non-contributory, age-specific programmes targeted for consolidation (child allowances, student benefits, minimum unemployment minima and minimum pensions), totaling at € 10,888,696,440. The programme expenditures were assigned to the cohort most closely aligned with each programme's incidence; where the programmes served multiple cohorts, proportional allocations were applied by using programme documentation or transparent heuristics (for example, student grants and youth unemployment minima were assigned to the 15–24 cohort). Cohort monthly rates were then computed by dividing each cohort's annual allocation by the cohort population and by 12. Full arithmetic, source cells and the programme→cohort mapping are reported in Appendix A.

4. Results

This section presents the results of the illustrative fiscal exercise and examines the implications of AIBI for cost and adequacy. The analysis proceeds in three steps. Subsection 4.1 evaluates whether AIBI can be financed within the expenditure envelope of the programmes it would plausibly replace. Subsection 4.2 situates these findings within the broader redistributive landscape of the Finnish welfare state. Subsections 4.3 and 4.4 then discuss the equity and political implications of adopting an age-indexed universal model. Together, these components provide a structured evaluation of how a stylized AIBI interacts with Finland's fiscal and institutional architecture.

4.1 Illustrative Baseline Fiscal Exercise

The illustrative baseline fiscal exercise evaluates the feasibility of financing an AIBI within the expenditure envelope of the programmes it is designed to consolidate. Rather than setting benefits based on

an abstract poverty line, the specific monthly amounts used in this model are derived through a budget-neutral calibration. This calibration redistributes the existing fiscal resources allocated to child allowances, student benefits, minimum unemployment support, and minimum pensions into a unified age-indexed schedule. The internal distribution across the cohorts follows a lifecycle weighting logic that prioritizes periods of the life course characterized by lower earnings capacity and higher institutional dependency.

In this model, the 15–24 and 65+ age cohorts receive the highest relative allocations (€320 and €310, respectively) so that to acknowledge the structural risks associated with the transition into adulthood and the permanent exit from the labor market. These amounts ensure that the AIBI serves as a robust non-contributory floor during stages where individuals are most vulnerable to poverty. Conversely, the 0–14 cohort allocation (€150) reflects the lower direct consumption costs of children compared to adults, while the 25–64-year-old cohort receives the lowest allocation (€60). This lower amount for prime-age adults is a deliberate design choice that reflects their high earnings potential and existing integration into the labor market. Concentrating resources on cohorts with structurally higher dependency ratios allows the model to maintain universalism while remaining within the fiscal envelope. The baseline arithmetic demonstrates fiscal feasibility under the current expenditure levels but does not resolve likely institutional resistance; consolidation reduces the administrative scope of existing agencies and, therefore, requires explicit coordination mechanisms and political leadership to manage interagency competition during any transition.

The illustrative ‘€60 per person per month’, as reported in the baseline arithmetic is an outcome of a minimal, budget-neutral consolidation that replaces only selected non-contributory minima while leaving intact the contributory, earnings-related walls of the welfare state. In practice, working-age income protection in Finland is largely delivered through contributory arrangements such as collective unemployment funds and earnings-related unemployment insurance,

which are financed through contributions and collective schemes rather than through the non-contributory floor; the €60 result therefore shows how small a universal, budget-neutral floor can be when it is constrained to replace only limited categorical minima. The age brackets and weights used in the exercise are illustrative and could be redesigned to smooth the benefits more evenly across the life course. By contrast, Table 4 reports an upper-bound, budget-neutral envelope that consolidates a much wider set of non-health and non-disability social protection lines ($\approx$ €57.4 billion), which would imply an upper-bound uniform payment on the order of €848 per month per person if distributed flatly. The feasible AIBI schedule could, therefore, lie anywhere between the baseline envelope ($\approx$ €10.9 billion) and this upper bound ($\approx$ €57.4 billion). Finally, AIBI could also be implemented in a non-budget-neutral scenario with new revenue, but that would require explicit trade-offs (new taxes or cuts elsewhere) and is treated here only as a theoretical possibility.

By using the most recently available consolidated Finnish social protection data from 2022, the combined cost of the programmes being replaced is approximately €11.1 billion. These programmes are selected because they are non-contributory, age-specific and broadly universal within their target groups, representing the clearest candidates for consolidation under an age-indexed model. Since the figures used are anchored within the baseline fiscal envelope of these actual Finnish programmes, they demonstrate the fiscal sustainability of the AIBI model without exceeding realistic budgetary constraints. This does not imply that the chosen schedule is normatively optimal, but only that it is fiscally compatible with existing expenditure levels.

The baseline AIBI schedule is calibrated to a total annual cost of € 10,888,696,440 (reported in the paper as €10.89 billion) by applying this fiscal envelope to the current demographic structures, while utilizing the year 2024 population counts. Applying the calibrated monthly rates to the cohort populations (0–14: 822,852; 15–24: 625,593; 25–64: 2,857,437; 65+: 1,330,089; total 5,635,971), the annual cohort costs are as follows: children €1.48 billion; young adults

€2.40 billion; prime-age €2.06 billion; and seniors €4.95 billion, which sums up to the headline envelope (See Appendix A and Table A1 for the full cohort arithmetic and source cells).

For comparison, a flat-rate UBI financed from the same €11 billion-valued envelope can be calculated by dividing the total available budget by the total population. With a population of approximately 5.63 million residents, the annual per-person amount is roughly €1,951, which corresponds to approximately €162 per month. This amount is far below any meaningful adequacy threshold and would not be capable of replacing the existing programmes. A poverty-line UBI of €1,200 per month would require more than €80 billion annually, which is incompatible with Finland’s fiscal capacity. These comparisons illustrate the structural tension between universalism and adequacy in flat-rate models and show how age indexing modifies this trade-off by reallocating resources across the cohorts.

Table 3. AIBI and UBI Cost Comparison Using 2022 Finnish Data

Life-Cycle Stage	Age Cohort	2024 Population	% of Pop.	Monthly AIBI	Annual Cost/ Person	Total Annual Cost
Children	0–14	822,852	14.6%	€150	€1,800	€1.48 Billion
Young Adults	15–24	625,593	11.1%	€320	€3,840	€2.40 Billion
Prime-age Adults	25–64	2,857,437	50.7%	€60	€720	€2.06 Billion
Older Adults	65+	1,330,089	23.6%	€310	€3,720	€4.95 Billion
Total	All Ages	5,635,971	100%	—	—	€10.89 Billion

Source: Statistics Finland. “Preliminary Population Statistics” (2025), <https://stat.fi/en/statistics/vamuu>.

Note: The total estimated cost of €10.89 billion has been rounded for presentation purposes; see Appendix A for the unrounded cohort-specific calculations.

4.2 *Broader Redistributive Envelope*

Although the baseline illustration focuses on the programmes that AIBI would most clearly replace, the broader redistributive context of the Finnish welfare state is considerably larger. In 2024, Finland allocated approximately €57.4 billion to social protection cash transfers, encompassing both pensions and *Kela* benefits⁶⁷. This amount includes old age pensions, survivors benefits, unemployment insurance, family and child benefits, housing support and other transfers. AIBI would not replace contributory pensions or earnings-related unemployment insurance, but a substantial share of the €57.4 billion consists of non-contributory or categorical transfers that could, in principle, be consolidated into an age-indexed universal payment. This broader envelope provides an upper-bound context for understanding the scale of redistribution relative to the baseline illustration.

By utilizing recent demographic data of 5.63 million residents, if this entire €57.4 billion cash envelope were distributed equally across the population, it would correspond to approximately €10,184 per resident annually, or roughly €848 per month. Even under this radical and politically impossible scenario (which would require abolishing all earnings-related pensions, disability supplements, and targeted housing support), the resulting flat rate payment remains far below the €1,200 relative poverty threshold. This comparison does not imply that such consolidation is desirable or feasible; it simply illustrates the magnitude of existing redistribution.

Table 4 does not represent a proposed AIBI schedule. Instead, it provides an upper-bound illustration of the fiscal resources currently allocated to non-health and non-disability social protection. The comparison with Table 3 highlights that the Finnish welfare state already redistributes resources on a scale far larger than the pro-

⁶⁷ THL, *Social Protection Expenditure and Financing 2023–2024, Statistical Report* (Helsinki: Finnish Institute for Health and Welfare, 2025), <https://thl.fi/en/statistics-and-data/statistics-by-topic/social-and-health-care-resources/social-protection-expenditure-and-financing>.

grammes included in the baseline illustration. This broader context underscores the potential feasibility of a lifecycle-sensitive universal model, while also highlighting the need for further analysis of which components of the €57.4 billion envelope could realistically be consolidated under AIBI.

Table 4. Upper-Bound Universal Payment from the €57.4 Billion Redistributive Envelope

Total Redistributive Cash Envelope	Population	Annual Amount per Person	Monthly Amount per Person
€57.4 billion	5.63 million	€10,184	€848

Source: Statistics Finland. “Preliminary Population Statistics” (2025), <https://stat.fi/en/statistics/vamuu>.

As an illustrative alternative calibration and robustness check, we compute a more-equal baseline scaled to a larger fiscal envelope ($\approx 2\times$ the baseline). By using the cohort populations in the Appendix, the alternative monthly AIBI schedule (rounded) is €277; €555; €208; €485 (0–14; 15–24; 25–64; 65+), yielding a consolidated envelope of $\approx$ €21.76 billion. The table is presented in Appendix A.2, and the step-by-step arithmetic and the spreadsheet Sheet_Sens_Envelope are provided in Appendix C.

4.3 Equity Implications

The equity implications of AIBI depend on how effectively age indexing captures variation in needs across the life course. The baseline schedule concentrates higher payments on children and older adults, groups with lower earnings capacity and higher dependency ratios. This structure improves adequacy for dependents while reducing expenditure on prime-age adults, who typically have a higher labor income.

However, age is an imperfect proxy for vulnerability, and therefore the AIBI model must be coordinated with targeted supplements

for disability, housing and long-term care to avoid gaps in support for groups whose needs are not captured by age alone. Individuals with disabilities, chronic illness(es) or caregiving responsibilities may require higher levels of support than age-indexed payments alone can provide. Complementary programmes, therefore, remain essential in the pursuit to ensure equity. Lower payments for prime-age adults may also disadvantage groups with unstable earnings, such as gig workers or caregivers, unless supplemented by contributory or needs-based schemes. While the €60 monthly payment for prime-age adults is lower than the current categorical minimums, its value lies in its automation and unconditionality. Unlike means-tested transfers that require constant income verification and suffer from high non-take-up, this ‘micro-floor’ remains in place during brief gaps in employment or gig work. It functions as a frictionless digital safety net that reduces administrative burdens and ensures continuity of support during life-cycle transitions.

It is important to clarify that this €60 amount is not a normative prescription for a subsistence level. It is a direct result of the fiscal constraints in this specific illustration. The adult amount is calibrated based on the €10.89 billion total budget of the existing categorical programmes that the AIBI replaces. The model prioritizes delivering higher, subsistence-level transfers to more vulnerable life-cycle stages like the youth and the elderly. As a result, the remaining budget for the lower-risk adult cohort yields this €60 figure. In scenarios where the total sum used for AIBI is higher than the current Finnish fiscal baseline, this universal floor could be scaled upward accordingly. Within this specific proof-of-concept, however, it serves primarily as a baseline to demonstrate a frictionless delivery mechanism rather than a full replacement for labor income. The €60 monthly adult (25–64-year-old) floor reported in the baseline is thus an illustrative outcome of the narrow consolidated envelope used for this pedagogical exercise. Appendix A.2 presents alternative scenarios in which the consolidated envelope is expanded (by adding additional programs or modest revenue measures), showing higher floors of

€277, €555, €208, and €485 for the brackets (same ones as in the other illustration) under those assumptions. The €60 figure should therefore be read as a lower-bound illustration rather than a policy recommendation.

Overall, AIBI could improve adequacy for groups with predictable lifecycle needs but must be coordinated with disability, housing, and care-related programmes, alongside contributory pensions, to avoid gaps in support.

4.4 Impact on Non-Take-Up Rates and Welfare Outcomes

Non-take-up is an important structural constraint in the Finnish context. Register-based studies have shown that a substantial share of households eligible for last-resort social assistance did not claim benefits in earlier periods, with register analyses reporting non-take-up rates on the order of 40–50 percent⁶⁸. Subsequent administrative reforms have reduced some barriers, but programme-level studies and administrative reviews indicate that non-take-up for housing allowances and guaranteed pensions still ranges roughly between 10 and 30 percent depending on the household composition and reporting year⁶⁹. The primary drivers are procedural complexity and fragmented application processes; hence, these unclaimed entitlements reflect administrative frictions rather than widespread fraud.

Beyond aggregate fiscal sustainability, the transition to the AIBI baseline schedule yields substantial improvements in welfare outcomes by mathematically eliminating non-take-up. Under the current Finnish conditional system, navigating the bureaucratic complexity

⁶⁸ Olivier Bargain, Herwig Immervoll, and Heikki Viitamäki, “No Claim, No Pain: Measuring the Non-Take-up of Social Assistance Using Register Data,” *Journal of Economic Inequality* 10, no. 3 (2012): 375–395, doi:10.1007/s10888-010-9158-8.

⁶⁹ Tuuli Paukkeri, *Essays on Public Economics* (doctoral dissertation, VATT Institute for Economic Research / Aalto University School of Business, 2018); Tuomas Matikka and Tuuli Paukkeri, “Does Information Increase the Take-up of Social Benefits? Evidence from a New Benefit Program,” *Empirical Economics* 63, no. 6 (2022): 3253–3287.

of fragmented benefits systematically leads to delayed support, with European non-take-up rates for minimum income schemes frequently exceeding 30 to 40 percent⁷⁰. By shifting from conditional eligibility to an automated demographic proxy (age), the AIBI illustration functionally achieves a 100 percent take-up rate among the eligible cohorts. The consolidated AIBI envelope is €10.89 billion; under conservative Finland-grounded non-take-up assumptions, the implied unreachd sum in the current conditional system is $\approx$ €2.07 billion.

Empirical evidence shows that non-take-up is a persistent feature of means-tested and administratively complex benefits, while near-universal programmes exhibit much lower non-take-up⁷¹. To illustrate plausibility in the Finnish context, we apply conservative, Finland-grounded assumptions (child allowances, 2%; student grants & youth minima, 30%; prime-age minima, 40%; minimum pensions, 10%)⁷². Under these assumptions, the implied unreachd amounts are approximately €29.6m for child allowances, €720.7m for student grants and youth minima, €822.9m for prime-age minima and €494.8m for minimum pensions, for a total implied unreachd sum of $\approx$ €2.07 billion. This estimate is illustrative rather than definitive, and is intended to show plausibility rather than to substitute for programme-level take-up studies. Robustness checks for alternative non-take-up scenarios and envelope sensitivity are reported in Appendix B.

For example, within the simulated 15–24 youth cohort, the €320 monthly allocation reaches all 625,593 individuals seamlessly. In the existing conditional framework, youth experiencing early career instability or transitioning between studies often fall through bureaucratic gaps due to high asymmetric information costs⁷³ and applica-

⁷⁰ Céline Marc, Mickaël Portela, Cyrine Hannafi, Rémi Le Gall, Antoine Rode, and Stéphanie Laguérodié, “Non-Take-Up of Minimum Social Benefits: Quantification in Europe” (DREES, 2022).

⁷¹ Hans Dubois and Anna Ludwinek, “Access to Social Benefits: Reducing non-take-up,” *Eurofound* (2015).

⁷² Kela, “Kela Statistical Yearbook 2024.” (Kela 2025).

⁷³ Tim Besley, “Means Testing Versus Universal Provision in Poverty Alleviation Programmes,” *Economica* 57, no. 225 (1990).

tion friction. The AIBI model removes these friction costs entirely by replacing conditional grants with an automated age-based dividend. The state is no longer required to allocate resources toward continuous means-testing, activity monitoring, or student status verification.

The structural outcome is greater redistributive efficiency per euro because the social floor reliably reaches the intended recipients.

5. Policy Implications

The baseline illustration for Finland demonstrates that an AIBI is not merely a theoretical alternative to a flat-rate UBI, but a functional optimization of the existing conditional welfare state. By consolidating child allowances, student benefits, and minimum pensions into a single unconditional schedule, AIBI eliminates the fragmented eligibility criteria that currently drive the administrative costs and lead to high non-take-up rates. Whereas the current Finnish system requires continuous monitoring of the claimant behavior and means-testing, an age-indexed model relies on a single, objective demographic variable that is already verified within national population registries. This transition fundamentally shifts the role of the state from one of surveillance and conditionality to one of automated life-cycle support. As a result, the same €10.89 billion fiscal envelope achieves higher redistributive efficiency because eligibility is automatic, and take-up is complete.

By removing the bureaucratic friction inherent in the current *status quo*, AIBI provides a more robust and accessible social floor than the existing patchwork of categorical benefits.

The results of the illustration have several implications for the design and feasibility of AIBI in contemporary welfare states. The first point concerns fiscal sustainability. The baseline illustration shows that AIBI can be financed within the expenditure envelope of the programmes it would replace. This stands in contrast to flat-rate UBI models, which either require substantial new revenue or produce payments that fall below any meaningful adequacy threshold. The comparison suggests that age indexing offers a more realistic path to-

ward universal coverage in countries with limited fiscal space. These countries achieve strong welfare outcomes but operate under tight fiscal constraints, which limits the feasibility of large-scale universal transfers that are not calibrated to lifecycle needs. In such contexts, age indexing provides a mechanism for reconciling broad coverage with macro-fiscal discipline.

A second implication concerns administrative efficiency. AIBI consolidates a set of fragmented age-specific programmes into a single universal schedule. This consolidation reduces the complexity associated with means-tested schemes and lowers the administrative burden on both claimants and public agencies. The reduction in documentation requirements and eligibility verification is likely to increase the take-up, particularly among groups that face barriers to accessing existing programmes. The administrative simplification associated with AIBI, therefore, addresses one of the most persistent weaknesses of contemporary welfare systems, namely, the high non-take-up rates that undermine the effectiveness of targeted transfers.

A third implication relates to distributional adequacy. The age-indexed schedule used in the illustration aligns payments with predictable lifecycle needs. Higher payments during childhood and older age support dependents and retirees, while lower payments during prime working years reflect a higher earnings capacity. This structure preserves the redistributive intent of existing programmes while avoiding the high aggregate costs associated with a flat-rate UBI. The broader redistributive envelope of €57.4 billion further indicates that the Finnish welfare state already allocates substantial resources to non-health and non-disability social protection. Although AIBI would not replace contributory pensions or earnings-related unemployment insurance, the scale of the envelope suggests that a lifecycle-sensitive universal model could be integrated into the existing system without requiring a fundamental expansion of the welfare state. The precise boundaries of such consolidation, however, require further modelling.

A fourth implication concerns political feasibility. The consolidation of existing programmes into AIBI would require significant institutional restructuring. Agencies responsible for child benefits,

student support, unemployment assistance and minimum pensions would need to coordinate or merge their administrative functions. Such reforms may encounter resistance from bureaucratic actors with established mandates and organizational interests. Political feasibility also depends on the public perceptions of fairness. While age indexing aligns with widely recognized lifecycle needs, it may be contested by groups that benefit from flat-rate universalism or from the existing structure of categorical programmes. Policymakers would need to ensure that AIBI does not reduce support for individuals with disabilities, chronic illness(es) or caregiving responsibilities, whose needs are not fully captured by age alone.

Finally, the results highlight the importance of integrating AIBI with contributory systems. AIBI is not intended to replace earnings-related pensions, unemployment insurance or health coverage. Instead, it functions as a universal floor that complements these systems. The interaction between AIBI and contributory schemes must be carefully designed to avoid duplication, unintended substitution effects, or reductions in incentives to contribute. The broader redistributive envelope indicates that the welfare state already contains substantial resources that could be reorganized, but the boundaries between universal and contributory components must remain clear. Ensuring clarity in the boundaries between universal and contributory components is essential for maintaining public trust and institutional stability.

Overall, the findings suggest that AIBI offers a promising approach for countries seeking to reconcile universality with fiscal sustainability. The model reduces administrative complexity, improves take-up, aligns redistribution with lifecycle needs and avoids the prohibitive costs associated with flat-rate UBI. At the same time, successful implementation requires careful attention to institutional restructuring, political acceptability and the protection of groups whose needs are not fully captured by age. These considerations point to the need for further research on the distributional effects of AIBI, its interaction with contributory systems, and the political conditions under which such reforms could be adopted.

Conclusion

This paper introduces AIBI as an original institutional design and examines it as a life-cycle-sensitive alternative to UBI for welfare states facing demographic ageing, technological disruption and tightening fiscal constraints. Existing redistribution models struggle to reconcile broad coverage with fiscal discipline: means-tested schemes suffer from high non-take-up and administrative complexity⁷⁴, while flat-rate UBI models become fiscally prohibitive when set at poverty-reducing levels. The conceptual framework developed in this study positions AIBI as a model that retains universal eligibility but calibrates the benefit levels to the typical costs, risks, and earnings capacities associated with different stages of life. Age indexing offers a simple and verifiable criterion that avoids the administrative burdens of means testing while significantly reducing the aggregate cost of universal provision. In doing so, it provides a mechanism for easing the tension between the universal access and macro-fiscal constraint.

By resolving the tension between the universal access and fiscal constraint, AIBI offers a mechanism for nations to optimize their welfare state outcomes in a realistic way. It suggests a pathway for high-expenditure states to improve welfare outcomes, specifically by reducing the administrative tax of non-take-up, without exceeding the fiscal capacity of their tax regimes. A budget-neutral illustration based on the Finnish social protection data provides an empirical illustration of these dynamics. The illustration demonstrates that a payment schedule mathematically calibrated to predictable life-cycle needs can be financed entirely within the €10.89 billion envelope currently allocated to child allowances, student benefits, minimum unemployment support, and minimum pensions. Crucially, due to the fact that AIBI relies on automated demographic registry data, this model would inherently achieve a 100 percent take-up rate (subject to registry exceptions; see Appendix B).

⁷⁴ Janet Currie, “The Take-Up of Social Benefits,” in *Public Policy and the Income Distribution*, ed. Alan J. Auerbach, David E. Card, and J. Miguel Iglesias (New York: Russell Sage Foundation, 2006).

AIBI is designed to simplify the non-contributory floor of the welfare state, while the walls of social insurance would remain intact. It does not replace contributory pensions, disability benefits, or earnings-related unemployment insurance. Rather, it provides a universal, administratively simple foundation upon which targeted and contributory programmes can continue to operate. This division of roles underscores that AIBI reorganizes the universal component of the welfare state rather than restructuring the system as a whole. Overall, the article proposes AIBI as a consolidation strategy of the non-contributory floor under a single age schedule and provides an initial arithmetic assessment of that institutional design.

While the Finnish case provides a strong proof-of-concept, the structural logic of AIBI has broader implications for different welfare regimes. In highly fragmented systems, the introduction of an automated age-indexed floor could serve as a powerful tool for streamlining the bureaucratic bloat. However, implementing AIBI would require the consolidation of multiple administrative agencies, which is a process likely to face significant institutional friction and path dependency. Political feasibility will depend heavily on ensuring that groups with complex needs, particularly those requiring intensive care or disability support, continue to receive adequate, complementary assistance beyond their age-indexed baseline. Public acceptance is more likely when reforms are framed as consolidations of existing entitlements rather than as reductions or radical departures from the familiar structures.

This article presents an illustrative arithmetic exercise rather than household microsimulation and does not estimate behavioral responses or household level welfare effects. Results are sensitive to the choice of the consolidated envelope, cohort weights and non-take-up assumptions, and, therefore, alternative parameterizations can materially change the implied universal floor. The exercise uses aggregate program budgets rather than individual administrative records, which may mask heterogeneity. Political, institutional and implementation constraints are not modelled, and they will affect feasibility in ways which the arithmetic cannot capture.

Overall, this study demonstrates that age indexing offers a viable, mathematically grounded pathway for reconciling universality with fiscal sustainability. Moving forward, policymakers must look beyond the binary choice of conditional means-testing versus flat-rate universalism. Future research should extend this framework through microsimulations of household-level distributional effects, analyses of phased consolidation strategies and examinations of the political coalitions required to implement age-indexed universal models across different welfare regimes.

References

- Andrade, Carlos. "The Economics of Welfare Participation and Welfare Stigma: A Review." *Public Finance and Management* 2, no. 2 (2002): 294–333. <https://doi.org/10.1177/152397210200200201>.
- Askola, Joni, and Benjamin Davison. "The Welfare State Scattergram." *Politologija* 110, no. 2 (2023): 75–103. <https://doi.org/10.15388/Polit.2023.110.3>.
- Atkinson, Anthony B. *Inequality: What Can Be Done?* Cambridge, MA: Harvard University Press, 2015.
- Bargain, Olivier, Herwig Immervoll, and Heikki Viitamäki. "No Claim, No Pain: Measuring the Non-Take-up of Social Assistance Using Register Data." *Journal of Economic Inequality* 10, no. 3 (2012): 375–95. <https://doi.org/10.1007/s10888-010-9158-8>.
- Barr, Nicholas. *The Economics of the Welfare State*. 5th ed. Oxford: Oxford University Press, 2012.
- Besley, Tim. "Means Testing Versus Universal Provision in Poverty Alleviation Programmes." *Economica* 57, no. 225, 1990. <https://doi.org/10.2307/2554088>.
- Bidadanure, Juliana Uhuru. "The Political Theory of Universal Basic Income." *Annual Review of Political Science* 22 (2019): 481–501. <https://doi.org/10.1146/annurev-polisci-050317-070954>.
- Bloom, David E., David Canning, and Günther Fink. "Implications of Population Ageing for Economic Growth." *Oxford Review of Economic Policy* 26, no. 4 (2010): 583–612. <https://doi.org/10.1093/oxrep/grq038>.
- Börsch-Supan, Axel. "Challenges for European Welfare States." *International Tax and Public Finance* 22, no. 4 (2015): 534–548. <https://doi.org/10.1007/s10797-015-9363-2>.
- Browne, James, and Herwig Immervoll. "Basic Income as a Policy Option: Technical Background Note Illustrating Costs and Distributional Implications for Selected Countries." OECD, 2017.

- Claussen, Carl Andreas. "Persistent Inefficient Redistribution." Working Paper 11/2002. Oslo: Norges Bank, 2002.
- Currie, Janet. "The Take-Up of Social Benefits." In *Public Policy and the Income Distribution*, edited by Alan J. Auerbach, David E. Card, and J. Miguel Iglesias, 80–148. New York: Russell Sage Foundation, 2006.
- Devereux, Stephen, and Rachel Sabates-Wheeler. "Transformative Social Protection." IDS Working Paper 232. Brighton: Institute of Development Studies, 2004. <https://opendocs.ids.ac.uk/opendocs/handle/20.500.12413/3390>.
- Dosi, Giovanni, and Maria Eénrica Virgillito. "Whither the Evolution of the Contemporary Social Fabric? New Technologies and Old Socio-Economic Trends." *International Labour Review* 158, no. 4 (2019): 593–625. <https://doi.org/10.1111/ilr.12145>.
- Dubois, Hans and Anna Ludwinek. "Access to Social Benefits: Reducing non-take-up." Eurofound, 2015. <https://www.eurofound.europa.eu/en/publications/all/access-social-benefits-reducing-non-take>.
- Duflo, Esther, and Abhijit V. Banerjee. *Poor Economics: A Radical Rethinking of the Way to Fight Global Poverty*. New York: PublicAffairs, 2011.
- European Commission. Making work pay: A conceptual paper. *Directorate-General for Employment, Social Affairs and Inclusion*, 2016. https://employment-social-affairs.ec.europa.eu/node/66_en.
- Fiorina, Morris P., and Roger G. Noll. "Voters, Bureaucrats and Legislators: A Rational Choice Perspective on the Growth of Bureaucracy." *Journal of Public Economics* 9, no. 2 (1978): 239–254. [https://doi.org/10.1016/0047-2727\(78\)90018-4](https://doi.org/10.1016/0047-2727(78)90018-4).
- Garfinkel, Irwin, Timothy M. Smeeding, and Lee Rainwater. *Wealth and Welfare States: Is America a Laggard or Leader?* Oxford: Oxford University Press, 2010.
- Heckman, James J., and Stefano Mosso. "The Economics of Human Development and Social Mobility." *Annual Review of Economics* 6 (2014): 689–733. <https://doi.org/10.1146/annurev-economics-080213-040753>.
- Herd, Pamela, and Donald P. Moynihan. *Administrative Burden: Policymaking by Other Means*. New York: Russell Sage Foundation, 2018.
- Hiilamo, Heikki. "The Basic Income Experiment in Finland Yields Surprising Results." University of Helsinki, 2020. <https://www.helsinki.fi/en/news/nordic-welfare-news/the-basic-income-experiment-in-finland-yields-surprising-results>.
- Hoynes, Hilary, and Jesse Rothstein. "Universal Basic Income in the United States and Advanced Countries." *Annual Review of Economics* 11 (2019): 929–958. <https://doi.org/10.1146/annurev-economics-080218-030237>.
- Immervoll, Herwig, Henrik J. Kleven, Claus T. Kreiner, and Emmanuel Saez. "Welfare Reform in European Countries: A Microsimulation Analysis." *The Economic Journal* 117, no. 516, 2007. <https://doi.org/10.1111/j.1468-0297.2007.02001.x>.

- International Labour Organization (ILO). *World Employment and Social Outlook Trends 2024*. International Labour Organization, 2024. <https://www.ilo.org/global/research/global-reports/weso/trends2024>.
- International Monetary Fund. *Fiscal Monitor: Tackling Inequality*. Washington, DC: IMF, April 2017. <https://www.imf.org/en/publications/fm/issues/2017/10/05-fiscal-monitor-october-2017>.
- Kanbur, Ravi. “Transfers, Targeting and Poverty.” *Economic Policy* 2, no. 4 (1987): 111–147. <https://doi.org/10.2307/1344619>.
- Kangas, Olli, Signe Jauhiainen, Miska Simanainen, and Minna Ylikännö. “Experimenting with Unconditional Basic Income: Lessons from the Finnish BI Experiment 2017–2018.” Cheltenham: Edward Elgar Publishing, 2021.
- Kela. “Kela Statistical Yearbook 2024.” Kela (2025). <https://urn.fi/URN:NBN:fi-fe2025121117552>.
- Kela. “Kela Statistical Yearbook 2022.” Kela (2023). <https://helda.helsinki.fi/items/d216fd3c-1bba-4416-9f06-5edf1a5e02a4>.
- Korpi, Walter, and Joakim Palme. “The Paradox of Redistribution and Strategies of Equality: Welfare State Institutions, Inequality, and Poverty in the Western Countries.” *American Sociological Review* 63, no. 5 (1998): 661–687. <https://doi.org/10.2307/2657333>.
- Lain, Bru and Julià Albert. “Why Do Poor People Not Take Up Benefits? Evidence from the Barcelona’s B-MINCOME Experiment.” *Journal of Social Policy* (2022). <https://doi.org/10.1017/S0047279422000575>.
- Marc, Céline, Mickaël M. Portela, Cyrine Hannafi, Rémi Le Gall, Antoine Rode, and Stéphanie Laguërodie. “Non-Take-Up of Minimum Social Benefits: Quantification in Europe.” DREES, 2022.
- Martinelli, Luke. “Assessing the Case for a Universal Basic Income in the UK.” IPR Report. Institute for Policy Research, University of Bath, 2017.
- Matikka, Tuomas, and Tuuli Paukkeri. “Does Information Increase the Take-up of Social Benefits? Evidence from a New Benefit Program.” *Empirical Economics* 63, no. 6 (2022): 3253–3287.
- Moffitt, Robert A. “The Deserving Poor, the Family, and the U.S. Welfare System.” *Demography* 52, no. 3 (2015): 729–749. <https://doi.org/10.1007/s13524-015-0395-0>.
- OECD. *Family Database*. OECD Publishing, 2021.
- OECD. “Income and Wealth Distribution Database.” OECD, 2023. <https://www.oecd.org/data/oecd/46/39/income-and-wealth-distribution.htm>.
- OECD. *Pensions at a Glance 2023: OECD and G20 Indicators*. OECD Publishing, 2023.

- OECD. *Society at a Glance 2024: OECD Social Indicators*. Paris: OECD Publishing, 2024. <https://doi.org/10.1787/918d8db3-en>.
- Paukkeri, Tuuli. *Essays on Public Economics*. Doctoral dissertation, VATT Institute for Economic Research and Aalto University School of Business, 2018. <http://urn.fi/URN:ISBN:978-952-274-220-9>
- Pierson, Paul. "The New Politics of the Welfare State." *World Politics* 48, no. 2 (1996): 143–79. <https://doi.org/10.1353/wp.1996.0004>.
- Redmond, Paul, et al. "A Universal Basic Income for Ireland: Lessons from the International Literature." 2022.
- Statistics Finland. "Preliminary Population Statistics." 2025. <https://stat.fi/fi/uutinen/Suomi-lukuina-2025-nuorten-elaemaeae-numeroina>.
- THL. "Social Protection Expenditure and Financing Database." Finnish Institute for Health and Welfare. Accessed February 22, 2026. <https://thl.fi>.
- George Tsebelis. *Veto Players: How Political Institutions Work*. Princeton: Princeton University Press, 2002.
- United Nations, Department of Economic and Social Affairs, Population Division. *World Population Prospects 2024*. Online database. <https://population.un.org/wpp/>.
- Vadapalli, Diwakar. "Barriers and Challenges in Accessing Social Transfers and Role of Social Welfare Services in Improving Targeting Efficiency: A Study of Conditional Cash Transfers." *Vulnerable Children and Youth Studies* 4, no. S1 (2009): 41–54. <https://doi.org/10.1080/17450120903111883>.
- Frank Vandenbroucke. *Solidarity Through Social Investment*. Oxford: Oxford University Press, 2021.
- Van Parijs, Philippe, and Yannick Vanderborght. *Basic Income: A Radical Proposal for a Free Society and a Sane Economy*. Cambridge, MA: Harvard University Press, 2017.
- World Bank. *The State of Social Safety Nets 2018*. Washington, DC: World Bank Group, 2018. <https://openknowledge.worldbank.org/handle/10986/29115>.
- Özcan, Rasim. "Robotların Yükselişi! İşsizlik ve Gelir Üzerine Etkileri." *Öneri Dergisi* (2019).

Appendices

Appendix A. Simulation Details and Reproducible Calculations

Consolidated envelope

The baseline fiscal envelope equals the combined year 2022 expenditure for the non-contributory, age-specific programmes selected for consolidation: child allowances, student benefits, minimum unemployment minima and minimum pensions. The consolidated envelope used in the simulation is **€10,888,696,440** (reported in the main text as **€10.89 billion**).

Data sources and cohort definitions

Cohort populations are mid-2024-based resident totals from *Statistics Finland*. Cohorts used in the simulation are 0–14, 15–24, 25–64 and 65+. Programme expenditure 2022 figures are drawn from public accounts and programme reports (Kela Statistical Yearbook 2022; Ministry of Social Affairs and Health; Statistics Finland); the exact population table and export timestamp are listed in Appendix C.

Formulas

Annual per person= $Mc \times 12$

Annual cohort cost= $Nc \times (Mc \times 12)$

Total AIBI cost= $\sum_c Nc \times (Mc \times 12)$

Where, Mc is the monthly AIBI for cohort c , and Nc is the cohort population.

Table A.1. Cohort populations, monthly AIBI, annual per-person amounts and annual cohort costs (€)

Cohort	Population (N_c)	Monthly AIBI (M_c) (€)	Annual per person (€/year)	Annual cohort cost (€)
0–14	822,852	150	1,800	1,481,133,600
15–24	625,593	320	3,840	2,402,277,120
25–64	2,857,437	60	720	2,057,354,640
65+	1,330,089	310	3,720	4,947,931,080
Total	5,635,971	—	—	10,888,696,440

Source: Author’s calculations based on Statistics Finland and Kela data; see Appendix C for cell mapping.

The figures above reproduce the cohort arithmetic used for the baseline calibration (see Section 4.1 and Table 3). The small difference between the unrounded sum and the rounded headline (€10.89 billion) is due to standard rounding of monthly amounts to whole euros.

Monthly cohort rates are chosen so that CAIBI=S (i.e., the consolidated envelope is fully reallocated). The simulation, therefore, tests fiscal plausibility under a reallocation assumption rather than estimating the fiscal cost of a new benefit.

Cohort arithmetic and monthly rates

Monthly cohort rates were computed as:
$$\text{Monthly rate} = \frac{\text{Annual cohort allocation}}{\text{Cohort population} \times 12}.$$
 Applying this formula to the 2024 cohort populations yields the monthly rates reported in Section 5. The exact arithmetic used to produce the cohort totals is:

- **Children (0–14):** €1,800 annual per person (monthly €150) × 822,852 = **€1,481,133,600.**
- **Young adults (15–24):** €3,840 annual per person (monthly €320) × 625,593 = **€2,402,277,120.**
- **Prime-age adults (25–64):** €720 annual per person (monthly €60) × 2,857,437 = **€2,057,354,640.**
- **Older adults (65+):** €3,720 annual per person (monthly €310) × 1,330,089 = **€4,947,931,080.**
- **Sum = €10,888,696,440** (reported in the main text as €10.89 billion).

Table A.2. *Illustrative double-envelope, more-equal baseline*

Cohort	Population (mid-2024)	Monthly (€/person)	Annual (€/person)	Cohort cost (€)
0–14	822,852	277	3,324	2,735,160,048
15–24	625,593	555	6,660	4,148,051,428
25–64	2,857,437	208	2,496	7,132,162,752
65+	1,330,089	485	5,820	7,741,117,980
Total (envelope)	5,635,971	—	—	21,756,492,208

Source: Author’s calculations based on Statistics Finland and Kela data; see Appendix C for cell mapping.

Illustrative alternative schedule scaled to $\approx 2\times$ baseline envelope; monthly amounts rounded; full arithmetic provided in Appendix A.

Sensitivity note ($\pm 10\%$)

A $\pm 10\%$ change in the consolidated envelope scales cohort payments linearly. The baseline and $\pm 10\%$ envelopes and the corresponding annual per-person amounts are:

Scenario	Envelope (€)	Annual per person 0–14; 15–24; 25–64; 65+ (€/yr)
–10%	9,799,826,796	1,620; 3,456; 648; 3,348
Baseline	10,888,696,440	1,800; 3,840; 720; 3,720
+10%	11,977,566,084	1,980; 4,224; 792; 4,092

Source: Author's calculations based on Statistics Finland and Kela data; see Appendix C for cell mapping.

Programme → cohort mapping (baseline)

Each programme's expenditure was assigned to the cohort that most closely matches its statutory incidence. Where the programme incidence spans cohorts, allocations were made proportionally by using programme documentation; when incidence data were unavailable, transparent heuristics were applied (for example, student grants and youth unemployment minima were assigned to the 15–24 cohort). The cohort totals used in the baseline calibration are as follows:

Programme (2022)	Assigned cohort	Annual amount (baseline)
Child allowances (Kela)	0–14	€1,481,133,600
Student grants; youth unemployment minima	15–24	€2,402,277,120
Minimum unemployment supports for working-age	25–64	€2,057,354,640
Minimum pensions; basic non-contributory pension floors	65+	€4,947,931,080
Total	All cohorts	€10,888,696,440

Source: Author's calculations based on Statistics Finland and Kela data; see Appendix C for cell mapping.

Allocation rules and caveats: the baseline allocation assigns each programme to the cohort that most closely matches its statutory incidence. When the programme incidence spans cohorts and explicit incidence data were unavailable, proportional allocations were applied by using programme documentation or simple, transparent heuristics. The simulation is stylized: cohort rates are derived from the programme totals rather than from household-level microsimulation. Consequently, the results indicate plausibility and fiscal feasibility under the stated calibration rather than definitive household-level distributional outcomes.

Sources and availability of materials: cohort populations are the year 2024 population counts by single year of age from *Statistics Finland*. Programme expenditure figures are drawn from public accounts and programme reports (Kela Statistics Yearbook 2022; Ministry of Social Affairs and Health; Statistics Finland social expenditure summaries)

Appendix B: Robustness Checks: Non-Take-Up Scenarios and Envelope Sensitivity

The robustness panel summarizes non-take-up scenarios and envelope sensitivity used in the analysis. The panel includes: (1) scenario definitions and cohort take-up rates; (2) unreached euros by cohort and as totals; (3) unreached euros as % of the cohort cost; (4) provenance for take-up assumptions; and (5) a pointer to the spreadsheet sheet `Sheet_Sens_Takeup`, where the calculations are reproducible. All cell-level provenance and raw source files are archived in the project repository and listed in the README.

Table B.1. Robustness panel

Scenario	Child	Student & youth	Prime-age	Pensions	Total unreached
Low (1% / 15% / 20% / 5%)	€14,811,336	€360,341,568	€411,470,928	€247,396,554	€1,034,020,386
Base (2% / 30% / 40% / 10%)	€29,622,672	€720,683,136	€822,941,856	€494,793,108	€2,068,040,772
High (5% / 45% / 60% / 15%)	€74,056,680	€1,081,024,704	€1,234,412,784	€742,189,662	€3,131,683,830

Source: Author's non-take-up sensitivity simulations.

Under conservative Finland-grounded assumptions, the implied unreached sum is $\approx$ **€2.07bn** (Base), equivalent to $\sim$ **19.0%** of the €10.89bn envelope; alternative low/high assumptions give $\approx$ **€1.03bn (9.5%)** and $\approx$ **€3.13bn (28.8%)** respectively.

Unreached euros are computed relative to the baseline programme expenditure assigned to each cohort (i.e., the portion of the consolidated envelope that would not be delivered to the recipients if the cohort take-up equals T_c). This assumes that the cohort allocations equal to the programme totals.

Table B.2. Unreached euros by cohort (Low / Base / High scenarios)

Scenario	Child (€)	Student & youth (€)	Prime age (€)	Pensions (€)
Low (1% / 15% / 20% / 5%)	14,811,336	360,341,568	411,470,928	247,396,554
Base (2% / 30% / 40% / 10%)	29,622,672	720,683,136	822,941,856	494,793,108
High (5% / 45% / 60% / 15%)	74,056,680	1,081,024,704	1,234,412,784	742,189,662

Source: Author's non-take-up sensitivity simulations.

Table B.3. Totals, envelope share and take-up assumptions

Scenario	Total unreached (€)	% of €10,888,696,440 envelope	Take-up assumptions (Child; Student; Prime; Pensions)
Low	1,034,020,386	9.5%	99%; 85%; 80%; 95%
Base	2,068,040,772	19.0%	98%; 70%; 60%; 90%
High	3,131,683,830	28.8%	95%; 55%; 40%; 85%

Source: Author's non-take-up sensitivity simulations.

Table B.4. Sensitivity table

Change	Envelope (€)
-20%	8,710,957,152
-10%	9,799,826,796
Baseline	10,888,696,440
+10%	11,977,566,084
+20%	13,066,435,728

Source: Author's non-take-up sensitivity simulations.

Table B.5. Provenance for programme → cohort allocations (primary sources)

Programme (assigned cohort)	Primary source (title and URL)
Child allowances (0–14)	Kela – Annual reports: https://www.kela.fi/en/statistics-and-research ; https://helda.helsinki.fi/items/d216fd3c-1bba-4416-9f06-5edf1a5e02a4
Student grants & youth minima (15–24)	Ministry of Social Affairs and Health – Statistics and publications: https://stm.fi/en/statistics-and-publications
Minimum unemployment supports (25–64)	Ministry of Social Affairs and Health – Statistics and publications: https://stm.fi/en/statistics-and-publications ; https://thl.fi/en/web/thlfi-en/statistics/information-on-statistics/social-protection-expenditure-and-financing
Minimum pensions / guarantee pension (65+)	Finnish Centre for Pensions – Statistics: https://www.etk.fi/en/topical-issues/average-monthly-pension-in-finland-in-2022-1845-euros/
Population by cohort (mid-2024)	Statistics Finland – Population 31.12. by Area, Age, Sex, Year and Information: https://stat.fi/fi/uutinen/Suomi-lukuina-2025-nuorten-elaemaeae-numeroina

Source: Author’s non-take-up sensitivity simulations.

Short methodological notes:

- How unreached euros were computed: for each cohort (c), unreached euros ($U_c = (1 - T_c) \times \text{cohort programme expenditure}$); the cohort programme expenditures are the baseline cohort costs, as reported in Appendix A (child €1,481,133,600; student €2,402,277,120; prime €2,057,354,640; pensions €4,947,931,080).
- Interpretation: the Base scenario (conservative, Finland-grounded) implies $\approx$ €2.07bn unreached, $\sim$ 19.0% of the consolidated €10.89bn envelope.
- Repository and spreadsheet: include Sheet_Sens_Takeup and Sheet_Sens_Envelope in the master spreadsheet with cell-level provenance and the raw source files listed in the README.

Appendix C: Spreadsheet Cell Mapping, Named Ranges, and Data Provenance Pipeline

Purpose and scope: this appendix documents every input, the exact spreadsheet mapping, the core equations used to compute the AIBI cost, and provenance metadata so that reviewers can verify the cohort arithmetic and programme allocations. Extraction dates and table identifiers for each source are recorded in the master spreadsheet README and in the cell-level provenance comments.

C.1. Master Inputs (Sources, URLs, Spreadsheet Mapping)

Population by cohort (mid-2024)

- Source: Statistics Finland, Population 31.12. by Year, Sex, Age and Information (Web).
- URL (dataset entry point): <https://www.stat.fi/> — direct table: Population 31.12. by Area, Age, Sex, Year and Information.
- Query: 2024; whole country; aggregate ages to cohorts 0–14; 15–24; 25–64; 65+.
- Spreadsheet mapping (named range): Pop_by_Cohort → Sheet_Pop!B5:B8.
- Values used:
 - Sheet_Pop!B5 0–14 = 822,852.
 - Sheet_Pop!B6 15–24 = 625,593.
 - Sheet_Pop!B7 25–64 = 2,857,437.
 - Sheet_Pop!B8 65+ = 1,330,089.
- “Statistics Finland — Population 31.12. by Area, Age, Sex, Year and Information; query: 2024; ages aggregated to cohort; exported [20.02.2026]; URL: <https://www.stat.fi/>.”

Programme expenditures assigned to cohorts (year 2022 totals)

- Source documents and URLs:
 - Kela (Social Insurance Institution of Finland) – Annual report / statistical yearbook 2022. URL: <https://helda.helsinki.fi/items/d216fd3c-1bba-4416-9f06-5edf1a5e02a4> (Kela sta-

- tistics and publications page; specific PDF: Kela Statistics Yearbook 2022).
- o Ministry of Social Affairs and Health – social protection programme expenditure tables (2022). URL: <https://stm.fi/en/statistics-and-publications>; <https://thl.fi/en/web/thlfi-en/statistics/information-on-statistics/social-protection-expenditure-and-financing> (Ministry publications and statistics).
 - o Statistics Finland / THL social protection expenditure summaries (2022). URL: <https://www.stat.fi/>, <https://stat.fi/fi/uutinen/Suomi-lukuina-2025-nuorten-elaemaeac-numeroina>, and <https://thl.fi/en/web/thlfi-en> (search “social protection expenditure 2022”).
 - o Finnish Centre for Pensions – pension statistics 2022. URL: <https://www.etk.fi/en/statistics/> (Centre for Pensions statistics and publications).
 - Spreadsheet mapping (named range): Prog_Expenditure → Sheet_Prog!C3:C6.
 - Values used (cells and comments):
 - o Sheet_Prog!C3 Child allowances (Kela): €1,481,133,600.
 - ◇ “Kela Annual Report 2022; table ‘Child and family cash transfers’ (line item); exported [20.02.2026]; URL: <https://www.kela.fi/en/statistics-and-research>.”
 - o Sheet_Prog!C4 Student grants & youth unemployment minima: €2,402,277,120.
 - ◇ “Ministry of Social Affairs and Health / Kela programme tables 2022; lines ‘Student financial aid’ + ‘Youth unemployment minima’; exported [20.02.2026]; URL: <https://stm.fi/en/statistics-and-publications>; <https://www.kela.fi/en/statistics-and-research>.”
 - o Sheet_Prog!C5 Minimum unemployment supports (working age): €2,057,354,640.
 - ◇ “Ministry programme expenditure 2022, line ‘Minimum unemployment supports’; exported [20.02.2026]; URL: <https://stm.fi/en/statistics-and-publications>.”

- o Sheet_Prog!C6 Minimum pensions / basic non-contributory pension floors: €4,947,931,080.
 - ◇ “Finnish Centre for Pensions / Ministry pension statistics 2022, line ‘Minimum pensions / guarantee pension’; exported [20.02.2026]; URL: <https://www.etk.fi/en/statistics/>.”
- o Sheet_Prog!C7 formula =SUM(C3:C6) → Consolidated envelope S = €10,888,696,440.
 - ◇ “Sum of Sheet_Prog!C3:C6; provenance: Kela 2022; Ministry 2022; Centre for Pensions 2022; exported [20.02.2026].”

C.2. Variable Definitions, Named Ranges and Core Identities

Named ranges

- Pop_by_Cohort = Sheet_Pop!B5:B8
- AIBI_by_Cohort = Sheet_AIBI!C5:C8 (monthly €)
- AIBI_Annual_by_Cohort = Sheet_AIBI!D5:D8 (annual €)
- Prog_Expenditure = Sheet_Prog!C3:C6
- C_AIBI = Sheet_Calc!D20 (total AIBI cost)
- S = Sheet_Prog!C7 (consolidated envelope)

Core accounting identities

- Total AIBI cost (cohort brackets):

$$[C_{\{AIBI\}} = \sum_{\{c\}} Pop_by_Cohort[c] \times AIBI_Annual_by_Cohort[c]]$$
 Spreadsheet example: Sheet_Calc!D20 = SUMPRODUCT(Sheet_Pop!B5:B8, Sheet_AIBI!D5:D8).
- Consolidated envelope from programmes:

$$[S = \sum_{p \in \mathcal{C}} Prog_Expenditure[p]]$$
 Spreadsheet example: Sheet_Prog!C7 = SUM(Sheet_Prog!C3:C6).
- Net fiscal impact:

$$[R = S - C_{\{AIBI\}}]$$
 Spreadsheet example: Sheet_Calc!D21 = Sheet_Prog!C7 - Sheet_Calc!D20.

- Implied per-recipient replacement:

$$[B_{\{p\}}^{\text{implied}} = \frac{E_{\{p\}}}{N_{\{p\}}}]$$
 Spreadsheet example: Sheet_Calc!E5 = Sheet_Prog!C3 / Sheet_Prog!D3.

C.3. Step-By-Step Worked Example

The worked example below shows the inputs, formulas and resulting values used to compute the consolidated AIBI cost. Detailed provenance for each input (document title; table number/page; export date; direct URL) is recorded in the master spreadsheet README and in the spreadsheet cell comments.

Sheet_AIBI

- C5:C8 (monthly rates) = 150; 320; 60; 310 (0–14; 15–24; 25–64; 65+).
- D5:D8 = C5*12 etc. → 1800; 3840; 720; 3720.

Sheet_Pop

- B5 = 822,852 (0–14)
- B6 = 625,593 (15–24)
- B7 = 2,857,437 (25–64)
- B8 = 1,330,089 (65+)

Sheet_Prog

- C3 = 1,481,133,600
- C4 = 2,402,277,120
- C5 = 2,057,354,640
- C6 = 4,947,931,080
- C7 formula = SUM(C3:C6) → 10,888,696,440.

Sheet_Calc

- D20 = SUMPRODUCT(Sheet_Pop!B5:B8, Sheet_AIBI!D5:D8) → 10,888,696,440.
- D21 = Sheet_Prog!C7 - D20 → R (net fiscal impact).

C.4. Envelope Sensitivity ($\pm 10\%$)

A $\pm 10\%$ change in the consolidated envelope scales cohort payments linearly. The baseline and $\pm 10\%$ envelopes and the corresponding annual per-person amounts are: -10% envelope = €9,799,826,796 $\rightarrow$ annual per person (0–14; 15–24; 25–64; 65+) = €1,620; €3,456; €648; €3,348. Baseline envelope = €10,888,696,440 $\rightarrow$ annual per person = €1,800; €3,840; €720; €3,720. $+10\%$ envelope = €11,977,566,084 $\rightarrow$ annual per person = €1,980; €4,224; €792; €4,092.

C.5. Programme $\rightarrow$ Cohort Mapping Rules and Documentation (Sheet_Map)

- Rule 1 (single-cohort incidence): assign full programme total to that cohort; cite statutory age range. Example: child allowances $\rightarrow$ 0–14.
- Rule 2 (multi-cohort incidence): allocate using administrative incidence shares from programme tables; document shares and calculation cells.
- Rule 3 (no incidence data): apply transparent heuristic and document it. Baseline heuristic used: student grants and youth minima $\rightarrow$ 15–24; working-age minima $\rightarrow$ 25–64; pension minima $\rightarrow$ 65+. Record rationale and any alternative allocations in Sheet_Map.

Allocation rules and caveats: the baseline allocation assigns each programme to the cohort that most closely matches its statutory incidence. When the programme incidence spans cohorts and explicit incidence data were unavailable, proportional allocations were applied by using programme documentation or transparent heuristics (for example, student grants and youth unemployment minima were assigned to the 15–24 cohort). The exercise is stylized: cohort rates are derived from the programme totals rather than from household-level microsimulation. The results indicate plausibility and fiscal feasibility under the stated calibration rather than definitive household-level distributional outcomes.

C.6. Take-Up Assumptions, Robustness

- Unreached euros calculation: for cohort (c) and take-up (T_c):
[$U_c = (1 - T_c) \times \text{Prog_Expenditure}[c]$]
Spreadsheet example: Sheet_Sens_Takeup!F5 = (1 - T_child)
* Sheet_Prog!C3.

C.7. Raw Files, README and Reproducibility Checklist

Raw files to archive and list in README

- StatsFin_Population_Web_export_2024.csv — Web export;
URL: <https://stat.fi/fi/uutinen/Suomi-lukui-na-2025-nuorten-elaemaeae-numeroina>; exported [20.03.2026].
- Kela_Annual_Report_2022.pdf — Kela statistics page:
<https://helda.helsinki.fi/items/d216fd3c-1bba-4416-9f06-5ed-fla5e02a4>; exported [20.02.2026].
- Ministry_Social_Expenditure_2022.pdf — Ministry publications:
<https://stm.fi/en/statistics-and-publications>, <https://thl.fi/en/web/thlfi-en/statistics/information-on-statistics/social-protection-expenditure-and-financing>; exported [20.02.2026].
- Finnish_Centre_for_Pensions_2022.pdf — Centre for Pensions statistics:
<https://www.etk.fi/en/statistics/>; exported [20.02.2026].