

# AGING AND HAWAII'S GENERATIONAL ECONOMY

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# UHERO

THE ECONOMIC RESEARCH ORGANIZATION  
AT THE UNIVERSITY OF HAWAII

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## **Aging and Hawai'i's Generational Economy**

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# Executive Summary

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Hawai'i's population is aging rapidly. By 2035 one in four people will be 65 or older according to the most recent projections. The purpose of this study is to assess how aging is affecting Hawai'i's economy and steps that could be taken to prepare for this unprecedented change in our population.

Aging will affect all generations. An important question is whether our support system will be sufficient to generate resources that kūpuna need during their senior years. If not, how can the support system for seniors be strengthened? The growing needs of seniors, however, must be balanced against the needs of other generations. Can working-age adults be expected to pay more taxes to fund old-age needs? Should we reduce spending on children to support a growing senior population? The choices about these and many other important issues will be decided by others. But this study considers Hawai'i's economy from a generational perspective to improve our understanding of the choices we are facing.

This study provides new estimates of Hawai'i National Transfer Accounts (HNTA), presented in Part 1, which show how people at every age meet their material needs, measured by consumption. As a group, people in their "working-ages" earn more than enough to fund their consumption. But people in Hawai'i who are younger than 26 or older than 63 must rely on a complex support system to fund the gap between what they consume and what they earn by working. Very young children rely heavily on support from the family while public support, mostly public education, is important for older children. Kūpuna rely heavily on two components of the support system: public transfer programs, such as, Medicare and Social Security, and private assets, such as, funded pension programs, owner-occupied housing, and dividends and interest income to name a few examples.

The 2022 generational economy has changed in important ways since 2012, the first year for which it was estimated. This is not surprising given the rapid pace of aging during the last decade and the impact of the COVID-19 pandemic on Hawai'i's economy. Our assessment of changes since 2012, shown in Part 2, is sobering. Per-capita consumption of working-age adults grew slowly, but stagnated or declined for kūpuna and children. Older children and younger kūpuna were hurt more than any other group. The effects are likely to be long-lasting as spending on education declined for children and saving declined for kūpuna.

The greatest change in age structure over the next few decades will be a surge in the number of older kūpuna, those 75 and older. The gap between what they consume and what they earn from their labor is projected to rise from 11% of Hawai'i's total labor income in 2010 to 23% by 2050, with the greatest increases occurring before 2035.

Four challenges confront us: strengthening economic security particularly in light of uncertainty about the future of Social Security and Medicare; building a stronger health care system; improving training and financial systems in support of accumulating pension wealth; and investment in children on whom future generations will depend.

The oldest members of Hawai'i's baby-boom generation turned 65 in 2011 igniting an unprecedented acceleration of population aging. The rapid pace of aging is expected to continue for another decade lasting until 2035. After that aging is expected to be slower but the population of kūpuna likely will grow more rapidly than the child and working-age populations based on key but plausible assumptions about the future: steady increases in life expectancy, little change in fertility rates, and a resumption of moderate net in-migration (DBEDT 2024). The actual path of Hawai'i's demography will undoubtedly differ from the projected values, but it is likely that our population will age substantially, presenting the economic challenges highlighted in this report.

This report examines the effects of population on the economy using a generational perspective, introduced in Part 1 using Hawai'i National Transfer Accounts (HNTA). Children, working-age adults, and kūpuna play unique and distinctive economic roles in society. Children consume more

than they contribute to the economy through their labor. They depend on parents and, to some extent grandparents, to provide food, clothing, shelter, and other material needs. Children also depend on taxpayers who fund important public programs. Education, funded both by private and public sources, is of particular importance in preparing children for the future.

Like children, kūpuna consume more than they produce through their labor. Kūpuna consume more in per capita terms than members of other generations primarily because of their consumption of health care. Two funding sources are especially important to seniors in Hawai'i: transfers from Federal programs like Social Security and Medicare; and assets including funded pension programs, owner-occupied housing, and profits from corporations and small businesses.

HNTA is used to show how members of each generation acquire and use economic resources at every point in their lifetime. The accounts provide estimates at every age from the youngest keiki to those 85 and older. The analysis emphasizes the connections across generations including the roles of families and governments.

Hawai'i's generational economy was first examined, using HNTA estimates for 2012, just as rapid population aging was beginning (Mason and Abrigo 2020). Important challenges were identified but the results from that study were optimistic. It appeared that solid economic growth and generational equity were well within reach. Unfortunately, Hawai'i faced unanticipated difficulties, especially the COVID 19 pandemic. Part 2 uses HNTA estimates for 2012 and 2022 to assess the damage. The bottom line is that net resources, and hence standards of living, grew slowly for working-age generations but declined or stagnated for young people and kūpuna. The reasons for these unfortunate developments are discussed in more detail in Part 2.

The impact of aging in the future is the subject of Part 3. Population projections are combined with HNTA 2022 estimates to reach several important conclusions. Total spending on children will not be driven by changes in the number of children but by how much we choose to spend on each child. Economic prospects for Hawai'i will suffer if we do not invest enough in children. Hawai'i will experience a surge in the number of kūpuna 75 and older. As compared with other generations, older kūpuna have lower labor income. They have higher consumption particularly higher consumption of health care. They depend heavily on Federally-funded programs namely Social Security and Medicare. In light of these changes, policies in Hawai'i must emphasize the distinctive needs of our oldest kūpuna.

# Part 1. Hawaii's Generational Economy in 2022

Economic challenges arise over the lifecycle because at many ages people consume more than they produce through their labor. The *lifecycle account* measures this feature at every age from 0 to 85 and older using per capita consumption, per capita labor income, and the difference between the two, the lifecycle deficit. The lifecycle deficits must be funded by reallocating resources across the lifecycle. Reallocations can be public or private and are comprised of transfers and asset-based reallocations. These flows are documented by the *reallocation account*. The lifecycle account and the reallocation account must balance and changes in one account must be offset by changes in the other account. The accounts are described more fully below.

## Hawai'i National Transfer Accounts

The HNTA dashboard provides a brief, visualization of important policy relevant results including estimates for 2012 and 2022 and projections for 1980 to 2060.

[HNTA dashboard](#)

The HNTA database provides an extensive set of per capita and aggregate economic flows for single years-of-age and for broader age groups (excel file):

[HNTA database \(https://ntaccounts.org/s/HNTA2022\)](https://ntaccounts.org/s/HNTA2022)

The database can also be accessed using:

[HNTA visualization \(https://ntaccounts.org/s/HNTA2022\)](https://ntaccounts.org/s/HNTA2022)

The report emphasizes highlights and broad trends, with supplementary information available online (<https://ntaccounts.org/s/HNTA2022>).

## The Lifecycle

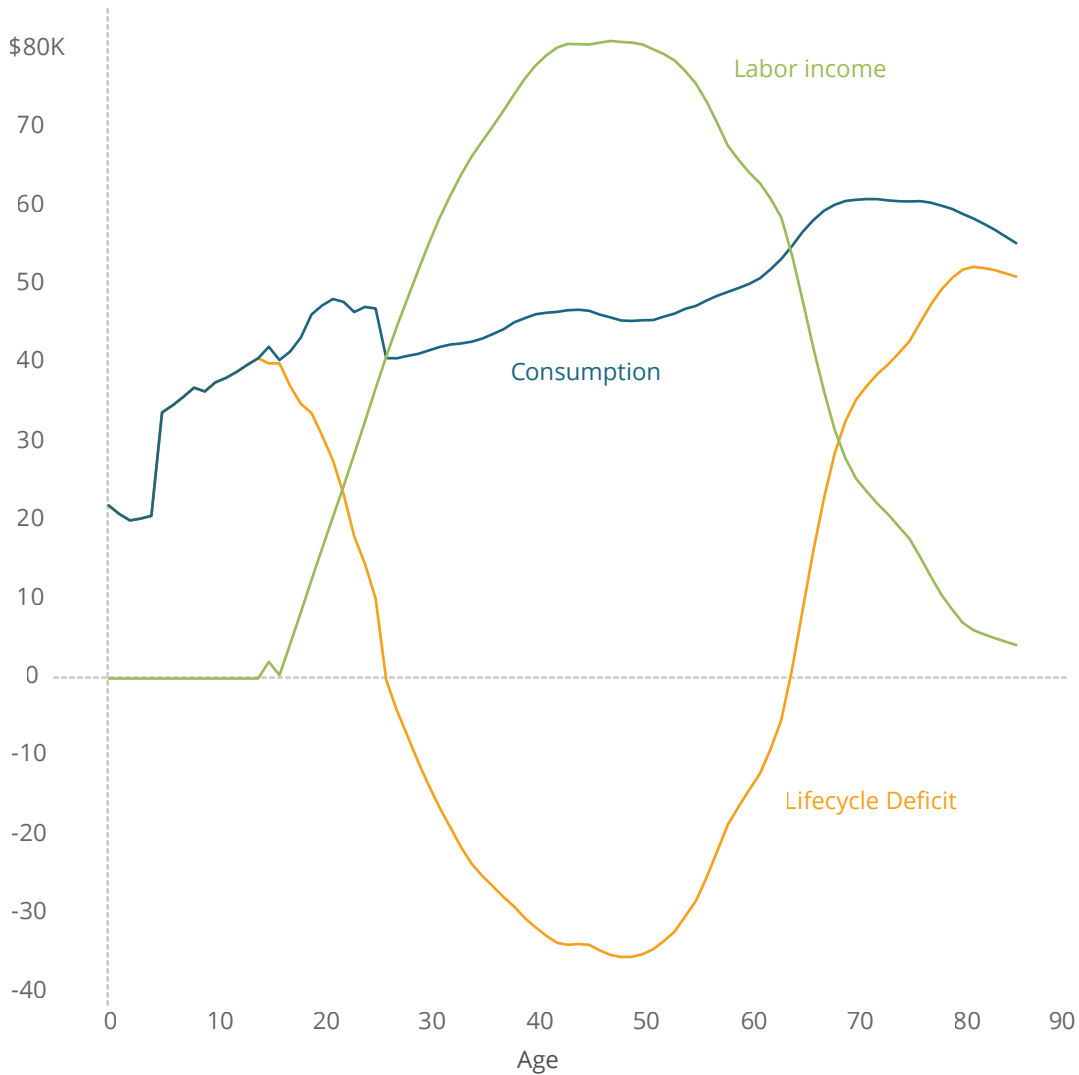
The young and the old do not produce enough by working to pay for their own needs, which means that labor income is less than consumption. The gap between the two is measured by the lifecycle deficit, shown in per capita terms in Figure 1.1. Those in the working ages produce more than they consume, yielding a lifecycle surplus (measured as a negative deficit).

In 2022 the lifecycle deficit reached a local peak at age 15 when per capita consumption exceeded per capita labor income by about \$40,000. The lifecycle deficit declined thereafter with those who were 25 years of age still consuming about \$10,000 more than they were earning through their labor. Those between the ages of 26 and 63, inclusive, earned more through their labor than they consumed, producing a lifecycle surplus (a negative deficit) with a peak of \$35,000 at age 48. After age 63, labor income was insufficient to fund consumption at age 64 to peak at \$52,000 at age 80, remaining high for those older than 80.

Consumption and labor income both drive the age profile of the lifecycle deficit. At young ages consumption is initially low but rises sharply due to public and private spending on education. Between the ages of 26 and 50 per capita consumption increased from about \$40,000 to \$46,000, continued to increase steadily for those in their 50s, and reached a peak of more than \$60,000 for those in their late 60s and 70s. Per capita consumption declined somewhat for those in their 80s, but this likely reflects the absence of data about the institutionalized population in Hawai'i.

The very young have no labor income, but some teens do work. By age 20 per capita labor income reached almost \$17,000. It grew steadily to reach a plateau between the ages of 40 and 53 of close to \$80,000. Labor income declined steadily with age thereafter. Labor income did not drop to low levels at any particular age. Those who were 65 averaged per capita labor income of \$48,000 and those who were 70 averaged \$25,000.

Figure 1.1. Lifecycle of Hawai'i in 2022. Per capita labor income, consumption, and the lifecycle deficit in thousands (K) of dollars.

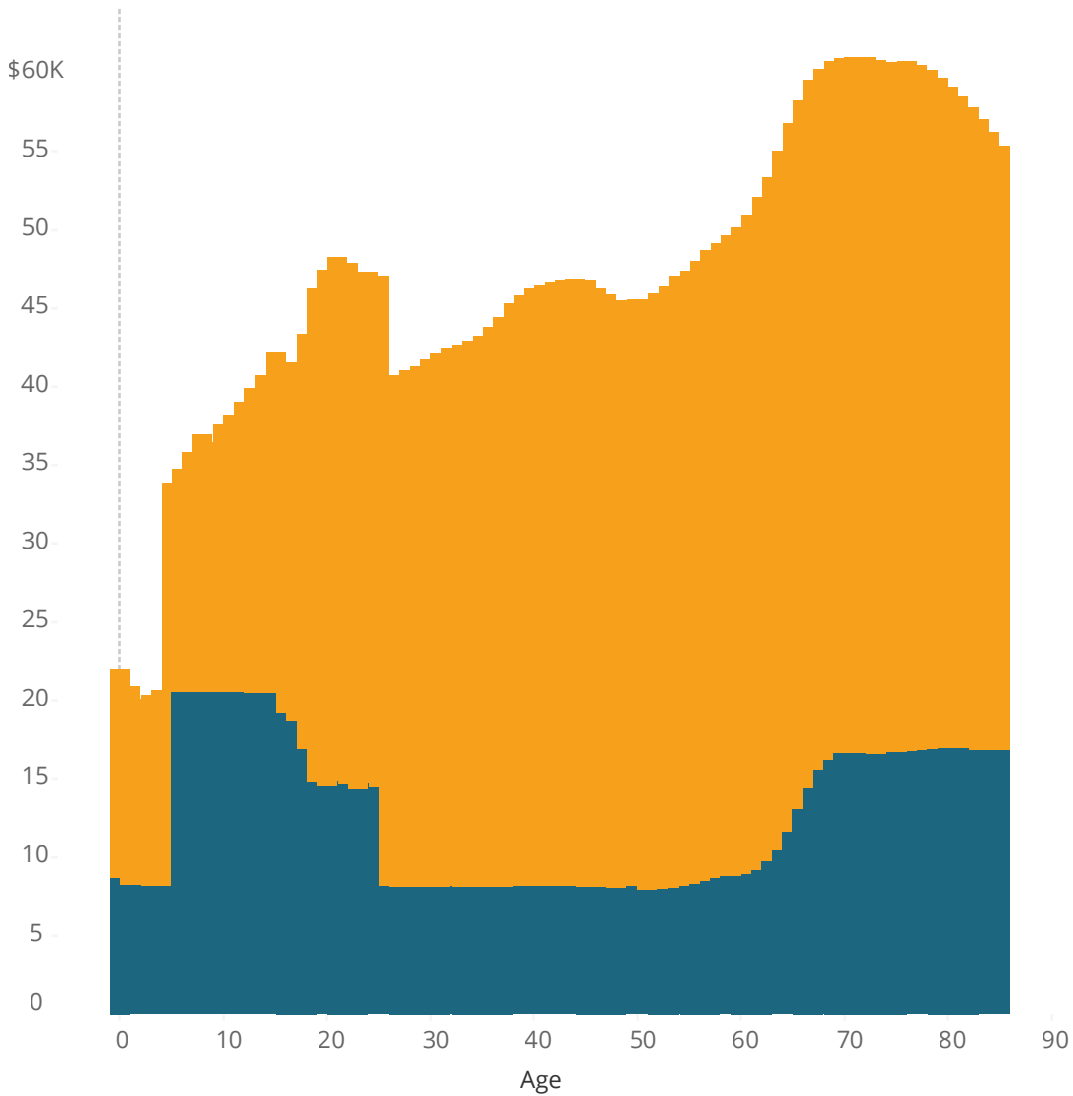


HNTA are constructed to insure consistency with aggregate measures for Hawai'i, like total income and consumption. The age dimension is added relying on survey data and administrative data for the state. Labor income consists of earnings and an estimate of the labor income of the self-employed. Labor income is a pre-tax measure including taxes paid by workers as well as earnings taxes paid by employers. Labor income does not include the value of the time of unpaid caregivers, such as, the time devoted to childrearing by parents and grandparents or time devoted to helping aging parents. This is a limitation of the analysis but data for Hawai'i are not available that can be used to quantify the value of this kind of labor. Estimates for the United States produced by the Counting Women's Work project are available on their website: <https://www.countingwomenswork.org/>.

Consumption is a comprehensive measure of the value of all goods and services consumed by residents of Hawai'i. Consumption by non-residents, e.g., tourists, is excluded. Some consumption age profiles are estimated using statistical methods and other age profiles using consumption weights that are equal to 0.4 at very young ages and then rise to 1.0 for older teens. Age profiles of public education and publicly funded health care are estimated, but other components of per capita public consumption are assumed to be equal at all ages.

Private consumption exceeds public consumption at most ages (Figure 1.2). For all ages combined, per capita private consumption was about \$34,000, as compared with \$12,500 for public consumption. The importance of public and private consumption varies greatly over the lifecycle, however, due to the importance of public funding for education at young ages and health care at older ages.

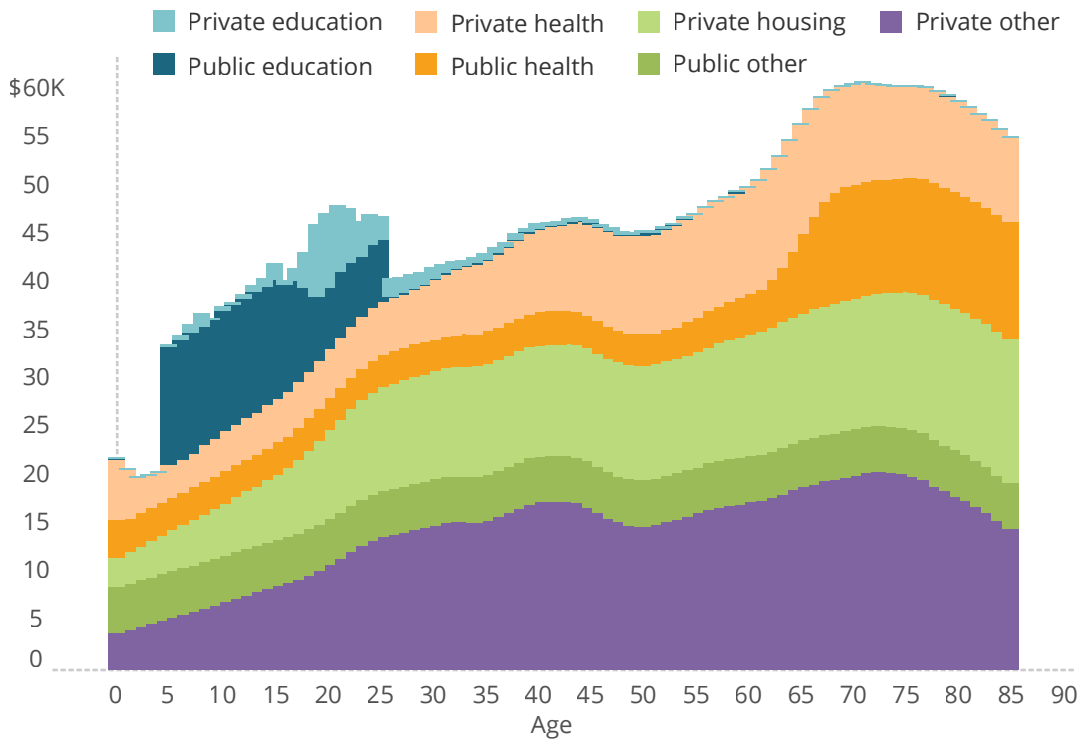
Figure 1.2. Per capita private and public consumption by age in Hawai'i, 2022, 1000s (K) of dollars.



A more detailed picture of consumption is shown in Figure 1.3 which documents private and public spending on education and health; private consumption of housing; and public and private consumption not otherwise included.

Consumption of publicly funded primary and secondary education is very important in Hawai'i, whereas private consumption becomes more important during post-secondary ages. Public and private consumption of health are important at all ages, but this is particularly true at older ages. Public spending on health consumption rises as seniors become eligible for Medicare at age 65. Private spending on health remains high for seniors although a bit lower at older ages.

Figure 1.3. Components of per capita public and private consumption by age, Hawai'i, 2022, thousands of dollars (K).

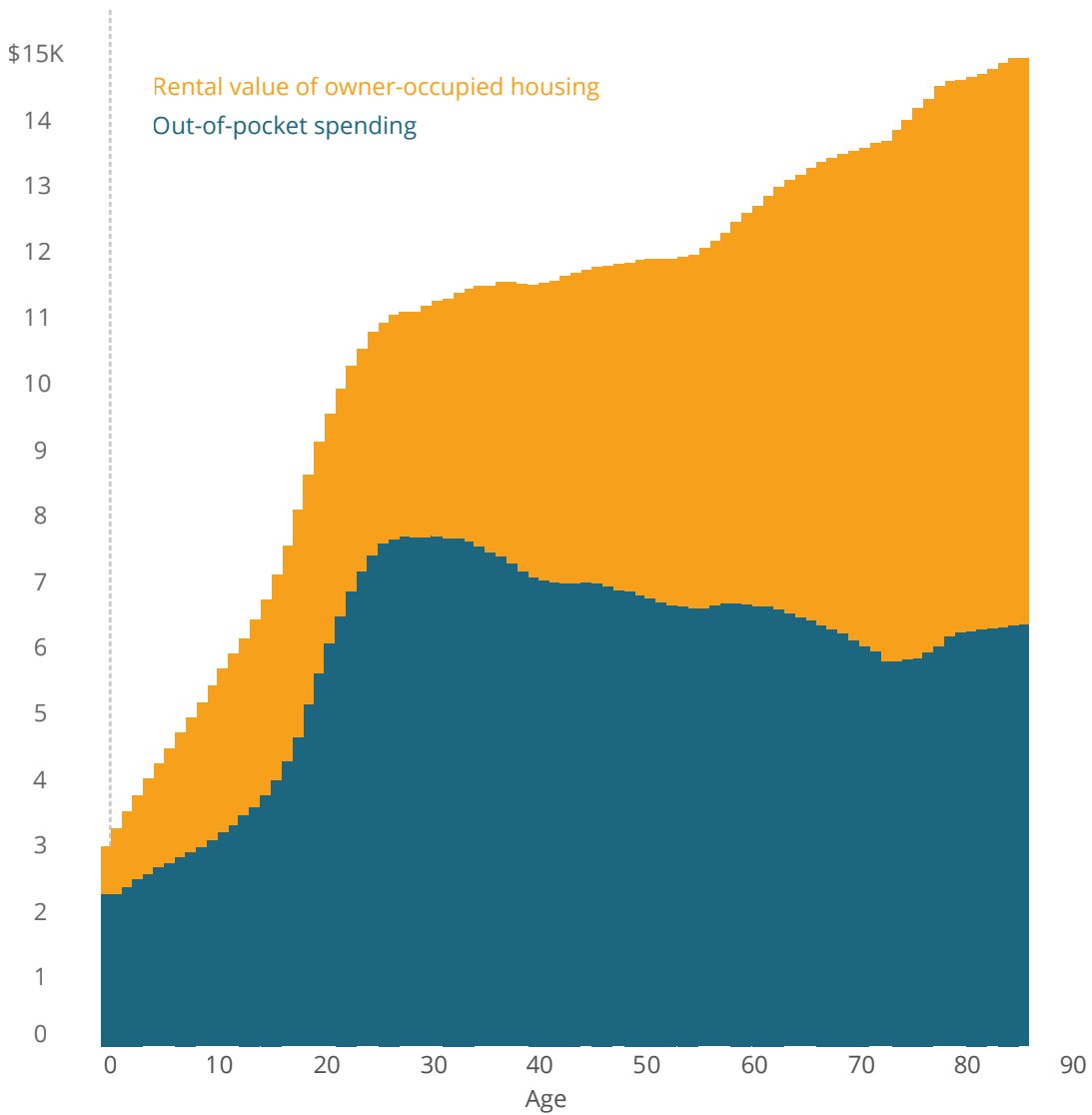


The 2012 HNTA did not emphasize housing but because this has become such an important issue in Hawai'i we are providing more detailed information about housing consumption for 2022 (Figure 1.4). Estimates for 2012 are provided in Part II, which discusses changes in the generational economy.

Consumption of housing for individuals is estimated by allocating the consumption of each household among its members using sharing rules. Young children, for example, are assumed to consume only 40% of the adult household members, as explained above and in the NTA manual.



Figure 1.4. Per capita consumptions of housing by age, Hawai'i, 2022, thousands of dollars (K).



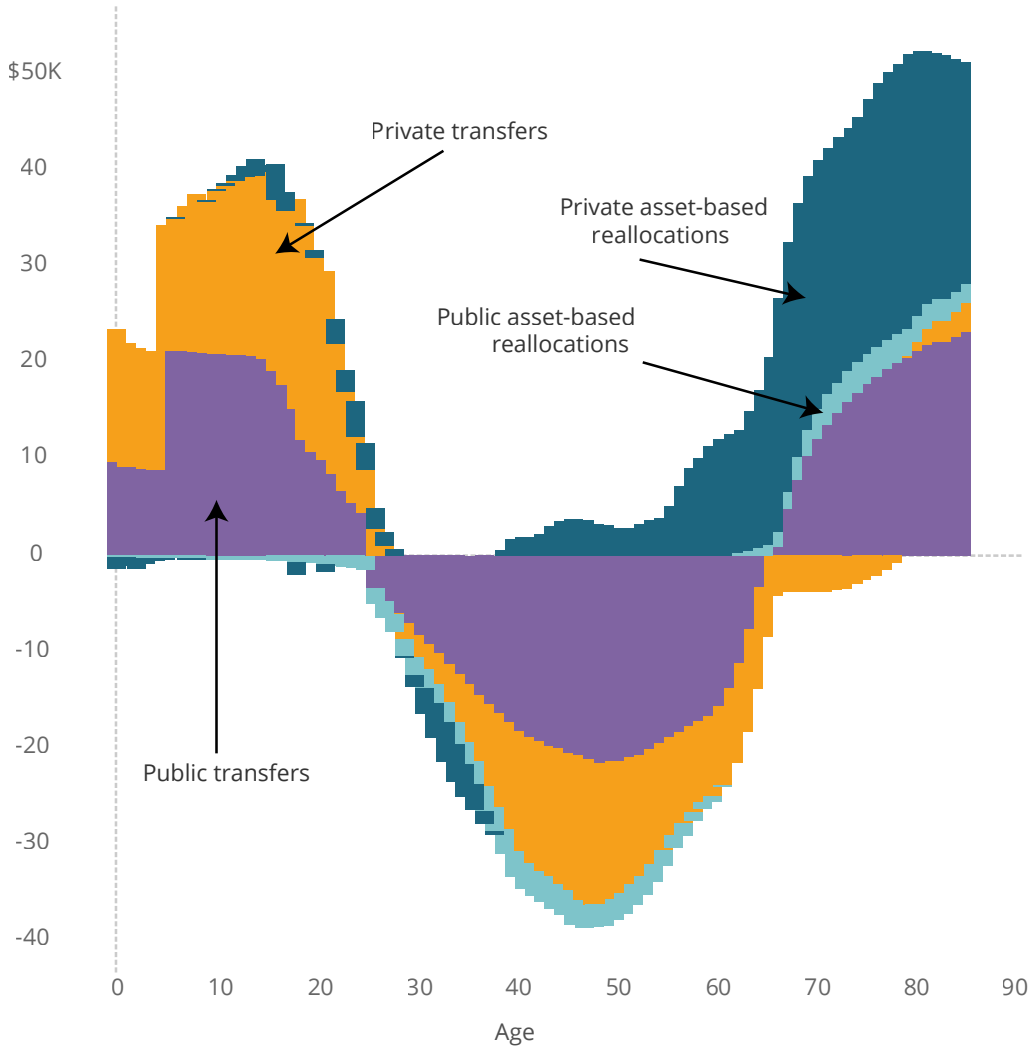
For all age groups combined, consumption of housing averaged \$10,750 per person or about 30% of total private consumption. Across all age groups, \$6100 was out-of-pocket spending for housing (rent, utilities, and maintenance), while \$4650 was the rental value of owner-occupied housing. Consumption rises sharply with age. Out-of-pocket spending peaked at around age 30 and then declined gradually thereafter. The rental value of owner-occupied housing increased steadily with age. At age 30 the rental value of owner-occupied housing amounted to about \$3500 per year, and at age 80 and older it was valued at \$8000 per year. The rise is due to several factors. A higher percentage of seniors own their own homes. Their households are smaller and, hence, per capita values are greater, because their children have left home and because some seniors have experienced the death of their spouse. Moreover, seniors acquired their homes when prices were lower and, hence, they have benefited from greater appreciation in the value of their homes. The relative importance of these factors cannot be assessed using these data.

The remaining components of private consumption are grouped into a category, *other*, consisting of private consumption excluding education, health, and housing. Other consumption is connected to age rising from low levels for children and reaching higher levels for kupuna. Other consumption should not be viewed as unimportant as it includes important components of consumption, e.g., food, clothing, and transportation.

## Age reallocations

Lifecycle needs, as quantified by the lifecycle account, are funded by reallocations of resources from the surplus ages (working-age adults) to the deficit ages (children and seniors). These reallocations consist of transfers and asset-based reallocations, which are further divided into public and private reallocations. Figure 1.5 shows age reallocations grouped into four broad categories.

Figure 1.5. Per capita age reallocations, Hawai'i, 2022, thousands of dollars (K).



Both transfer inflows and transfer outflows are estimated for HNTA. Here we emphasize net transfers, the difference between inflows to residents and outflows from residents. Public transfer inflows consist of both in-kind transfers, such as public education and publicly funded health care provided through Medicare and Medicaid. Public cash transfer inflows are also important, especially benefits provided by Social Security. Public transfer outflows consist mostly of taxes paid to State and Local governments or to the Federal government and fall heavily on working-age adults (earnings taxes), all adults (income taxes, and property taxes), and consumers (GET).

Private transfers are dominated by family transfers, particularly transfers within households. HNTA provides estimates of the value of transfers within households between adults and children and between adults and seniors. Transfers involving children are primarily one way – from parents and grandparents to children. Transfers among prime-age adults and seniors are two-way with seniors providing more than they receive in some cases and less than they receive in other cases.

Net transfers dominate age reallocations to children. For preschool age children private transfers are a little greater than public transfers. Once children enter school, public transfers increase sharply. At older ages (children and young adults), transfers decline but they remain substantial. College education is expensive, although many do not attend college. Net private transfers exceed net public transfers among those in their late-teens and early twenties.

Public transfers are an important source of resources for seniors in Hawai'i, but at age 65 net public transfers are near zero. This may surprise people who know that seniors qualify for Medicare at age 65 and can elect to receive Social Security at age 62, although at a reduced benefit level. Net transfers are transfer inflows less transfer outflow, and younger seniors are paying taxes. Moreover, health care spending on younger seniors is relatively low. In addition, many seniors elect to defer Social Security. After age 65, net public transfers rise steadily, reaching \$18,000 per year per capita by age 75. For those 85 and older, net public transfers are \$23,000.

Net transfers to children and seniors are largely constrained by net transfers supplied by working-age adults. Public transfers provided (negative values) peaked at about \$21,000 at age 50, while private transfers peaked at age 46 at \$15,000.

In a closed economy, transfer inflows and transfer outflows are equal; net transfers sum to zero. But in Hawai'i, transfer inflows for all ages combined do not equal transfer outflows because of transfers to and from non-residents. The value of benefits provided to non-residents by State and local governments differ from the taxes collected from non-residents. Likewise, the benefits received by residents differ in value from the taxes paid by residents for Federal programs. Private transfer inflows do not equal private transfer outflows for residents because residents give and receive transfers to family members and others living outside the state.

Asset-based reallocations are an important way that people in Hawai'i fund old-age needs. People accumulate assets when they or their employer contribute to a pension fund, or build up equity in a home, or build a successful business, or save in some other way. They also accumulate assets through inheritance. These assets can be used to fund retirement needs in one of two ways: by relying on income generated by that asset (interest, dividends, or profits, for example), or by cashing those assets in. The net gain that arises from these assets is called private asset-based reallocations and is used to fund the lifecycle deficit.

Asset-based reallocations can be created by the public sector if it borrows more than needed to make interest payments on public debt.

The young can also rely on assets to fund a lifecycle deficit. This is also accomplished by accumulating debt in excess of interest payments. Student loans and credit card debt are two examples.

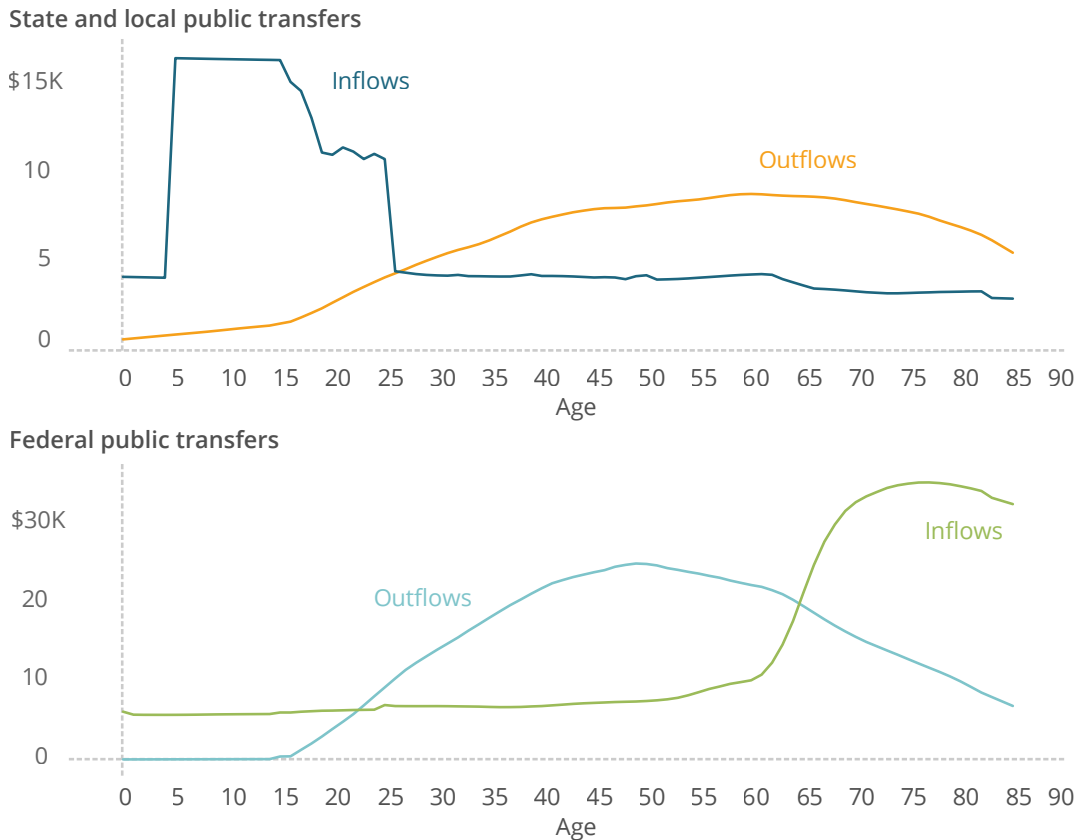
Private asset-based reallocations are even more important than public transfers as a way of funding old age, rising from \$16,000 per person at age 65 to \$27,000 for those in their late 70s. For the very old, private asset-based reallocations remain important, though dropping slightly to \$23,000 for those 85 and older. Public asset-based reallocations do generate resources for seniors because the Federal government has been running deficits. These inflows are much smaller than private reallocations, however, typically adding up to around \$2,000 to \$3,000 per year.

Young people do rely on asset-based reallocations to fund their lifecycle needs, but the inflows are relatively small, around \$2,000 to \$3,000 per year.

## A Comparison of Federal to State and Local Spending

The effects of aging or any other change in population age structure are very different for State and Local public transfers and Federal public transfers (Figure 1.6). State and local spending provides support for children through support for education. Federal programs provide support for seniors through the Social Security and Medicare programs. The age profiles of outflows (mostly taxes) for State and Local programs, depicted in Figure 1.6, are composed of taxes on consumption (GET taxes), property, and income. The Federal government mostly imposes taxes on earnings and income. Thus, the age profile of outflows for Hawai'i is broader than the age profile of outflows for the Federal government.

**Figure 1.6. Per capita Federal and State and Local public transfers by age, thousands of dollars (K), Hawai'i, 2022.**



This might be viewed as a good thing for Hawai'i because aging has a moderate effect on public finances with taxes falling more heavily, in percentage terms, on seniors. In contrast, tax revenues for the Federal government are more sensitive to aging. Aging will have a relatively small impact on public transfer inflows at the State and Local level and a very large impact at the Federal level. Thus, aging will have a small fiscal impact at the State and Local level and a large impact at the Federal level.

This does not tell the whole story, however. Programs that support seniors are becoming increasingly important to the people who live in Hawai'i, but the State and Local governments have limited influence on those programs. The Federal government may pursue policies in the future with consequential effects for Hawai'i's generational economy. The direction of those policies is largely unknown and may lead to outcomes that are undesirable to the people of Hawai'i. State and Local governments may have to take a more expansive role in meeting the needs of seniors.

A second issue is that funding, and to some extent, managing health care spending on seniors is a Federal responsibility, but State and local governments and private firms are primarily responsible for ensuring that health care services are adequate to meet needs. As aging proceeds, it could be increasingly difficult to maintain quality of health care.

## Conclusion

The purpose of this narrative is to provide a brief overview of new estimates of the 2022 HNTA, emphasizing the broad outlines of Hawai'i's generational economy and highlighting a few important findings that merit further exploration. Many more details are available in the full HNTA which include over 120 economic series.

## Part 2. Generational Change Over the Last Decade

Our first study of Hawai'i's generational economy assessed the economic and demographic situation based on the 2012 Hawai'i National Transfer Accounts (HNTA) (Mason and Abrigo 2020, DBEDT 2020). The study noted that Hawai'i faced unprecedented population aging, yet remained optimistic that standards of living could grow and generational equity could be maintained. The experience from 2012 to 2022 has been discouraging, however. Standards of living have improved more slowly than hoped, and generational equity has deteriorated. Children and seniors have lagged behind the working-age population. These shortfalls are especially concerning as Hawai'i faces another decade of rapid population aging.

### A Generational Perspective on Hawai'i

The generational economy is structured around three broad generations that play important and inter-dependent roles in our society. The early years emphasize learning, from rapid early childhood development to formal schooling to skill accumulation in early work life. The middle years focus on producing, whether through paid employment, self-employment, or non-market activities like childrearing, caring for seniors, and community service. The economic value of non-market activities has not been quantified for Hawai'i, but national estimates highlight their significance (Donehower, 2024). Seniors or kūpuna are acknowledged in Hawai'i for their contributions as grandparents, mentors, and respected elders.

While learners and kūpuna play crucial roles in society, they do not earn enough through their labor to pay for their current material needs. The shortfall in 2022 was large for four of six age groups distinguished in Table 2.1. The gap between consumption and labor income, the lifecycle deficit, was about \$30,000 per person for learners (0 to 13 and 14 to 24), and young kūpuna (65 to 74). For older kūpuna (75 and older) the per capita lifecycle deficit was almost \$50,000. In 2022, young producers generated a lifecycle surplus of more than \$20,000 while older producers generated a surplus of almost \$24,000.

Table 2.1. Selected per capita flows (\$) for six generations, Hawai'i, 2022.

Generation	Age group	Consumption	Labor income	Lifecycle deficit
Learners	0 -13	31,651	-	31,651
	14 -24	44,865	14,081	30,784
Producers	25 -44	43,920	64,360	(20,440)
	45 -64	48,395	72,344	(23,949)
Kūpuna	65 -74	59,932	30,471	29,462
	75+	58,270	8,813	49,457

Each generation, Learners, Producers and Kūpuna, fund their consumption by relying on *net* resources, comprised of labor income, transfers, and asset-based reallocations (Table 2.2). Within this broad classification, we further distinguish two age groups: 0-13 and 14-24 for Learners; 25-

44 and 45-54 for Producers; and 65-74 and 75 and older for kūpuna. Learners rely heavily on net transfers and lightly on labor income and asset-based reallocations to fund net resources.<sup>1</sup> Older learners, those 14 to 24, are beginning to earn labor income, supplementing net resources beyond the contribution of net transfers. Asset-based reallocations play a more limited role, but older learners do rely on student loans and consumer credit to fill out the net resources on which they rely.

Table 2.2. Per capita net resources and components (\$), 2022.

Age group	Net resources	Components of net resources		
		Labor income	Net transfers	Asset-based reallocations
0 -13	31,651	-	32,119	(468)
14 -24	44,865	14,081	30,187	597
25 -44	43,920	64,360	(17,962)	(2,479)
45 -64	48,395	72,344	(29,323)	5,374
65 -74	59,932	30,471	5,039	24,423
75 and older	58,270	8,813	21,796	27,661

Labor income is more than sufficient for producers to fund net resources. For both young and old producers, the surplus is used to provide transfers to other generations. Young producers also rely on labor income to generate negative asset-based reallocations, saving more than they earn on assets. Older producers have positive asset-based reallocations to fund their consumption relying on some but not all of their asset income. They do save some of their asset income.

Young kūpuna rely on labor income, asset-based reallocations, and to a lesser degree on net transfers. Older kūpuna rely heavily on net transfers and asset-based reallocations.

This brief overview sets the stage for analyzing how standards of living, measured by per capita consumption, changed for different generations between 2012 and 2022; and for documenting why some generations did better than others.

### Hawai'i's struggling economy: the lost decade<sup>2</sup>

Hawai'i's economy faced significant challenges during the last decade, failing to meet the optimism felt at the beginning of the decade. Demographic changes, such as declining fertility rates and increasing life expectancy, changed as expected. But growth of the producer population slowed more significantly than expected as Hawai'i lost more producers than it gained through migration. Population aging continued at a pace unprecedented in Hawai'i's history.

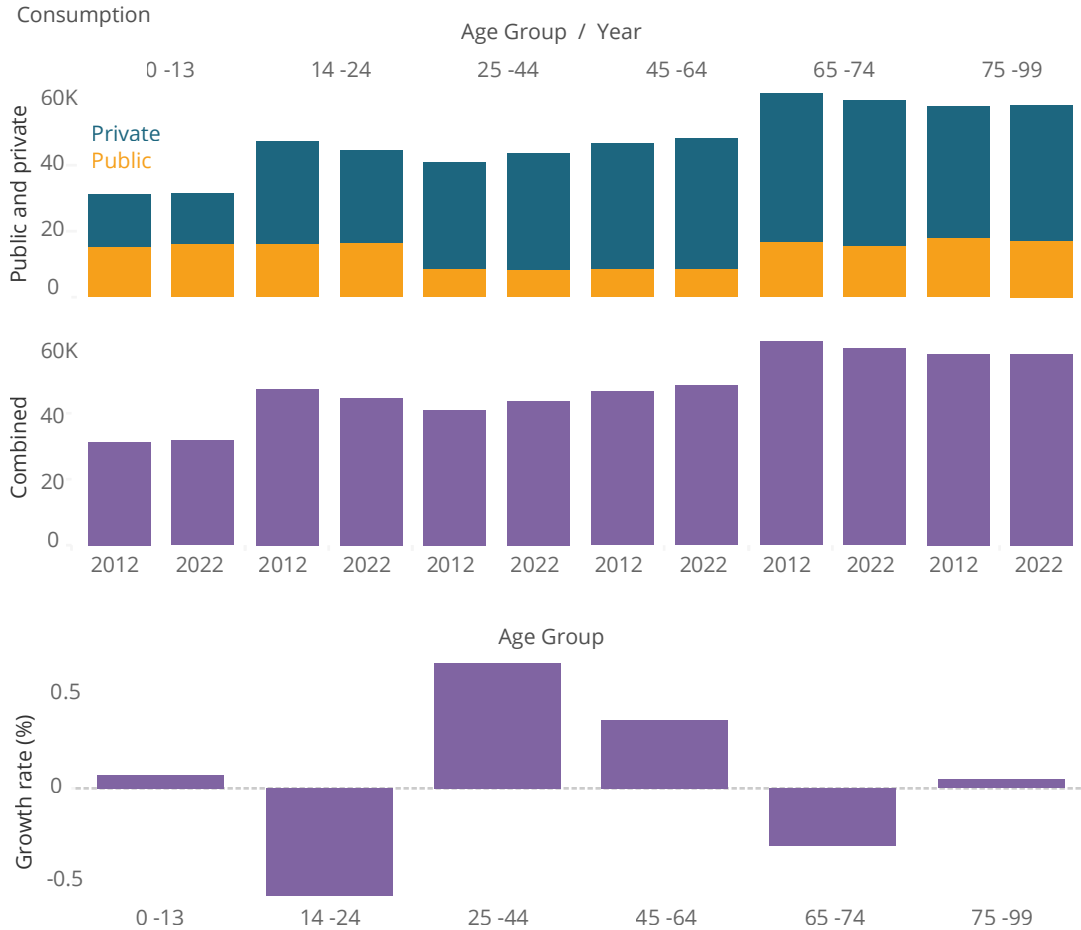
The economic outlook seemed promising until the COVID-19 pandemic struck in March 2020. Between 2012 and 2019, Hawai'i's real GDP grew at an annual rate of 2.1% (UHERO). GDP dropped sharply in 2020 and recovered slowly, only reaching pre-pandemic levels in 2022. For the entire decade, 2012-2022, real GDP grew slowly at 1.1 percent per year and per capita GDP grew at only 0.8% per year.

Other problems have affected many in Hawai'i. The Consumer Price Index increased by 3.8 percent in 2021, 6.5 percent in 2022, and 3.1 percent in 2023. Interest rates have reached high levels. The US 30-Year fixed mortgage rate was about 3 percent in 2020 and 2021, but increased sharply to 5.3% in 2022 and 6.8% in 2023. The COVID 19 pandemic had consequences that go beyond economic measures. Hawai'i experienced isolation due to quarantines, work-from-home mandates, school closures, travel restrictions, and mask mandates. The increased isolation has had profound implications for mental health, learning, and other aspects of well-being.

## Winners and Losers: Children and Kūpuna Left Behind

Learners, those under 25 years of age, did not fare well during the last decade. Private consumption declined by 0.65 percent per year for young learners, those 0 to 13 years old, and by 1.03 percent per year for older learners, those 14 to 24 years old (Figure 2.1). Both groups benefited from growth in public consumption, but public and private consumption combined was stagnant for young learners and declined sharply, by 0.58 percent per year, for older learners.

**Figure 2.1. Per capital real (2022 prices) private, public, and total consumption for six age groups in Hawai'i, 2012 and 2022. Annual growth rates between 2012 and 2022 in percent.**



Kūpuna have not done well either. Per capita consumption for the oldest kūpuna, 75 and older, was flat, growing at only 0.05 percent per year. The youngest kūpuna, 65 to 74, experienced a significant decline of 0.30 percent per year.

Only producers realized a noticeable increase in per capita consumption. The annual growth rate of consumption for older producers was almost 0.4% per year while for younger producers the increase was almost 0.7% per year.

The components of consumption also changed in important ways (Figure 2.2 and Table 2.3). Support for education suffered during the last decade. Private education spending on young learners declined by 10.22 percent and on older learners by 5.40 percent. Increases in public spending on education offset these declines to some extent. For young learners, combined spending on education grew slightly while older learners experienced a significant decline. The combined effects of lower spending and Covid 19 has had devastating implications for education in Hawai'i.

Both public and private spending on health increased for all age groups during the last decade, and the rates of increase were high. Part of this happened because prices of health care increased more rapidly than general prices and because of higher spending on health care due to the Covid 19 pandemic (UHERO data portal). Spending on health in Hawai'i was successful, resulting in

“high-quality, accessible, and equitable health care.” Hawai‘i ranked first among all states in the Commonwealth Fund’s 2022 Scorecard on State Health System Performance (Radley et al., 2022). Life expectancy for males and females also continues to rank first among all US states.

Spending on housing increased across the board. This includes both out-of-pocket spending for rent, utilities, and maintenance and the value of housing owned by owner-occupants. The value for owner-occupants is assessed as the cost of renting a similar home. Thus, the rise in consumption of housing reflects both increasing rent and increasing home prices. Consumption of housing is allocated among the members of each household using consumer weights that rise for children from 0.4 for young children to 1 for adults. Thus, per capita consumption of housing is “automatically” lower for children than for adults. Other things equal, however, the growth rates of per capita consumption of housing would be the same for all age groups.

Spending on housing increased most rapidly for producers, 1.2% per year for younger producers and 1.4% per year for older producers, after controlling for the effects of general price increases. For others, spending on housing also increased, but by less than 1% per year. The lowest increase was for young learners, for whom housing consumption grew by 0.43% per year.

The final component of consumption considered is “Other” which includes many important types of consumption, such as food, clothing, and transportation. Per capita other public consumption is assumed to be identical for all age groups because most “other public consumption” consists of collective goods, like defense, public safety, or governance, that cannot be assigned to individuals. Other private consumption varied considerably across generations. Learners experienced very large declines during the last decade -- 2.2 percent and 1.9 percent respectively for younger and older learners. Older producers and younger kūpuna also experienced annual declines of more than 1 percent per year. Other private consumption also declined for young producers and older kūpuna, but the declines were smaller for them (Table 2.3).

**Figure 2.2. Real (2022 prices) per capita consumption of education, health, private housing, and other goods and services, 2012 and 2022.**





In summary, the trends in overall consumption and the changes in generational patterns of consumption are troubling. Spending on health and housing increased, but otherwise consumption declined for most generations. Economic gains have been elusive, particularly for children with the decline in private spending on education notable. Older kūpuna experienced stagnant standards of living and younger kūpuna experienced decline. The one bright spot that affected all generations is higher spending on health care. Producers appear to have gained more than others during the last decade, but even for them the value of their higher consumption is unclear. The gains were modest and the higher spending on housing may not have been beneficial. Even producers did not experience growth in other private consumption of food, clothing, transportation, etc.

**Table 2.3. Public and private consumption, total, education, health, housing, and other, broad age groups, 2012 and 2022.**

Age group	Public and private combined	Private Consumption					Public consumption			
		Total	Education	Health	Housing	Other	Total	Education	Health	Other
Per capita consumption, 2022, in dollars.										
All ages	46,473	33,974	839	7,950	10,748	14,436	12,499	2,497	5,181	4,821
0 -13	31,651	15,147	374	4,084	4,682	6,006	16,504	8,277	3,407	4,821
14 -24	44,865	28,204	3,943	4,970	8,627	10,665	16,661	8,519	3,321	4,821
25 -44	43,920	35,436	881	7,390	11,386	15,779	8,483	342	3,321	4,821
45 -64	48,395	39,646	119	10,751	12,237	16,540	8,749	26	3,902	4,821
65 -74	59,932	44,055	3	10,583	13,527	19,942	15,877	-	11,057	4,821
75+	58,270	41,381	3	9,302	14,628	17,448	16,888	-	12,068	4,821
Per capita consumption, 2012, in dollars, in 2022 prices.										
All ages	44,701	32,476	1,442	6,102	9,411	15,521	12,225	2,308	3,743	6,174
0 -13	31,429	16,166	1,100	3,049	4,492	7,525	15,263	6,561	2,528	6,174
14 -24	47,530	31,296	6,866	3,658	7,836	12,935	16,234	7,508	2,552	6,174
25 -44	41,079	32,429	788	5,188	10,140	16,312	8,651	356	2,121	6,174
45 -64	46,665	37,932	156	8,607	10,672	18,496	8,733	9	2,550	6,174
65 -74	61,766	44,955	56	9,461	12,411	23,027	16,811	-	10,637	6,174
75+	58,005	39,959	32	8,777	13,645	17,505	18,045	-	11,872	6,174
Annual growth rate in real per capita consumption, 2012-2022, percent.										
All ages	0.39	0.45	-5.27	2.68	1.34	-0.72	0.22	0.79	3.30	-2.44
0 -13	0.07	-0.65	-10.22	2.96	0.42	-2.23	0.79	2.35	3.03	-2.44
14 -24	-0.58	-1.03	-5.40	3.11	0.97	-1.91	0.26	1.27	2.67	-2.44
25 -44	0.67	0.89	1.12	3.60	1.17	-0.33	-0.19	-0.42	4.59	-2.44
45 -64	0.36	0.44	-2.69	2.25	1.38	-1.11	0.02	10.69	4.35	-2.44
65 -74	-0.30	-0.20	-24.34	1.13	0.86	-1.43	-0.57		0.39	-2.44
75+	0.05	0.35	-20.99	0.58	0.70	-0.03	-0.66		0.16	-2.44

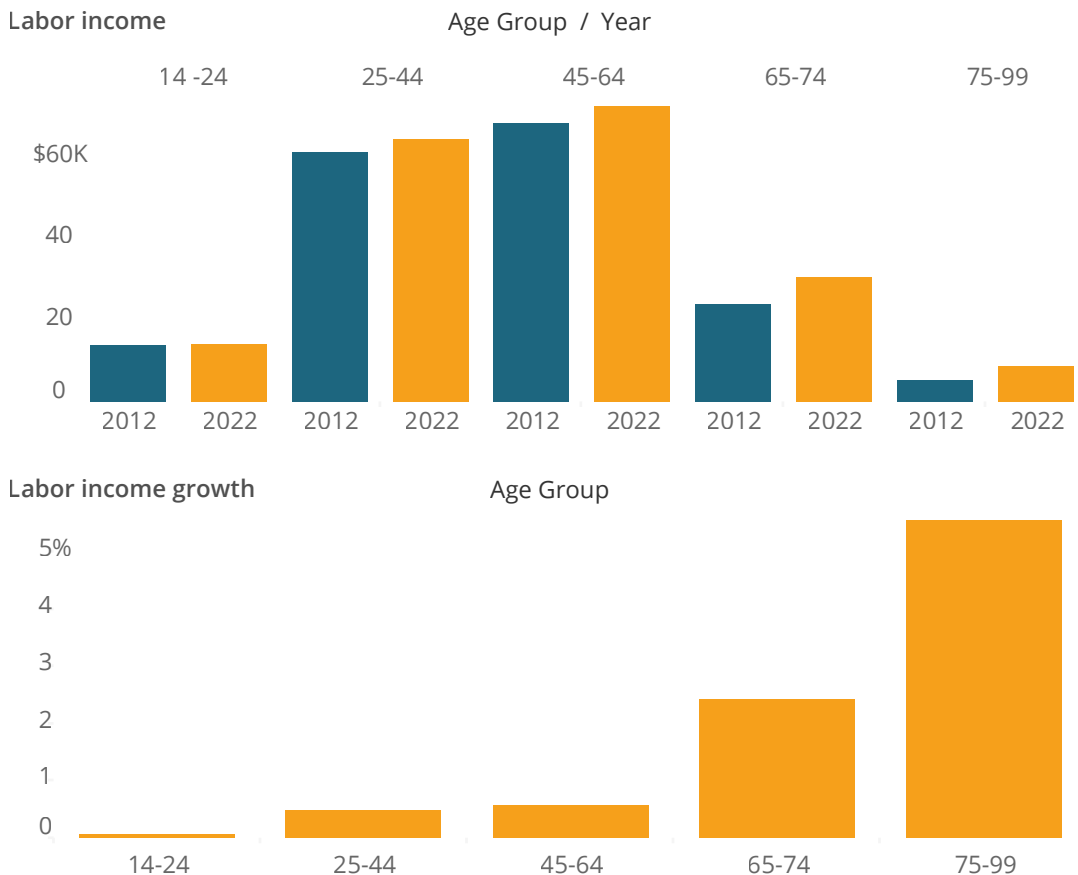
### Resources lag across generations

Every economy, including Hawai'i's, is governed by a generational balance sheet. Consumption and net resources must, by definition, balance. If net resources decline for any generation, their consumption must also decline by an equal amount. Over the last decade net resources, and hence consumption, declined for some generations and grew slowly for others. Why did this happen? Labor income changed and reallocations, consisting of transfers and asset-based reallocations, changed. We consider each of these in turn to assess why net resources increased slowly for producers and declined or stagnated for learners and kūpuna.

## Labor income growth, modest at best

Young learners have no per capita income. Older learners had some in 2012 and not much more in 2022. Labor income did increase for producers – by 0.49% per year for young producers and by 0.56% per year for older producers. Kūpuna achieved high annual growth in labor income – 2.4% for younger kūpuna and 5.5% older kūpuna. The increase in labor income was about \$3700 for older kūpuna as compared with \$3900 for older producers and \$3100 for younger producers. Younger kūpuna achieved an increase of \$6500, more than for any other generation (Figure 2.3).

Figure 2.3. Real (2022 prices) labor income for five age groups in 2012 and 2022; annual growth for 2012 to 2022.



## Transfers and asset-based reallocations were insufficient for children and kūpuna

Learners depend almost exclusively on public and private transfers for net resources. Public transfers increased for them during the last decade, but private transfers declined for young learners and were stagnant for older learners. Changes in asset-based reallocations did not have an important impact on net resources for learners (Figure 2.4).

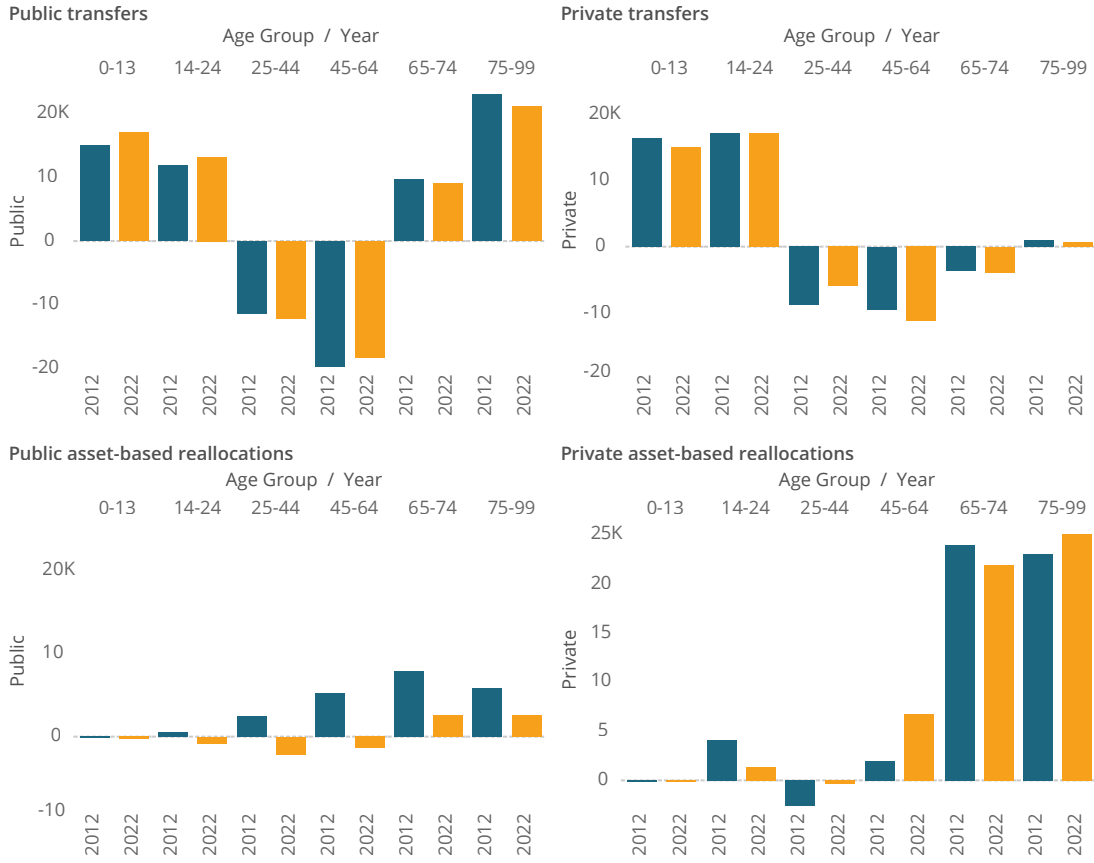
Kūpuna depend heavily on public transfers and on private asset-based reallocations. Public transfers, e.g. Social Security and Medicare, generate resources for kūpuna by taxing workers and providing benefits to seniors. Private asset-based reallocations consist of private asset income in excess of private saving. Young kūpuna experienced a decline for both per capita public transfers and private asset-based reallocations between 2012 and 2022. Older kūpuna experienced a decline in public transfers but an increase in private asset-based reallocations.

Net private transfers to kūpuna are relatively modest and have not changed noticeably during the last decade. Young kūpuna gave more than they received and older kūpuna received more than they gave, but the differences between transfers given and transfers received were small and they changed very little.

Public asset-based reallocations arise because governments borrow to support many programs, but must pay interest on their accumulated debts. Because governments borrowed less in 2022

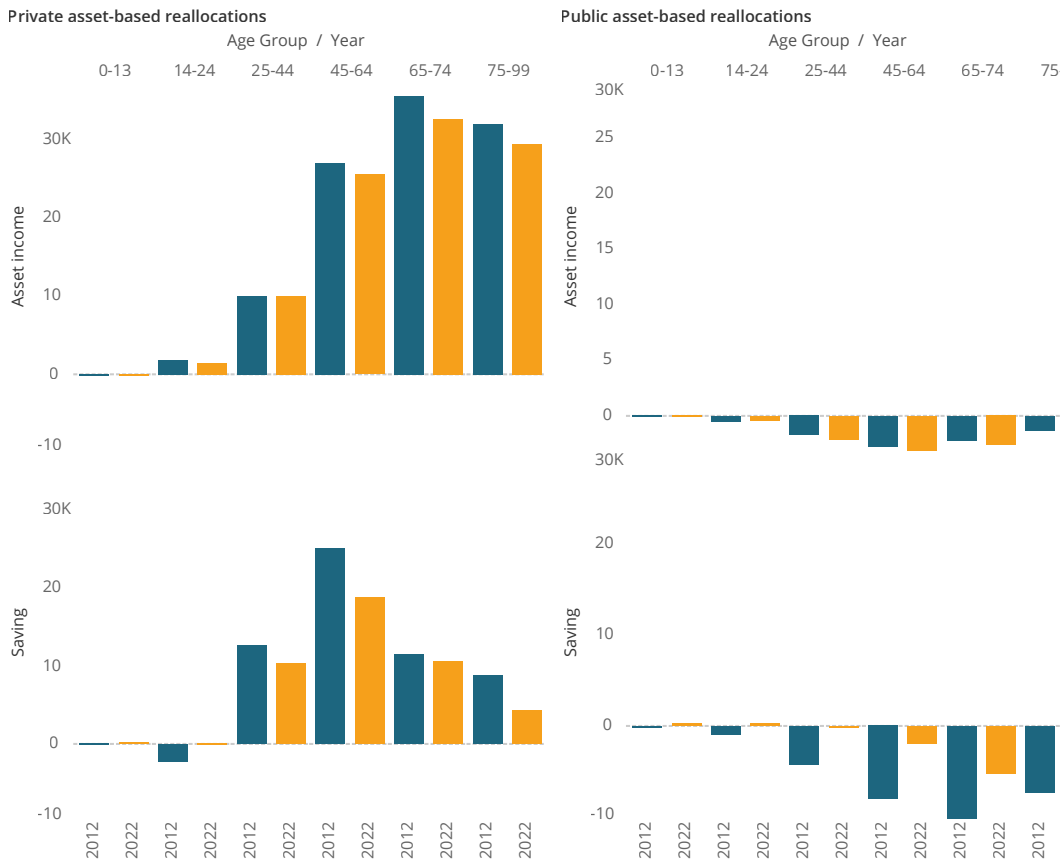
than they did in 2012, public asset-based reallocations contributed less to net resources for all age groups in 2022.

**Figure 2.4. Real (2022 prices) per capita reallocations in 2012 and 2022, for six age groups.**



Because private asset-based reallocations are so important to kūpuna, we document how its two components, asset income and saving, changed between 2012 and 2022 (Figure 2.5). For both younger and older kūpuna, asset income decreased substantially due to the pandemic. Younger kūpuna could have maintained the contribution of private assets to net resources by saving less. They did reduce their saving to some extent, but not by enough to offset the decline in their asset-income. In contrast, older kūpuna reduced their saving by more than enough to offset declines in their asset income. By saving less, they generated more net resources from private asset-based reallocations in 2022 than in 2012 (Figure 2.5).

**Figure 2.5. Real (2022 prices) per capita asset income and saving in 2012 and 2022, for six age groups.**



Increased reliance on asset-based reallocations helps fund current needs, but it hurts Hawai'i's ability to meet future needs. Growth in private assets depends on solid growth in asset income and high rates of saving. Unfortunately, because private saving rates and private asset income both declined during the last decade, an opportunity to strengthen preparation for aging has been missed.

## Conclusions

During the last decade, Hawai'i's economy has faced strong headwinds due to the Covid 19 pandemic and rapid population aging. For the young and the old, real per capita consumption was stagnant or declined. Working age adults did manage moderate growth, but their gains were eaten up by higher spending on health care and housing. Higher health care spending yielded real benefits but higher spending on housing did not. Health care and housing aside, goods and services declined across all generations. In short, Hawai'i lost ground.

Our failure to prepare for the future is also concerning. Spending on education declined significantly for many young people, jeopardizing future prospects for them. Moreover, declines in private saving have undermined efforts to accumulate assets essential to funding investment and meeting future retirement needs. Important opportunities have been missed and should serve as a wakeup call to those charged with preparing for the future.

## Part 3. The Future

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Population projections provide a useful if uncertain window into the future. The most recently available projections anticipate that the State's total population will grow slowly. The older population will grow more rapidly than the number of children and the number in the working ages (DBEDT 2024). Rapid aging will continue for the next few years until about 1 in 4 residents are 65 or older in 2030 and into the foreseeable future.

Aging within aging is an important feature of Hawai'i's demographic change. With the aging of the baby boomers, the senior population will become increasingly concentrated in the 75 and older age group. This is an important development because older kūpuna, those 75 and older, differ in many ways from younger kūpuna, those 65 to 74.

Migration, an important driver of population change in Hawai'i, is uncertain. The DBEDT population projections, on which we rely, assume that net international migration will remain at the pre-COVID19 level of about 6000 persons per year. Net domestic migration is assumed to be negative, varying between -1,500 and -2,000 per year (DBEDT 2024). The results we present will assess the impact on the generational economy of net international migration of 5000 per year rather than the default assumption of 6000.

The projections of HNTA assess the implications of demographic change by holding the per capita age profiles of HNTA variables constant. This is useful for quantifying the ways that different generations will gain or lose from population change and by drawing attention to the strains on the connections across generations. The per capita age profiles will undoubtedly change in the future in response to aging, economic factors, and decisions by policymakers. It is possible to speculate about these changes, but empirical analysis of the changes in HNTA based on two years of data is not possible.

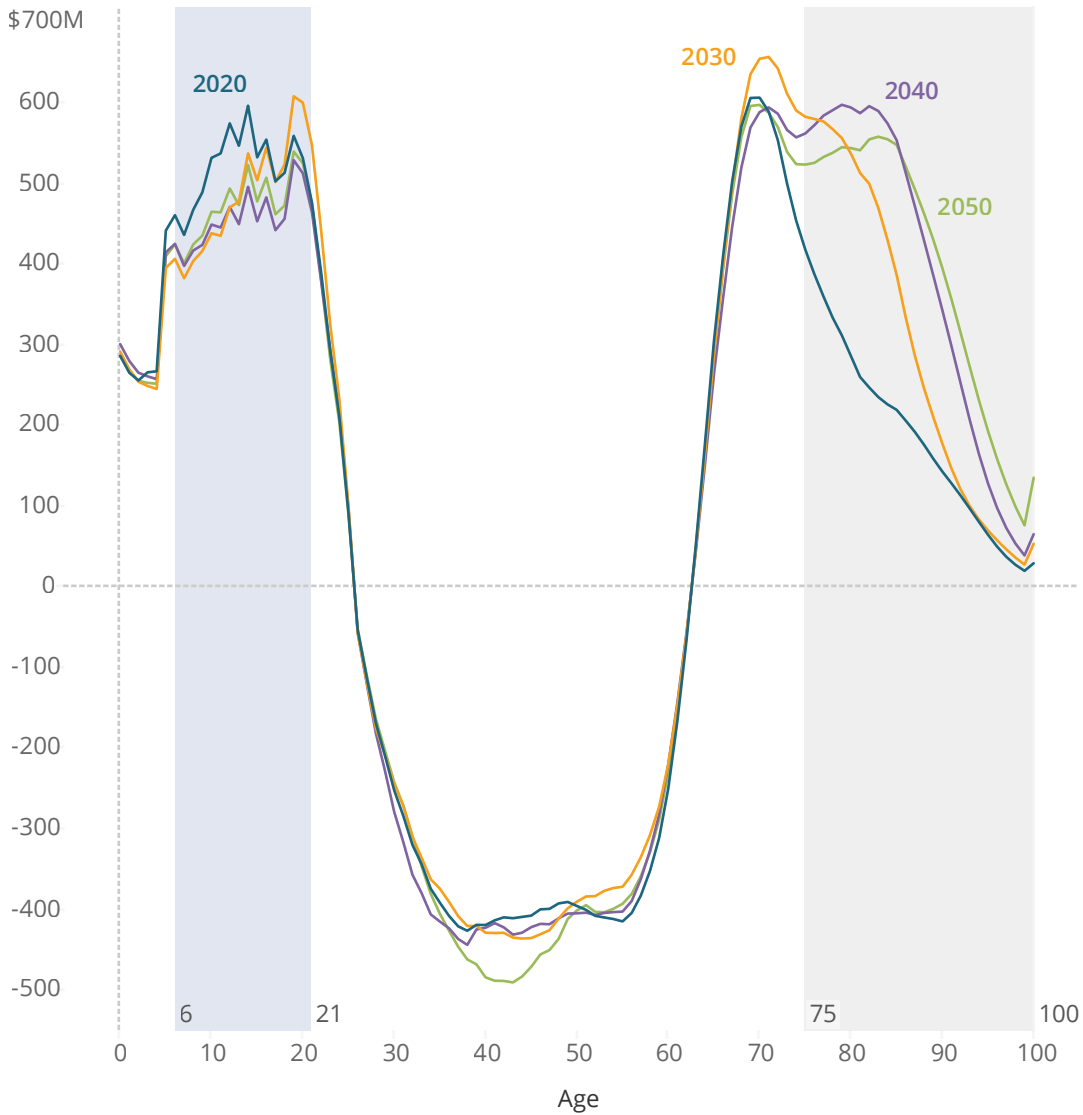
### **Hawai'i's future: Slow decline, stability, and old-age surges**

Hawai'i's population is projected to grow slowly over the coming decades except for school-age children from whom a modest decline is projected. The working-age population will be relatively stable, while the population at the oldest ages will surge. Demographic changes from 2020 to 2050 are viewed through an economic lens using the aggregate lifecycle deficit or surplus at each age. The lifecycle deficits at school-ages, between 6 and 21, are expected to decline due to the emergence of lower rates of childbearing in Hawai'i. Fertility is difficult to predict and if fertility rates decline further, the drop in the school-age deficits will be greater (Figure 3.1).

The lifecycle deficits or surpluses for those from their early twenties to those in their late sixties and early seventies are projected to be quite stable. Changes in immigration could have a modest effect, producing changes in the surplus at working ages. But in the absence of substantial changes in immigration, the projected lifecycle deficits and surpluses are expected to be stable at most ages.

The deficits for older kūpuna, however, are expected to surge over the coming decades. The deficit as a percentage of labor income is projected to double between 2020 and 2050, from 11 percent to 23 percent of total labor income. The underlying demographic changes for those 75 and older are relatively certain because baby boomers, who already live in Hawai'i and are unlikely to leave, are driving this change. The oldest baby boomers, born in 1946, turned 75 in 2021 while the youngest, born in 1964, will turn 75 in 2039.

Figure 3.1. Projected aggregate lifecycle deficits in real (2022 prices) millions of dollars by age for 2020, 2030, 2040, and 2050.



Notes. The projected changes are due entirely to changes in population by age. No impact in productivity is incorporated into the projections. A negative lifecycle deficit is equivalent to a lifecycle surplus.

## Children

The projected decline in the school-age deficit occurs due to a decline in the number of children. One way to view the decline of aggregate child deficit is as a cost-saving realized because people are having fewer children. The decline in the aggregate child deficit could be used to support other generations, to opt for more leisure time, to increase saving, or to increase spending per child. But the decline of total spending on children also represented a decline in total investment in children, a decline in investment in the next generation (Table 3.1).

Table 3.1. Projected consumption for persons 0 to 24, millions of dollars (2022 prices).

Year	Consumption	Private Consumption				Public Consumption			
		Total	Education	Health	Other	Total	Education	Health	Other
2020	12,990	7,661	1,224	1,104	5,334	5,329	2,426	847	2,055
2025	12,926	7,696	1,267	1,097	5,333	5,230	2,368	837	2,024
2030	12,726	7,637	1,282	1,079	5,275	5,089	2,283	819	1,988
2040	11,956	7,107	1,148	1,024	4,935	4,849	2,167	782	1,901
2050	12,099	7,178	1,163	1,032	4,983	4,921	2,216	789	1,916

Spending on children is very important in Hawai'i. A large portion of that is "human capital" spending. The projected spending on education declines slowly from \$1,267 million in 2025 to \$1,148 million in 2040, followed by a slight increase between 2040 and 2050. Health spending is also an important component of human capital spending for children. A similar decline is projected, dropping from \$1,097 in 2025 to \$1,024 million by 2040.

If per capita spending on education recovers to pre-Covid 19 levels, aggregate spending on education would be higher in 2025 and subsequent years.

An important policy issue for Hawai'i is our response in human capital spending to lower fertility. Research on this issue has found that countries with low fertility have responded by raising per capita spending on health and education. The response in spending has been sufficient to maintain total human capital investment despite declines in the number of children. This response has helped to maintain productivity growth and the tax base. Many countries are having fewer children, but they are investing more in the children they have. (Lee and Mason 2010; Mason, Lee, and Jiang 2016).

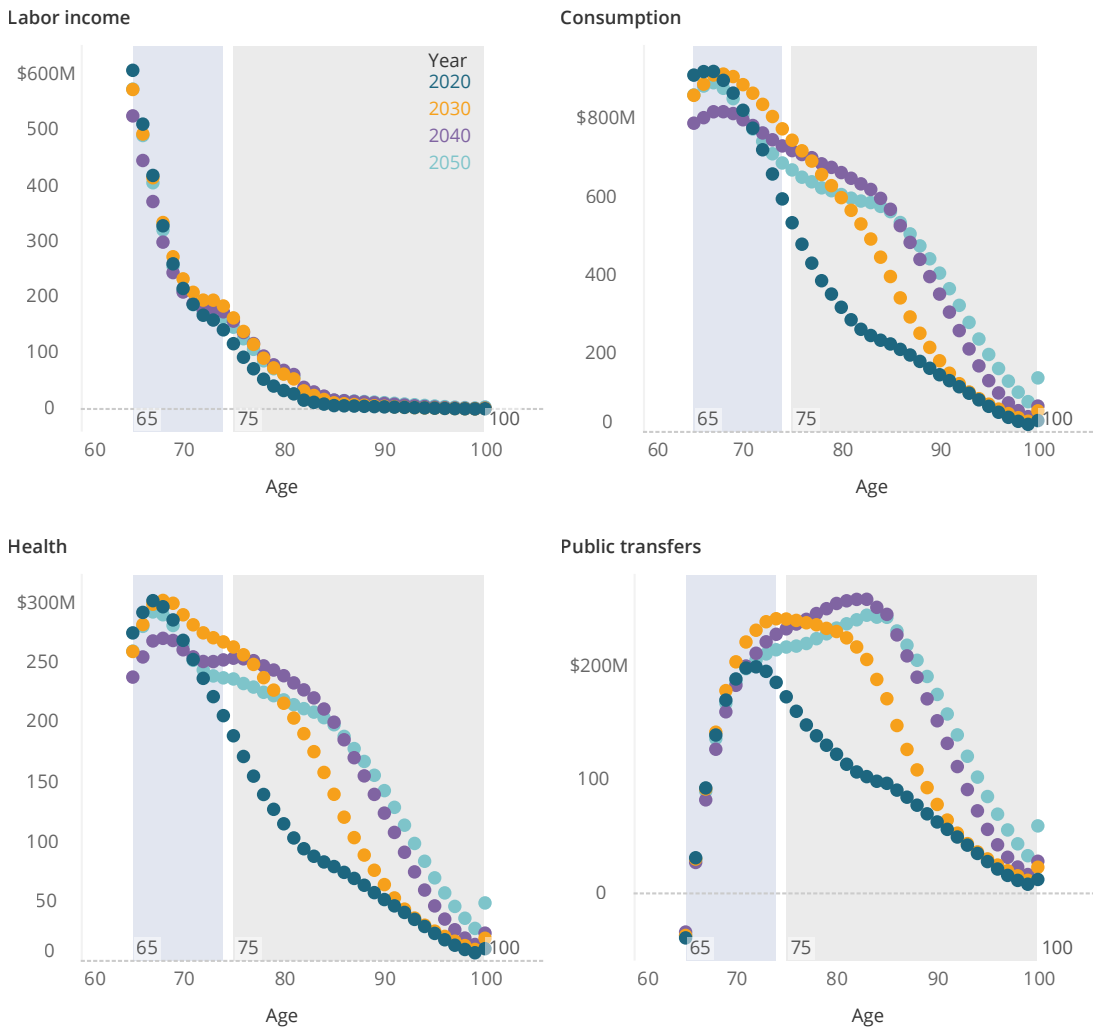
## **Kūpuna**

The greatest change in age structure over the next few decades will be a surge in the number of older kūpuna, those 75 and older, producing a substantial change in the net resources needed to meet their material needs. The lifecycle deficit of older kūpuna is projected to rise from 11% of total labor income in 2010 to 23% by 2050. Most of the increase in the deficit will occur by 2035 when the deficit will exceed 20% of total labor income. There is no doubt that the shock to the generational economy will be substantial and immediate.

In the last 20 years, rapid aging has been concentrated in the generation of younger kūpuna. In many ways, however, younger kūpuna are a transition group, partly retired but partly producing. Their labor income is still substantial, if lower than when they were younger. Also, they are providing more support to younger generations than they are receiving. They are also paying taxes, partially offsetting increased reliance on Medicare and Social Security.

In many ways, the lives of older kūpuna are very different from those of younger kūpuna. As compared with younger kūpuna, labor income is lower, consumption is higher, health spending is higher, and public transfers are higher for older kūpuna. These differences will influence the aggregate impact of rapid aging during the coming decades (Figure 3.2). Aggregate labor income will change very little because few older kūpuna are working. The increase in consumption will be very substantial because per capita consumption is high for older kūpuna. Projected spending on health will increase significantly because the older kūpuna population is growing and older kūpuna spend a great deal on health. And projected public transfers will grow substantially because older kūpuna rely heavily on Social Security and Medicare. These are just four changes that are highlighted here, but there are others that are important.

Figure 3.2. Projected values of labor income, consumption, health consumption, and public transfers (real millions of dollars, 2022 prices) for those 65 and older in 2020, 2030, 2040, and 2050.



Aging in Hawai'i will create two kinds of problems. The first is a financial problem. If labor income is not growing, how can Hawai'i generate the resources needed to fund increased spending on consumption, health care, and other important needs? This is a problem for the public sector but also a problem for kūpuna and their families who may be heavily burdened by the costs of aging. The second problem is a supply problem. How can Hawai'i recruit the workers and create the infrastructure to provide for a much larger older kūpuna population? The coming changes will have enormous effects on health, housing, transportation, and many other sectors in Hawai'i. The difficulties we will face will be all the greater as we compete with the needs of aging populations in other states and in countries in Asia with which we have close connections. Greater needs but fewer workers through our domestic and global networks will be the rule.

### Fiscal problems

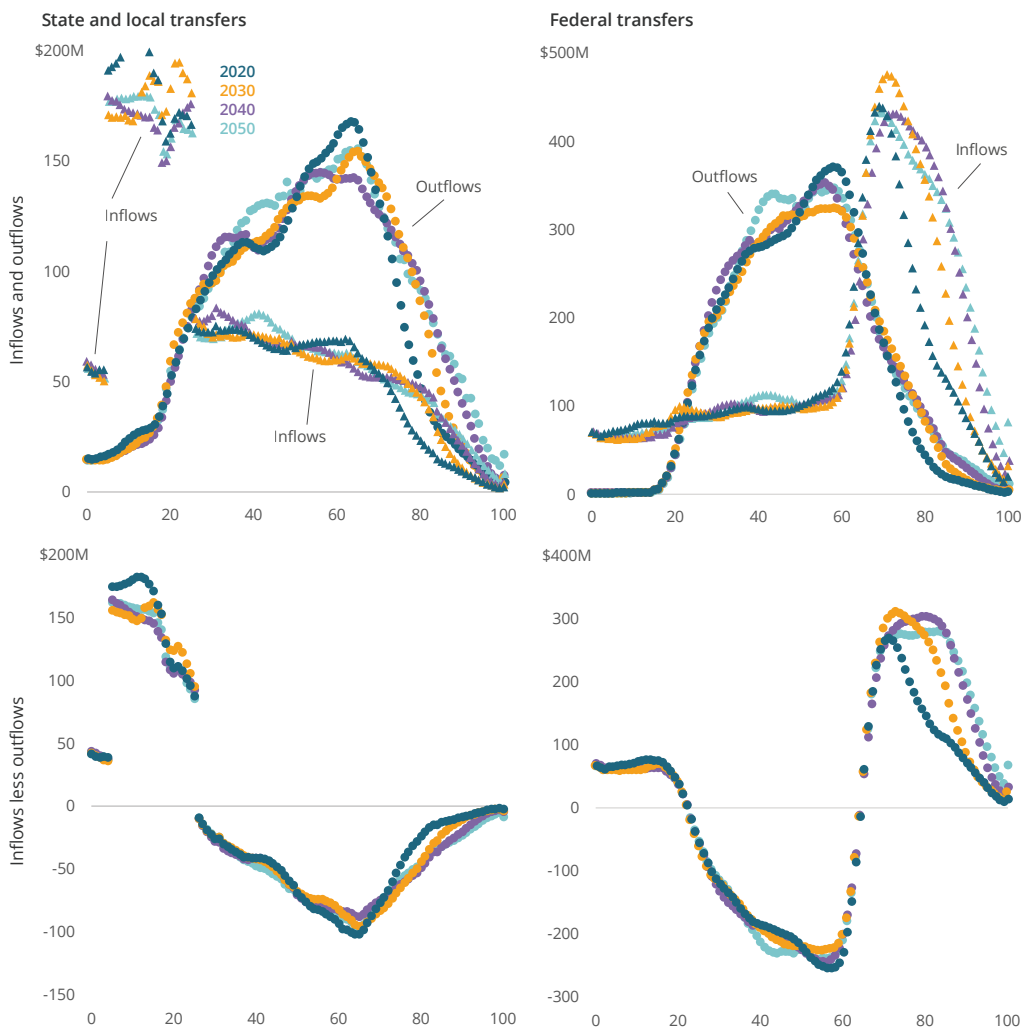
Aging is leading to serious and unresolved fiscal problems. Aging will lead to a substantial increase in the need for public transfers but without a corresponding increase in the means for funding those needs. For the most part, total transfer inflows must be equal to total transfer outflows, although public transfers inflows can exceed public transfers outflows to a limited extent. This can occur if taxes on non-residents (tourists) exceed the benefits provided to them. Or if Hawai'i residents receive more in benefits than they pay in taxes to the Federal government. Realistically, Hawai'i will not be able to count on substantial increases in net transfers from people who do not live here.



The impact of aging on State and Local transfers is very different from the impact on Federal transfers. State and Local programs spend heavily on children while taxes fall heavily on adults including seniors. Projected population change leads to a decline in aggregate inflows as total spending on children declines and taxes paid by kūpuna increases (Figure 3.3)

The US population as a whole will age in the same way that Hawai'i is aging with a severe impact on Federal programs. Federal taxes emphasize labor income and personal income and not property and, hence, Federal public transfer outflows are relatively less sensitive to growth in the older population than is true of State outflows. Federal benefits, public transfer inflows, emphasize programs that benefit seniors, particularly Social Security, Medicare, and Medicaid. Thus, transfer outflows, taxes paid by residents, are projected to increase much more than public transfer inflows, benefits received by residents. The federal system of taxes and benefits is unsustainable. Taxes must be increased or benefits must be reduced or some combination of the two.

**Figure 3.3. Public transfer inflows and outflows (real millions of dollars, 2022 prices), State and Local versus Federal programs, by age in 2020, 2030, 2040, and 2050.**



The existence of these problems is widely known and frequently reported in analyses by the Congressional Budget Office and Reports by the Trustees responsible for Social Security and Medicare. Fiscal effects are usually evaluated on a program-by-program basis, while the values reported here for Hawai'i are reported on an economy-wide basis. The changes in transfer inflows or benefits, outflows or taxes, and net transfers quantify the divergence between obligations and revenues in support of public programs.<sup>3</sup>

These and other values in Table 3.2 assume that per capita age profiles of transfer inflows (benefits) and outflows (taxes) do not change. Only the number of people in each age group changes. For State and Local government, the projected values of transfer inflows, essentially State and Local benefits, change very little between 2020 and 2040 with an uptick of almost \$100 million after 2040. Transfer outflows (taxes) are projected to increase sharply – by \$365 million between 2020 and 2030, by an additional \$245 million between 2030 and 2040, and by an additional \$135 million between 2040 and 2050.

The fiscal balance of the State and Local government is projected to change in a very favorable way. A decline in net transfers of \$347 million for net residents would produce a \$347 million increase in the State’s budget surplus while the following decade would produce an increase of \$255 million per year. Aging will produce a large surplus that can be used to fund urgent needs or to reduce taxes.

The situation at the Federal level is entirely different. Projected net transfers to Hawai’i residents, the gap between projected inflows and outflows, are projected to increase by \$1.8 billion between 2020 and 2030 and an additional \$622 million between 2030 and 2040. Note that these are changes in annual values.

For the Federal government to maintain its current fiscal position vis-à-vis Hawai’i in 2030, for example, taxes would need to be increased by \$1.8 billion per year, or benefits would need to be reduced by \$1.8 billion or by some combination of the two.

The remaining panels in Table 3.2 show the changes in inflows and outflows for younger and older kūpuna. The key implication is that increases in the number of older kūpuna is a major source of strain for Federal benefits. To maintain net resources for senior kūpuna, net Federal transfers would need to increase by \$1.5 billion in 2030 as compared with 2020. An increase of \$1.1 billion would be needed in 2040 as compared with 2030.

**Table 3.2. Changes in public transfer inflows (benefits) and outflows (taxes), millions of dollars (2022 prices), State and Local and Federal, 2020 to 2050.**

Period	Age group	State and Local			Federal		
		Net transfers	Transfer Inflows	Transfer Outflows	Net transfers	Transfer Inflows	Transfer Outflows
2020-30	All	(347)	18	365	1,812	1,997	184
2030-40	All	(255)	(9)	245	622	965	343
2040-50	All	(37)	98	135	52	316	264
2020-30	65-74	(50)	38	88	230	333	102
2030-40	65-74	76	(52)	(128)	(213)	(392)	(178)
2040-50	65-74	(25)	14	39	19	84	65
2020-30	75+	(223)	217	440	1,470	1,878	408
2030-40	75+	(134)	141	275	1,122	1,331	209
2040-50	75+	(5)	10	15	151	142	(8)

## Immigration

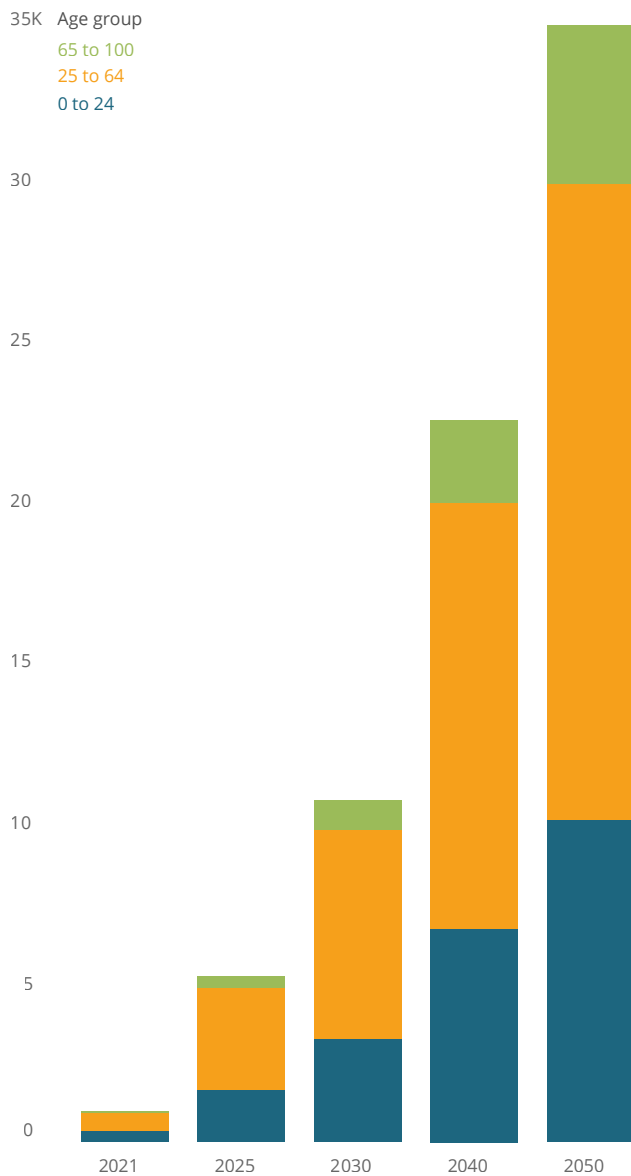
Recently the direction of immigration flows reversed. Traditionally, net immigration has been positive in Hawai’i, leading to an increase in population. In recent years, however, net immigration turned negative. If this outflow persists, the population will decline, with implications for economic growth and public finances. Alternatively, immigration could return to its long-run trend of about 6000 net international migrants per year, offsetting a much smaller outflow of migrants from Hawai’i to the mainland. Population projections, prepared by DBEDT and used here, assume that net migration will return to its long-run trend. This may not happen, however, and it is difficult to assess how immigration might change in the future. International migration is a very politically charged issue and new policies may curtail the number of immigrants the

US accepts. Moreover, Hawai'i must compete for immigrants with other states and countries. Recruiting teachers, health care workers, and workers in the hospitality industry will be difficult given the high cost of living in Hawai'i.

In the analysis presented here we assess the economic impact of immigration by comparing the main DBEDT scenario of 6000 migrants per year to an alternative scenario that assumes 1000 fewer immigrants per year starting in 2021.

The additional 1000 migrants per year resulted in a larger population. The population initially increases by 1000 every year so that after five years the population would be greater by 5000 except for the effects of two factors. First, some immigrants die each year. However, most immigrants are young and relatively few die. Second, immigrants bear children after coming to Hawai'i. Additional births add to the population, initially the number of children, and eventually the number of adults. The projected impact of additional immigrants on Hawai'i's population in three broad age groups is shown in Figure 3.4.

**Figure 3.4. Cumulative impact of 1000 immigrants per year on Hawai'i's population from 2021 to 2050.**

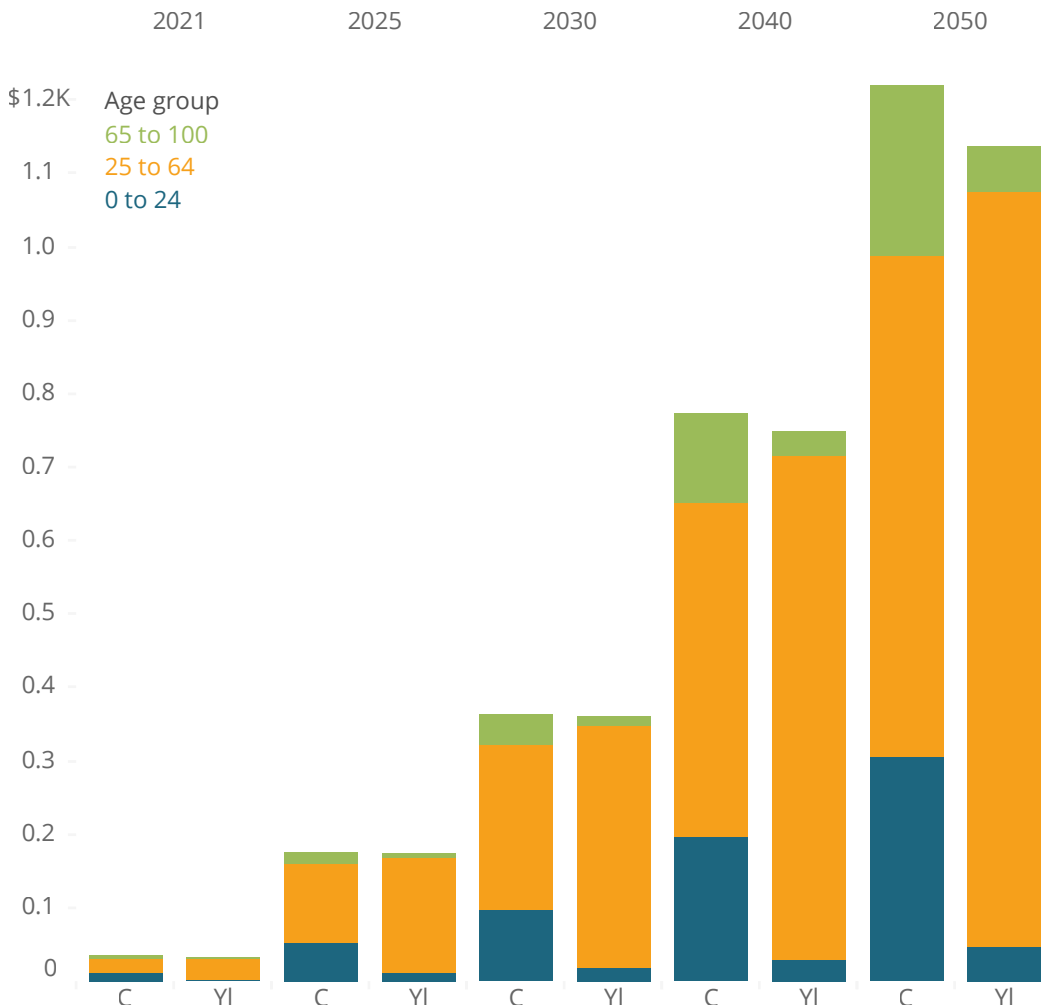


The total population increases by about 5000 by 2025, 10,000 by 2030, and almost 35,000 by 2050. Immigrants tend to be concentrated in the working ages, but many immigrants arrive with their families. About 60 percent of those arriving each year are in the 25-64 age group, 34

percent in the 0-24 age group, and 6 percent 65 and older. Like everyone, immigrants get older and over time begin to look more like the rest of Hawai'i's population. In 2040, about 15 percent of the stock of additional immigrants will be 65 and older. The economic impact of additional immigration will depend on many factors: whether the immigrants are skilled, how quickly they find jobs and acquire abilities useful to success, and how successful they are at establishing and building new businesses. These and many other factors may be very important but in this study the impact of the age structure of immigrants is addressed. HNTA data is used to assess the impact of immigrants, setting aside these other important factors.

Projected labor income is higher by about \$350 million per year because of the additional 1000 immigrants per year by 2030. The consumption of the additional immigrants is very similar to their labor income. For 2021, their consumption was only 3% greater than their labor income. For Hawai'i's economy including migrants and non-migrants, consumption was about 20% higher than labor income. The source of this difference is that a smaller share of the immigrant population consists of kūpuna. Hence, labor income is almost sufficient to fund consumption. Immigrants need not rely on reallocations to the extent that non-immigrants do because many immigrants arrive in our country with limited assets and limited access to Social Security or Medicare. Over time, immigrants can accumulate wealth and qualify for important public programs. Over time the immigrant population ages and the lifecycle deficit rises (Figure 3.5), but they should also have more access to reallocations.

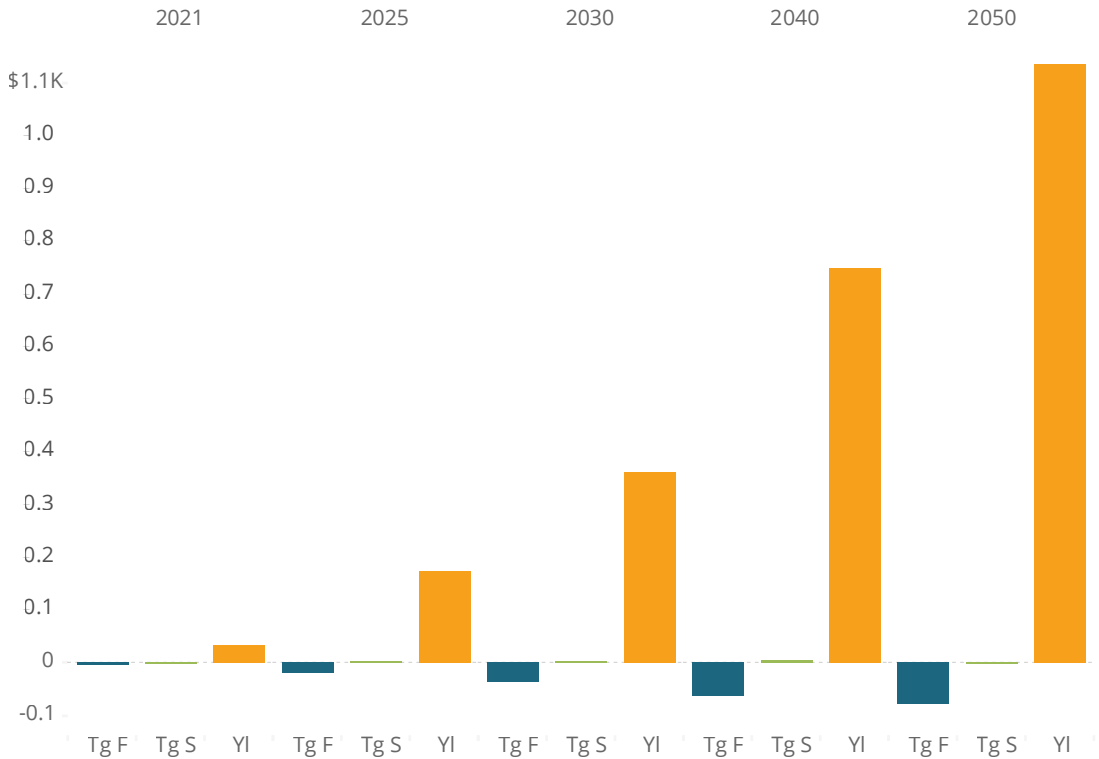
**Figure 3.5. Cumulative impact of an additional 1000 immigrants per year on consumption and labor income for three broad age groups in millions of dollars (real, 2022 prices), projected to 2021, 2025, 2030, 2040, and 2050.**



*Note. The 2021 value is projected from the 2020 starting year to show the initial impact of having 6000 rather than 5000 immigrants. C is consumption and YI is labor income.*

A final issue to be addressed here is the impact of immigration on public finances. The impact is quite different for the State and Local government as compared with the Federal government. After arriving, immigrants immediately rely on public services for children, namely public education, funded by the State and Local government. Total State and Local public transfer inflows are greater than public transfer outflows for immigrants, but not by much. The net transfers are compared with the additional labor income in Figure 3.6 and can be seen to be negligible. Immigration tends to favor public finances at the Federal level because they are more heavily concentrated at the working ages than at older ages. This is certainly the case for Hawai'i. Immigrants are paying more in taxes than they are receiving in benefits at the Federal level.

**Figure 3.6. Cumulative impact of 1000 extra immigrants per year on State and local net public transfers (TG S) and Federal net public transfers (TG F) as compared with additional labor income (YI), millions of dollars (real, 2022 prices), 2021 to 2060.**



## Part 4. Conclusions

Hawai'i experienced unprecedented population aging during the last decade. This aging was concentrated among younger kūpuna, a transitional group. Some have left the workforce, but many continue to work and rely on their labor income to support themselves. Younger kūpuna are healthier, but their spending on health care is high, almost as high as spending by older kūpuna. For these and other reasons, the lifecycle deficit for younger kūpuna is less than for older kūpuna. They pay more in taxes, provide more support to younger family members, save more, and depend less on public transfer programs than older kūpuna.

Hawai'i is beginning to experience super aging, characterized by rapid growth in the population aged 75 and older. Older kūpuna have little labor income, but their consumption is high, largely due to health care needs. They rely more heavily on retirement wealth accumulated when they were younger, public programs such as Social Security, Medicare, and Medicaid, and to some extent on their adult children.

The last decade was a critical period to prepare for aging, but efforts were significantly hampered by the COVID-19 pandemic. Per capita income grew slowly; per capita consumption actually stagnated or stagnated for learners and kūpuna. Inflation compounded our economic struggles.

There have been positive developments in the last decade. Labor income has increased significantly for younger kūpuna. Kūpuna could count on the mainstays of old-age support: Social Security, Medicare, and Medicaid. A new program, the Hawai'i Retirement Savings Program (HRSP), is expanding opportunities for accumulating retirement wealth. The Green Affordability Plan II (GAP II) will reduce taxes substantially, and taxpayers could devote additional resources to accumulating retirement wealth, but only if they choose to do so. The State has initiated measures to increase the capacity and quality of our health care system. The Healthcare Education Loan Repayment Program (HELP) and other new initiatives may help Hawai'i meet the growing need for healthcare.

Four challenges confront us.

- The first is strengthening economic security for kūpuna. Social Security is the front line of defense, but revenues are insufficient to fund benefits on which retirees count. In the absence of reform, benefits will be substantially reduced. Our Congressional delegation should be urged to shore up Social Security finances. The State needs to develop contingency plans in the event that Social Security or Medicare falter, which would be catastrophic for lower income individuals.
- Second is to build a stronger health care system. This will require additional resources for Medicare, Medicaid, and privately-funded health insurance programs. It will also require recruitment of health care providers in competition with other states and many countries that are experiencing population aging.
- Third is improvement in training and financial systems that will help residents accumulate financial wealth to support their retirement needs.
- Fourth is investment in children. The future of our state depends on our investment in children who will be providing essential support to future generations. Spending on education declined during the last decade and it is imperative that the needs of children are not sacrificed to meet the needs of seniors.

Hawai'i should be proud of its efforts to respond to aging. The State has a health care system that is strong in many respects and has contributed to achieving the longest life expectancy of any state in the US. Our society honors kūpuna and cares about their well-being. The last decade has been difficult for many but especially for children and kūpuna. The coming decades offers an opportunity to strengthen support for all generations.

## **Annex A. Compilation of Hawai'i National Transfer Accounts**

Hawai'i National Transfer Account (HNTA) aggregates were compiled using information from various sources following the guidelines provided in the United Nations (2013) National Transfer Accounts Manual. More specifically, estimates from the US Bureau of Economic Analysis' (BEA) Regional Economic Accounts (REA) for Hawai'i were supplemented by state and local government income and expenditures from the US Census Bureau's (CB) State and Local Government Finance Survey (SLGFS); details of federal income tax collection from the Internal Revenue Service; breakdown of health expenditures from the Centers for Medicare and Medicaid Services; tourist expenditures from Hawai'i's Department of Business, Economic Development and Tourism (DBEDT), among others. In cases where no state-specific estimates are available from official sources, we apply the relations in the national or in the historical data on available Hawai'i estimates. This is particularly useful for the compilation of 2022 estimates as some official estimates were not yet available at the time of compilation.

We first compiled the HNTA Lifecycle Account. Primary income and household consumption from the BEA-REA were adjusted for taxes to conform with NTA concepts. Labor taxes were added back to employee wages and benefits, and to the labor share of self-employment income, while consumption taxes were netted out of household expenditures. State and local government consumption were compiled directly from SLGFS reports while those for the national government on education and health from federal awards data collated by the Bureau of Fiscal Spending following the 2008 United Nations System of National Accounts Manual. Federal consumption other than health and education in Hawai'i were allocated proportionally from the national-level economic accounts based on state-level population.

Building on compiled federal and state and local government in-kind consumption and taxes on products and production in the Lifecycle Account, we then include other public transfers and public asset-based reallocations to compile HNTA Public Reallocations. Social contributions for federal and state programs (e.g. FICA, SECA, unemployment insurance) and other taxes not previously included (e.g. taxes on income, profits and capital gains) were added as public transfer outflows. Similarly, federal and state program benefits (e.g. OASDI, SSI, EITC, SNAP) were compiled as public transfer inflows. Property income flows of the state and local government were calculated directly from the CB-SLGFS reports, while those for the federal government were assigned proportional to the unobligated tax contributions from Hawai'i relative to the national tax collections. Federal and state government saving were calculated as residuals.

Finally, HNTA Private Reallocations were compiled directly from estimates and relations in the BEA-REA and National Income and Product Accounts (NIPA). Capital income was calculated by adding operating surplus of corporations, value of owner-occupied housing and the capital share of mixed (self-employment) income and excluding the related consumption of fixed capital. Household property income in the BEA-REA was scaled to include the property income of corporations using relations in the national-level NIPA. Hawai'i property income outflows are estimated similarly using the estimated total Hawai'i property income and relations in NIPA. Inter-household private transfer inflows are directly drawn from the BEA-REA, while outflows use relations between household cash contributions and total consumption in the Consumption Expenditure Survey for Honolulu Metropolitan Area. Private saving was calculated as a residual.

Because of the significance of tourism in Hawai'i's economy, we separated consumption and public transfer incidence by residence status of the population. Only the consumption and public transfers of Hawai'i residents are explicitly included in the HNTA. Those of non-residents, including visitors from mainland US and the rest of the world, were treated in the same manner as international trade flows and are not incorporated into HNTA. Consumption and public transfers by non-residents, for example, are not included in HNTA.

The 2012 HNTA presented in Mason and Abrigo (2020) generally follows the same procedures outlined above. A key difference is that the previous HNTA compilation relied more heavily on estimates and relations in DBEDT's input-output (IO) matrix, while we relied more heavily on BEA's REA for Hawai'i. This decision was conditioned primarily by the availability of more updated information in the BEA-REA. Another important distinction in the updated HNTA distinguishes private housing. Private housing consumption includes consumption of owner-occupied housing, and the consumption of rented housing together with housing amenities (electricity, water, maintenance, etc.). Aggregate estimates from the original 2012 HNTA and using the updated methodology for 2012 and 2022 are provided in Table A.1 to facilitate comparisons.

The year 2022 was selected as the reference year for the latest HNTA due to the timing of the release of official statistics from our primary data sources. While this may coincide with the tail-end of the global COVID-19 pandemic, inspection of the Hawai'i economic accounts suggests that the Hawai'i economy has returned, in many respects, to its pre-pandemic trend by this period.

**Table A.1. Hawai'i National Transfer Accounts, 2012 and 2022 (in current USD Millions)**

	<b>2012o</b>	<b>2012r</b>	<b>2022p</b>
<b>Lifecycle Account</b>			
Consumption	49,927	49,124	67,630
Private Consumption	36,554	35,690	49,441
Education	1,454	1,584	1,221
Health	5,894	6,705	11,570
Housing	...	10,343	15,642
Others, not elsewhere classified	29,206	17,057	21,008
Public Consumption	13,373	13,435	18,189
Education	2,429	2,536	3,634
Health	4,114	4,114	7,539
Other NEC	6,830	6,785	7,015
Federal	6,617	6,620	9,533
Education	2	2	16
Health	2,667	2,667	5,035
Other NEC	3,948	3,951	4,482
State and local government	6,755	6,815	8,656
Education	2,428	2,535	3,619
Health	1,446	1,446	2,505
Other NEC	2,882	2,834	2,533
Labor Income	42,788	42,694	59,379
Earnings	39,855	39,540	55,031
Self-employment labor income	2,934	3,154	4,347
Lifecycle Deficit	7,138	6,430	8,251
<b>Reallocations</b>			
Public Age-based Reallocations	2,172	1,732	-1,396
Public transfers	1,228	-1,714	-637
Public transfers, inflows	19,142	19,204	27,689
Public transfers, inflows, in-kind	13,373	13,435	18,189
Education	2,429	2,536	3,634
Health	4,114	4,114	7,539
Others, NEC	6,830	6,785	7,015



Public transfers, inflows, cash	5,769	5,769	9,500
OASDI benefits	3,328	3,328	5,518
Other cash, NEC	2,441	2,441	3,982
Public transfers, outflows	17,914	20,918	28,326
Taxes and other revenues	16,971	17,472	29,085
Transfer deficits (surplus)	943	3,447	-759
Asset-based Reallocations	943	3,447	-759
Asset Income	-996	-1,722	-2,744
Capital income	0	0	0
Property income	-996	-1,722	-2,744
Property income, inflow	802	650	693
Property income, outflow	1,799	2,371	3,437
Less: Public Saving, net	-1,939	-5,168	-1,985
Private Age-based Reallocations	4,967	4,698	9,647
Private transfers	-655	-495	-798
Private transfers, intra-household	0	0	0
Private transfers, inter-household	-655	-495	-798
Private transfers, inter-household, inflows	178	178	424
Private transfers, inter-household, outflows	833	673	1,221
Private asset-based reallocations	5,622	5,194	10,445
Asset income	17,266	16,735	22,727
Capital income	13,274	13,063	17,755
Property income	3,992	3,672	4,973
Property income, inflow	26,983	24,815	34,585
Property income, outflow	22,991	21,143	29,612
Less: Private saving, net	11,644	11,541	12,282

*Note: o - original estimates presented in Mason and Abrigo (2020); r - revised based on updated HNTA compilation methodology; p - preliminary*

## Annex B. Variable names and codes

### Variables

Population  
Lifecycle deficit  
Labor income  
Labor income, earnings  
Labor income, self-employment income  
Consumption  
Consumption, private  
Consumption, private, education  
Consumption, private, health  
Consumption, private, other  
Consumption, private, other, owner-occupied housing  
Consumption, private, other, rent and household operations  
Consumption, private, other, alcohol  
Consumption, private, other, tobacco  
Consumption, private, other, other  
Consumption, public  
Consumption, public, education  
Consumption, public, health  
Consumption, public, other  
Consumption, public, federal  
Consumption, public, education, federal  
Consumption, public, health , federal  
Consumption, public, other, federal  
Consumption, public, state and local  
Consumption, public, education, state and local  
Consumption, public, health , state and local  
Consumption, public, other, state and local  
Public transfers  
Public transfers, inflows  
Public transfers, education, inflows  
Public transfers, health, inflows  
Public transfers, other in-kind, inflows  
Public transfers, pensions, inflows  
Public transfers, other cash, inflows  
Public transfers, outflows  
Taxes  
Taxes on goods and services (consumption taxes)  
Taxes on income, profits and capital gains  
Taxes on property  
Taxes on payroll and workforce  
Public transfer deficit  
Public transfers, federal  
Public transfers, inflows, federal  
Public transfers, education, inflows, federal  
Public transfers, health, inflows, federal  
Public transfers, other in-kind, inflows, federal

### Variable Codes

pop  
lcd  
yl  
yle  
yls  
c  
cf  
cfe  
cfh  
cfx  
cfxr  
cfxh  
cfxa  
cfxt  
cfxx  
cg  
cge  
cgh  
cgx  
cg\_f  
cge\_f  
cgh\_f  
cgx\_f  
cg\_s  
cge\_s  
cgh\_s  
cgx\_s  
tg  
tgi  
tgei  
tghi  
tgxii  
tgsoai  
tgxci  
tgo  
tgf  
tgfg  
tgfk  
tgfp  
tgp  
tgd  
tg\_f  
tgi\_f  
tgei\_f  
tghi\_f  
tgxii\_f

Public transfers, pensions, inflows, federal	tgsoai_f
Public transfers, other Cash, inflows, federal	tgxci_f
Public transfers, outflows, federal	tgo_f
Taxes, federal	tgf_f
Taxes on goods and services (consumption taxes), federal	tgfg_f
Taxes on income, profits and capital gains, federal	tgfk_f
Taxes on property, federal	tgfp_f
Taxes on payroll and workforce, federal	tgp_f
Public transfer deficit, federal	tgd_f
Public transfers, state and local	tg_s
Public transfers, inflows, state and local	tgi_s
Public transfers, education, inflows, state and local	tgei_s
Public transfers, health, inflows, state and local	tghi_s
Public transfers, other in-kind, inflows, state and local	tgxii_s
Public transfers, pensions, inflows, state and local	tgsoai_s
Public transfers, other cash, inflows, state and local	tgxci_s
Public transfers, outflows, state and local	tgo_s
Taxes, state and local	tgf_s
Taxes on goods and services (consumption taxes), state and local	tgfg_s
Taxes on income, profits and capital gains, state and local	tgfk_s
Taxes on property, state and local	tgfp_s
Taxes on payroll and workforce, state and local	tgp_s
Public transfer deficit, state and local	tgd_s
Public asset-based reallocations	rag
Public asset income	yag
Public capital income	ykg
Public property income	ypg
Public property income, inflows	ypgi
Public property income, outflows	ypgo
Public saving	sg
Public asset-based reallocations, federal	rag_f
Public asset income, federal	yag_f
Public capital income, federal	ykg_f
Public property income, federal	ypg_f
Public property income, inflows, federal	ypgi_f
Public property income, outflows, federal	ypgo_f
Public saving, federal	sg_f
Public asset-based reallocations, state and local	rag_s
Public asset income, state and local	yag_s
Public capital income, state and local	ykg_s
Public property income, state and local	ypg_s
Public property income, inflows, state and local	ypgi_s
Public property income, outflows, state and local	ypgo_s
Public saving, state and local	sg_s
Adjustment for pension funds (ERS)	sgers_s
ERS benefits	sgersi_s
ERS contributions	sgerso_s
Public saving, others, state and local	sgnec_s

Private transfers	tf
Private transfers, inflows	tfi
Private transfers, outflows	tfo
Private transfers, inter-household	tfb
Private transfers, inter-household, inflows	tfbi
Private transfers, inter-household, outflows	tfbo
Private transfers, intra-household	tfw
Private transfers, intra-household, inflows	tfwi
Private transfers, intra-household, outflows	tfwo
Private transfers, intra-household, education	tfwe
Private transfers, intra-household, education, inflows	tfwei
Private transfers, intra-household, education, outflows	tfweo
Private transfers, intra-household, health	tfwh
Private transfers, intra-household, health, inflows	tfwhi
Private transfers, intra-household, health, outflows	tfwho
Private transfers, intra-household, housing	tfwr
Private transfers, intra-household, housing, inflows	tfwri
Private transfers, intra-household, housing, outflows	tfwro
Private transfers, intra-household, other	tfwx
Private transfers, intra-household, other, inflows	tfwxi
Private transfers, intra-household, other, outflows	tfwxo
Private transfers, intra-household, saving	tfws
Private transfers, intra-household, saving, inflows	tfwsi
Private transfers, intra-household, saving, outflows	tfwso
Private asset-based reallocations	raf
Private asset income	yaf
Private capital income	ykf
Private property income	ypf
Private property income, inflows	ypfi
Private property income, outflows	ypfo
Private saving	sf

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## Endnotes

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- 1 Net transfers and transfers are equivalent but we sometimes use the term "net transfers" to emphasize that transfers are measured as transfer inflows less transfer outflows.
- 2 The term decade is used loosely depending in part on data availability. Population censuses were conducted in 2010 and 2020. HNTA are available for 2012 and 2022. In most instances, we use the term decade to describe changes between 2012 and 2022.
- 3 The projections for Hawai'i assume that the changes at the national level will not influence Hawai'i's shares of taxes and benefits.

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