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ON TAXES AND WONDERS: COMPLETE FISCAL ACCOUNTS AT THE HOUSEHOLD LEVEL IN ISRAEL

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Abstract

What taxes do Israeli households pay, and how much? What is the net value of the transfers and services (such as allowances, public education, healthcare, etc.) provided by the State of Israel due to taxpayers? Which households receive more than they pay and vice versa?

We estimate the distribution of the general government's income and expenditures at the household level by combining data from household Expenditure Surveys conducted by the Israel Central Bureau of Statistics with administrative data from numerous other sources. Based on the distribution of tax burden literature, we attribute to each household the amount of all taxes borne and of all services and transfers received from the general government.

The research presented in this paper is far more comprehensive than previous studies in the scope of the taxes, services, and transfers studied. We account for NIS 405 billion in taxes and NIS 268 billion (NIS 435 billion in secondary analyses) in general government expenditure annually (in 2018 terms).

Estimates include in-depth and cross-sectional analyses that were not previously possible—from the disaggregation of each specific tax payment and expenditure to all net transfers (total transfers and services minus taxes) by income decile, population group, family type, household structure, and more.

[1] The bulk of this paper's research was conducted while the four authors were working at Kohelet Economic Forum. Ariel Karlinsky is currently with the Hebrew University, Tom Sadeh at the Aaron Institute for Economic Policy, and Eran Yogev and Michael Sarel are at Kohelet Economic Forum. We would like to thank the participants of the annual conference of the Israel Economic Association and the annual conference of the Hebrew University's Department of Economics for useful comments and suggestions. Thanks to Yoni Ben-Bassat, Lior David-Pur, Lev Drucker, Yaakov Chen Zion, Ori Katz, David Lagziel, Michel Strawczynski, Tatiana Slobodnitsky, Assaf Zimring, Matan Kolerman, and Eugene Kandel for reviewing the article's draft and providing useful comments and suggestions. Thanks to Matan Goldman, Rachel Zini, and Shaked Maaneh for their help in conducting the literature review and to Asher Meir for his comments and participation in discussions. We would also like to thank Nisan Avraham for his work on a previous version of this paper and for his useful comments.

The research includes many additional results, as well as sensitivity analyses under different assumptions, and taxes and expenditure variations.

The main analysis by population groups shows that the average non-Haredi (ultra-Orthodox) Jewish household pays (per month) approximately NIS 6,000 more in taxes than what it receives in transfers and services, with 70 percent of such households paying more than what they receive (negative net-transfers). The average Haredi and Arab households receive (per month), approximately NIS 4,000 and NIS 1,000 more than what they pay, with 80 percent and 60 percent of them, respectively, receiving more than they pay (positive net-transfers).

1. INTRODUCTION

Residents of Israel work and produce goods and services, which they provide for other Israelis and the rest of the world through the market mechanism—this is the State of Israel's national economic output. The state appropriates a portion of the output for itself through various taxes imposed on a wide range of incomes, assets, and expenditures. Through these taxes, the State of Israel provides the population allowances, subsidies, and many services: law and order, national security, health, education, welfare, and more. In this paper, we estimate the distribution of all these taxes, services, and transfers at the household level in Israel.

First, in regard to taxes—although the law defines who should pay each tax, the entity that actually bears the tax burden is not necessarily the one defined by law. For example, the typical consumer has never visited the Value Added Tax (VAT) offices—the business from which they purchased products or services is the one that transfers the VAT payment. However, consumers bear the burden of this tax in the form of higher prices. Alongside consumers, it is possible that producers (and sellers) absorb part of the burden, and perhaps the workers employed by producers also bear some of burden in the form of lower wages or employment reductions. Similarly, corporate taxes are also distributed among consumers, workers, and firm owners. The employer’s portion of National Insurance and health insurance taxes may be borne by workers in the form of lower wages. The burden of other taxes—consumption taxes, municipal taxes, and others—is also distributed throughout the entirety of Israeli society.

This paper analyzes a wide scope of both taxes and public expenditures of the general government (meaning all public-sector institutions, including the government, local authorities, Kupot Cholim, (HMOs) and Bituach Leumi (National Insurance)) and how they are distributed across households, a scope much wider than that currently available in official state publications or in the research literature from Israel and abroad. We account for the vast majority of taxes collected by the general government: individual income tax (earned and capital income), National Insurance contributions (the employee's portion and the employer's

portion for salaried workers, as well as self-employed payments), health tax, corporate tax, VAT, financial VAT and non-profit VAT, residential municipal tax (Arnona) and other municipal tax (mainly commercial), tobacco tax, alcohol tax, fuel purchase tax, additional consumption taxes, customs, duties, and fees. To attribute the appropriate tax burden to each household, we conducted a comprehensive review of both the theoretical and empirical research literature on the distribution of the economic burden of different taxes. The main conclusions emerging from this review appear in the main text, and a more extensive discussion can be found in the technical appendix.

Second, with regard to general government spending, direct transfers (monetary allowances) do not cover the totality of state support of households; in fact, it does not even make up the lion's share. Most government expenditures come in the form of various government services: health, education, public housing, and the like (Manski and Mayshar, 2000). These services are subsidized in full or in part by Israeli taxpayers. We estimate the expenditures of the general government in the form of the primary payments and services that households receive: National Insurance allowances, transfers from other government institutions, welfare services, public education services, higher-education subsidies, public health services, public transportation subsidies, and public housing. The amount of these services that are provided vary for each household, according to its characteristics. For example, the recipients of public education are students. Thus, a household with five children will receive from both direct cash transfers related to children (such as child allowances), and government services of a substantial monetary value (such as education and health). It is important to emphasize that from the state's perspective, there is no fundamental difference (at least in terms of cost) between a monthly payment of NIS 2,500 to the Cohen family and a payment of an identical amount to fund teachers' salaries in the public schools attended by the Cohen family's children. Therefore, even though a simple cash flow statement of the Cohen family income does not include those NIS 2,500 provided as public education, this expenditure should be attributed to them. This is similar to measuring government expenditure as part of the national product, as well as in studies that distribute total national income among households (Auten and Splinter, 2023; Piketty et al., 2018).[2]

[2] We attribute expenditures (in shekels) to households, despite it being unclear if it equals the monetary value of the same expenditure for the household. In the case of a direct transfer, the household would decide how to spend the money, so that the benefit is equal to the expenditure. However, in the case of services or subsidies, the value for a household may be lower or higher than the cost of the expense. For example, a household receiving 100 NIS of education services may value the expense as less than that, since the service has been forced upon them and they would have preferred to use the money differently. In contrast, the household may value the expense as more than NIS 100 due to economies of scale benefits or positive externalities in public provision of education. Additionally, some transfers represent compensation for harm or damage. For example, the subsidy of a wheelchair (either in money transfer or the product itself). Such a transfer does not necessarily improve the household's situation more than a household not receiving such a transfer. However, its conditions are better compared to what would have been without it, and such subsidy is a

In addition to expenditures for services with a known recipient, attribution of other general government expenditures to households is complex, and depends on various assumptions about them, due to their being public goods (in the economic sense): national security, law and order, etc. In fact, it can be argued that these are pure or nearly pure public goods, which are not consumed by specific individuals but rather by all residents of the state (this is detailed extensively in the technical appendix).

The existing literature on this subject (in Israel and abroad) up to now has not addressed all transfers and services that households receive from the general government (Verbist and Förster, 2019; Bank of Israel, 2023), and, at the same time, all the taxes paid by households (Bigot et al., 2014; Chief Economist's Division, 2022; Bank of Israel, 2023; Knesset Research and Information Center, 2011; Falk, 2018).

In this research, we primarily sought to measure "who pays and who receives" within the framework of transfers between the public and the state. We calculate the (net) amount paid and received by population groups, income deciles, and family types. The data are examined in a positive rather than normative manner—that is, we describe the existing state of affairs as objectively as possible without offering any opinion on whether or not state intervention via taxes and transfers is being conducted in a proper proportion: whether too low or too high or whether the amount of benefits and payments for different groups is justified—these questions are not addressed in this paper.

Thus, we do not focus on measuring the progressivity of the tax system. It is customary in part of the relevant literature, and sometimes also in analyses by various international institutions, to focus on this issue, usually by presenting taxes as a share of households' gross income. In our view, this approach is highly problematic and therefore should be avoided. First, it is incorrect to examine the progressivity of a particular tax (or of all taxes), since what matters is how the tax revenue is distributed in the form of transfers and services. Second, expenditure and income surveys are cross-sectional, and present households' income and expenditures at a particular point in time, without tracking the same households over time. Third, using taxes as a share of households' gross income to measure tax system progressivity implicitly assumes that gross income is exogenous, meaning it does not depend on government policy. However, this assumption is not reasonable. People respond to incentives. Fourth, the gross income of different households, as well as of entire population groups, reflect many dimensions, including cultural preferences for education, employment, leisure, family size, and more. This point is particularly relevant in Israel, given the preferences of many Haredi (ultra-Orthodox) households. In this context, the question from a public perspective and also in terms of its policy implications is "what is the scope of net transfers between different population groups," and not "what is the scope of transfers between those with high gross incomes and those with low gross incomes". An extensive discussion of these issues can be found in the technical appendix.

state expense no different in that regard from a regular transfer. Therefore, such transfers are attributed according to their cost and not according to their value or benefit to the household.

The paper proceeds as follows: **Section 2** presents the main results of the analysis, as well as the data used. **Section 3** analyses tax revenues while **Section 4** examines public expenditures. **Section 5** analyzes the combination of both in the form of net transfers (expenditures minus taxes) to households by various breakdowns. In this context, we emphasize once more that this analysis is positive rather than normative—it describes the actual reality, not whether or how far it is from what is desirable. **Section 6** presents inequality indices according to net transfers and additional tests we conducted (including sensitivity tests). **Section 7** presents a discussion and summary, emphasizing the research's novel contributions. Finally, the paper is accompanied by a technical appendix that describes the methodology (empirical and theoretical) in detail as well as the assumptions we used in the various analyses.

2. MAIN FINDINGS AND DATA

Our primary data source is the Household Expenditure Survey (henceforth, survey) conducted by the Israel Central Bureau of Statistics (henceforth, CBS), an annual survey covering thousands of households that constitute a representative sample of Israeli households, and detailing the composition of income, expenditures, and socioeconomic characteristics. The survey provides a cross-section of household expenditures and income in Israel: for a short period during the month in which they are surveyed, households fill out an expenditure diary and the CBS calculates the households' monthly expenditure in each category through various statistical methods. Additionally, the CBS uses further methods to calculate and attribute less frequent household expenditures (such as the purchase of a vehicle). Due to the survey's structure, the analysis in this paper is limited to current income and expenditures, without taking into account changes in income or expenditures of individuals or households over time. In order to improve accuracy by expanding the sample and to minimize possible biases arising from different sampling in different years, we pooled the three surveys of 2016–18 into a unified dataset, taking into account the surveys' structure and adjusting monetary values to 2018. In total, our data includes 89,519 individuals residing in 26,664 households, representing a total of 8,586,448 individuals and 2,603,240 households. The technical appendix details additional aspects of how the survey data was used, including the adjustment of monetary values between the different years.

Regarding taxation, the survey only contains direct data for income tax on individuals, alongside National Insurance contributions and health tax (employee portion). We therefore expanded our tax data by using additional sources: CBS National Accounts from 1995–2020, Government Finance Statistics (GFS) data for 2018, the National Insurance Institute's Monthly Bulletin of Statistics, local authority files for 2019, Transport Statistics Quarterly No. 4, 2020, the Ministry of Education's Shkifut B'Chinuch (Transparency in Education) data site, the Finance Ministry's "Digital-Fiscal" dataset for 2018, and state revenue reports for 2016, 2018, and 2019–20.

Regarding the general government's expenditures, the survey includes monetary transfers (allowances) from the National Insurance Institute or other state institutions granting assistance, such as direct support for rent from the Ministry of Construction and Housing. We expanded our expenditure data using administrative data from several sources: National Insurance Institute's Monthly Bulletin of Statistics, CBS National Accounts publications—National Expenditure on Education 1962–2020, National Expenditure on Health 1962–2020, and Gross Fixed Capital Formation and the Net Capital Stock by Industry, 1995–2020. Also, the Finance Ministry's "Digital-Fiscal", the Ministry of Education's Shkifut B'Chinuch (Transparency in Education) data site, a 2018 report on HMOs, and an Israel Railways 2018 report. We matched the survey estimates with the relevant fiscal data appearing in these sources. The technical appendix details the matching methods we used for each of the taxes and expenditures.

Note that the results of this paper's analysis are largely valid for later years as well, and using more recent data would not necessarily lead to more accurate results. First, the response rate in the years 2016–18 was significantly higher than in subsequent years: 74.9–75.5 percent, compared to 64 percent in 2019 and 44.4 percent in 2020–21. Second, a methodological change in the survey was implemented in 2019, which, according to the CBS, marks a break in the series, so that the previous years are not directly comparable to 2019. Third, the COVID pandemic dramatically affected the structure of household income and expenditures in the years 2020–21, so that these years do not represent the "normal" or steady state of households in Israel. We therefore consider the 2016–18 surveys the best, currently possible sample.

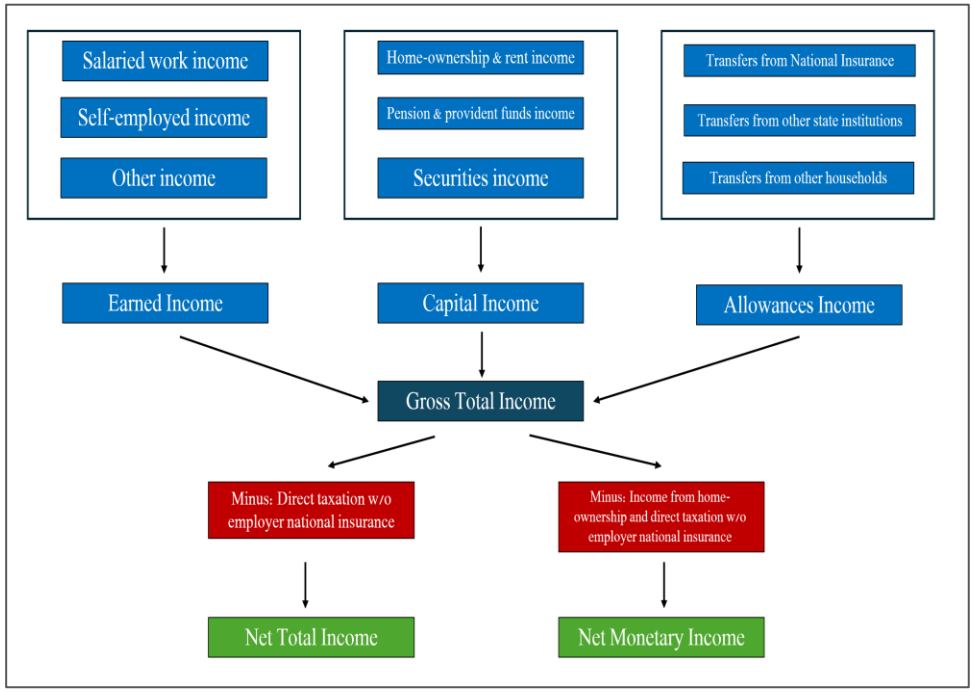
Household Income Structure

Household income is usually divided into three primary sources: labor income (salaried and self-employed); capital income (pensions, securities, rental income from owned property, imputed income from owner-occupied housing[3] and the like); and government transfers (from the National Insurance Institute and other state institutions).

Household income from labor, capital, and transfers is named **gross total income**. In order to obtain the **net total income**, the CBS deducts income taxes on work and capital gains, as well as the employee portion of National Insurance and health taxes from the gross total income. The terms "gross monetary income" and "net monetary income", which are sometimes used in various publications, are similar to gross total income and net total income, but they do not include the imputed income from owner-occupied housing. Figure 1 is a schematic diagram describing how the various incomes are defined and calculated.

[3] This attribution is performed by the CBS because households that own a home consume housing services at the monetary rate of zero cost; however, they would have been obliged to rent if they didn't own the house. Since they do, the CBS attributes the income and expenditure in a similar fashion to the theoretical condition in which the household rented its own house out to itself.

Figure 1
Income Included in the CBS Household Expenditure Survey



The division into different types of income is not merely technical; it plays a central role in public discourse regarding government policy and inequality. Public discourse tends to focus on households' gross total income, gross net income and net monetary income. This can be seen in examples such as the National Insurance Institute's calculation of inequality and relative poverty estimates. However, these figures fail to take all taxes paid by households into consideration, and include only direct transfers (allowances) that households receive from the state.

In actuality, these household income definitions are akin to assuming that the services provided by the general government contribute nothing to the recipients' welfare. Such an assumption is clearly false. For example, if the Israeli government would collect billions more in taxpayer money from the top decile and transfer the funds to pay for the education of children from the bottom decile, the transfer would appear in the tax calculation but not in the calculation of the service's recipients, and the decline in conventional inequality estimates would be significantly biased downward compared to the actual reduction in inequality. Moreover, if this additional tax was collected by raising the VAT rate, conventional inequality estimates would show no change in inequality whatsoever, contrary to reality.

Therefore, taking into account the different types of income, including additional taxes that households pay and the value of services they receive from the general government, provides valuable information regarding the economic standard of living in various households, and highlights the general government's policy and its impact on the distribution of resources and income in Israel. This enables us to estimate the distribution of the general government's tax revenues and the distribution of its transfers among households. By combining the two, we calculate the net transfers to each household and to each group of households (such as by income decile or population group); that is, whether and to what extent each household or group of households pays the general government more than the value of the services and transfers they receive, and vice versa. Our dataset allows analyses by many other segments, such as residential area, number of children, or head of household age.

It is commonplace to divide households into income deciles according to monetary income per capita, while adjusting for economies of scale in home consumption (equivalence scales). In this study, we use a similar division into income deciles—we define the equivalized number of persons in the household as the square root of the actual number of people (as is customary in the OECD) and divide households into deciles according to equivalized net total income.[4] Net total income is, in our opinion, a better and more accurate measure of a household's income than net monetary income (which does not include the in-kind income of a household that owns its home). It should be noted that the net total income measure is only used for calculating the deciles. We also present the distribution by deciles within various population groups in Israel (Arab, non-Haredi Jewish, and Haredi) and by household structure and number of children.

Main Findings

Figure 2 presents net transfers by decile. The figure shows that households from the top decile pay NIS 28,600 in taxes, in 2018 terms (hereinafter: "shekels", or "NIS"), more than they receive, and households in the bottom decile receive approximately NIS 6,700 more than what they pay. It also shows (as totaled in the subtitle) that the total net transfers to all households is negative, because our estimate (at least in the main analysis presented in this figure) contains more taxes than expenditures (a gap of approximately NIS 138 billion), partly as a result of the fact that the government expenditures presented in this analysis do not include expenditures on public goods (such as national security) and infrastructure investment. Later we will also present analyses in which these are included on the expenditure side. Furthermore, the technical appendix includes an additional analysis in which we equalized the total expenditures with the total taxes. The distribution of net transfers by decile is similar even after we equalized the expenditure with the income.

[4] Using the CBS equivalence scale leads to very similar results, as is shown in the technical appendix.

Figure 2
Average Net Transfers (Transfers Minus Taxes), by Income Decile

General government revenues from taxes—income taxes on individuals, social security and health tax, VAT, corporate tax, financial activity tax and nonprofit VAT, sales and fuel taxes, residential and other property taxes, real estate taxes and customs. Total: NIS 405.47 billion. General government transfers—health, education, cash transfers, welfare services, public transport, religion, culture, sports and leisure, and public housing. Total: NIS 267.74 billion.

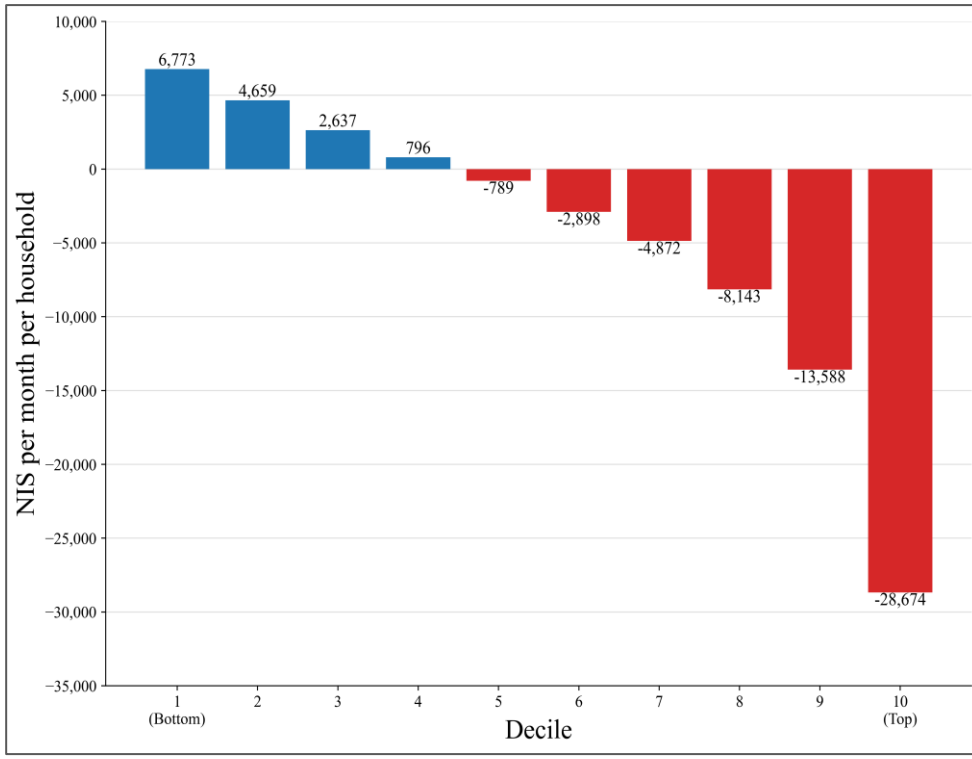
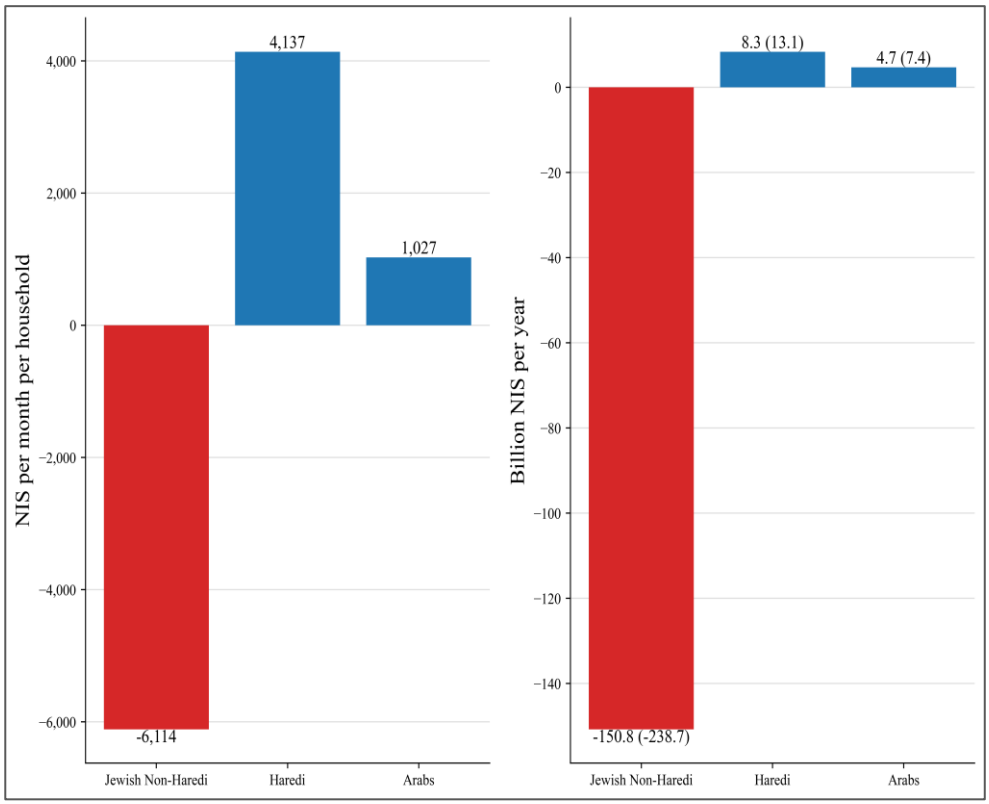


Figure 3 presents the average net transfers to households by population group, as well as the total net transfers to each group. As shown, while the average net transfers of the non-Haredi Jewish sector are negative (approximately NIS –6,100 shekels per month), net transfers to Jewish Haredi and Arab households are positive. That is, the average Haredi and Arab household receives transfers and services at a higher value than the taxes they pay (even without attributing public goods and infrastructure), while the average non-Haredi Jewish household pays more taxes than it receives. Similarly, examining the total net transfers for all households in each group shows that the average non-Haredi Jewish household pays more

taxes than the services it enjoys, while the Arab and groups receive more services and transfers than the taxes they pay.[5]

Figure 3
Average and Total Net Transfers (Services Minus Taxes) to Households, by Population Group (Excluding public goods and infrastructure)

General government revenues from taxes—income taxes on individuals, social security and health tax, VAT, corporate tax, financial activity tax and nonprofit VAT, sales and fuel taxes, residential and other property taxes, real estate taxes and customs. Total: NIS 405.47 billion. General government transfers—health, education, cash transfers, welfare services, public transport, religion, culture, sports and leisure, and public housing. Total: NIS 267.74 billion. In parentheses—in 2023 terms.



[5] The right-hand panel presents in parentheses the sums according to 2025 data by adjusting the 2018 estimates to 2025 using the rise of 58.3% in nominal GDP between 2018 and 2025.

Figure 4 shows net transfers by deciles within each group. Among non-Haredi Jewish households, net transfers are negative (i.e., the amount of taxes paid by these households is greater than the amount received by transfers) starting from the fourth decile, while the Arab group shows negative net transfers at the seventh decile onward, and in the Haredi group only the top two are negative. That is, households that receive more in transfers and services than what they pay in taxes constitute approximately 80 percent of Haredi households, 60 percent of Arab households, and 30 percent of non-Haredi Jewish households.

Figure 4
Average Net Transfers (Services Minus Taxes,) by Group and Income Deciles within Group

General government revenues from taxes—income taxes on individuals, social security and health tax, VAT, corporate tax, financial activity tax and nonprofit VAT, sales and fuel taxes, residential and other property taxes, real estate taxes and customs. Total: NIS 405.47 billion. General government transfers—health, education, cash transfers, welfare services, public transport, religion, culture, sports and leisure, and public housing. Total: NIS 267.74 billion.

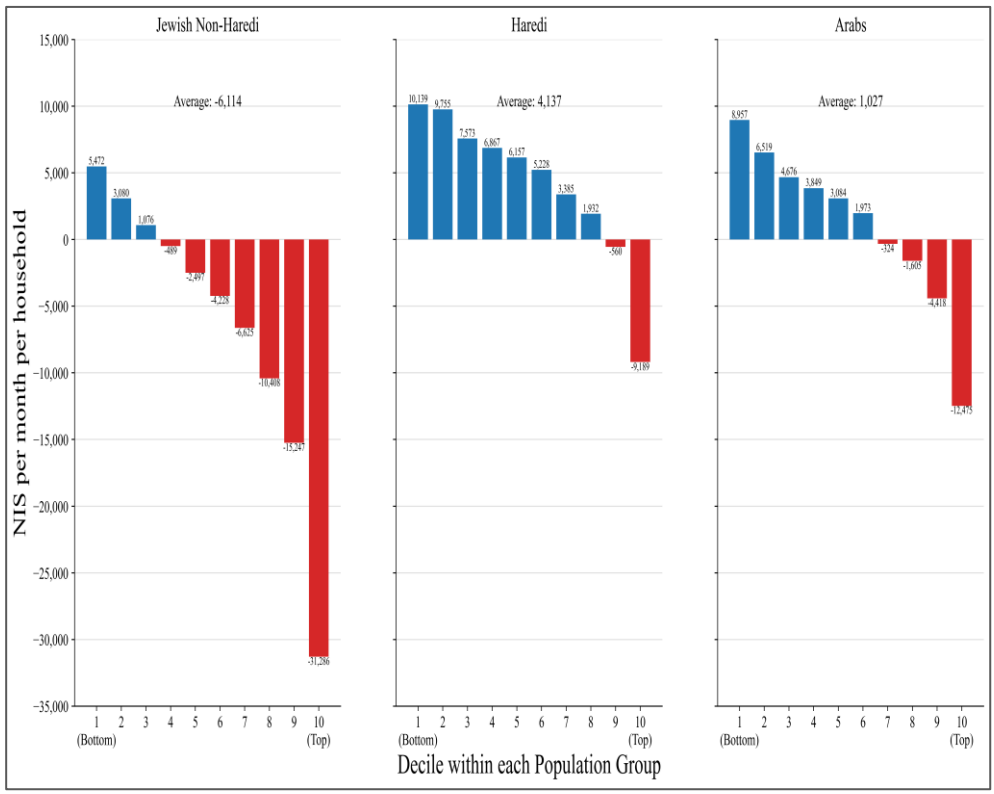


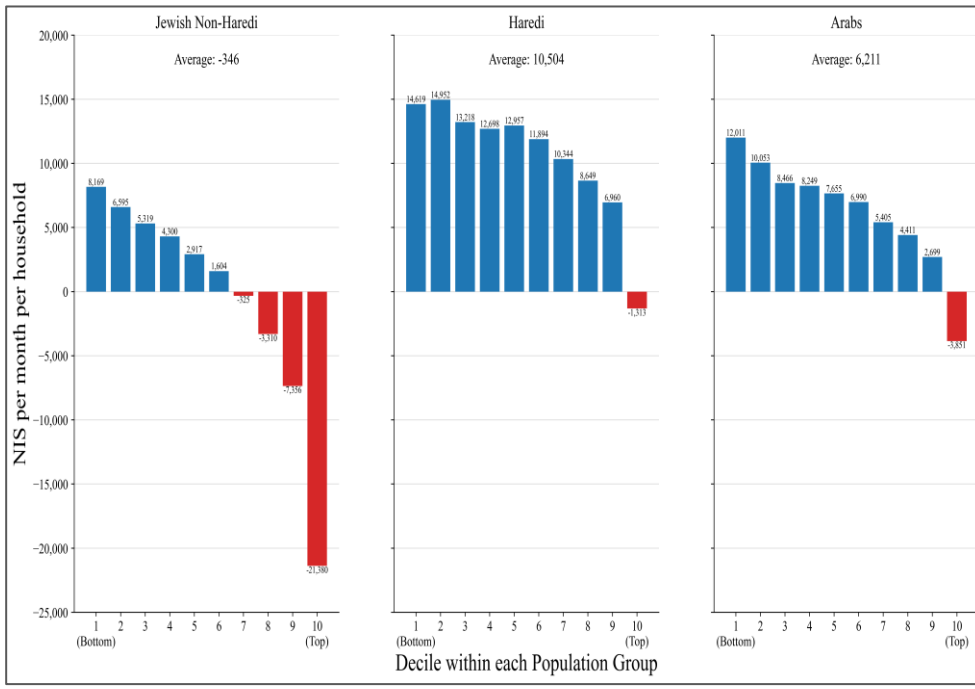
Figure 5 also shows the value of net transfers, when including the attribution of public goods and infrastructure provided by the general government, with imputation to each household based on its relative share of total consumption (monetary and in-kind). The technical appendix includes a detailed explanation of this calculation and other alternatives.

While in Figure 4 we attribute more taxes than expenditures (by approximately NIS 138 billion), in Figure 5 we attribute more expenditures than taxes (by approximately NIS 20 billion). This result is due to part of the state budget being financed by debt and various transfers (not all of the state's income is from taxes), which we did not attribute to households, as detailed later in the paper and in the technical appendix. As can be seen, after accounting for expenditure on public goods and infrastructure investment, net transfers to Haredi households are positive for all income deciles, except for the top decile. Arab households show the same pattern. In non-Haredi Jewish households, the top four deciles show negative net transfers. The average Haredi household shows a net transfer of approximately NIS 10,500 per month, while Arab households show approximately NIS 6,200 per month. The average non-Haredi Jewish household shows -700 shekels per month in net transfers. It is important to note that the public goods imputation method presented here (by consumption) is one of three alternatives we consider: Household size (number of persons), share of total income, and share of total consumption. In the context of the reduction of inequality through net transfers, it lies between household size (the greatest reduction of inequality) and share of total income (the smallest reduction of inequality), as can be seen in Figure 34. The technical appendix contains a detailed discussion on public goods imputation.

Figure 5
Average Net Transfers (Services Minus Taxes), by Group and Income Deciles within Group, Including Public Goods and Infrastructure Investment (Imputed by Consumption)

General government transfers—health, education, cash transfers, national defense, law and order, infrastructure, welfare services, public transport, public housing and other government expenditures. Total: NIS 446.48 billion.

General government revenues from taxes—income taxes on individuals, social security and health tax, VAT, corporate tax and financial activity tax, sales and fuel taxes, residential and other property taxes, real estate taxes and customs. Total: NIS 405.47 billion.



An analysis on other income deciles, such as the CBS equivalence scale, or by expenditure deciles yields similar results for the distribution of net transfers. Some of these divisions are presented in the technical appendix for comparison.

We note two main reasons for choosing the household as the unit of analysis: First, for both income and expenditure, an individual's primary economic activity is at the household level. To put it simply, economic activity in most households is based on income from all sources and all persons. Similarly, households consume many consumption goods as a single unit, such as family vacations, a container of cottage cheese or a drive in the car. In general, society operates at the level of households rather than individuals. Children (in advanced

economies) do not work or pay taxes, and most couples function as a single economic unit. Secondly, the survey data includes a cross-section of the population in Israel each year, making it impossible to examine the expenditures and income of individuals over time; furthermore, the survey contains, in practice, a mixture of income and expenditure (and consequently of net transfers) at different life stages. As a result, it is not possible to reliably examine how much tax each individual pays the state and what the value of the services and transfers that the state provides to each individual is. As such, we preferred to use the household as the basic unit of measurement for this analysis.

3. TAX DISTRIBUTION AMONG ISRAELI HOUSEHOLDS

In this section, we present the various taxes in Israel and their distribution among households. First, we present the distribution of total tax payments among households. We then show breakdowns to specific taxes, alongside a discussion of how each tax burden is divided. We refer to households' net tax payment, without reference to tax benefits they may enjoy, since the survey data already incorporate relevant tax benefits. Additional details can be found in the appendix.

Total Tax Payments by Households

In total, we account for 96 percent of the general government's income from taxes (NIS 405.47 billion). Figure 6 presents the total tax burden in shekels that each household bears on average, per month, by income decile. The figure shows that while households in the top decile paid an average of NIS 36,400 a month, households in the bottom decile paid approximately 3,800.

Figure 6
Average Total Tax Payments, by Income Decile

Ratio of top three deciles to bottom three: 4.9
General government revenues from taxes—income taxes on individuals, social security and health tax, VAT, corporate tax, financial activity tax and nonprofit VAT, sales and fuel taxes, residential and other property taxes, real estate taxes and customs. Total: NIS 405.47 billion.

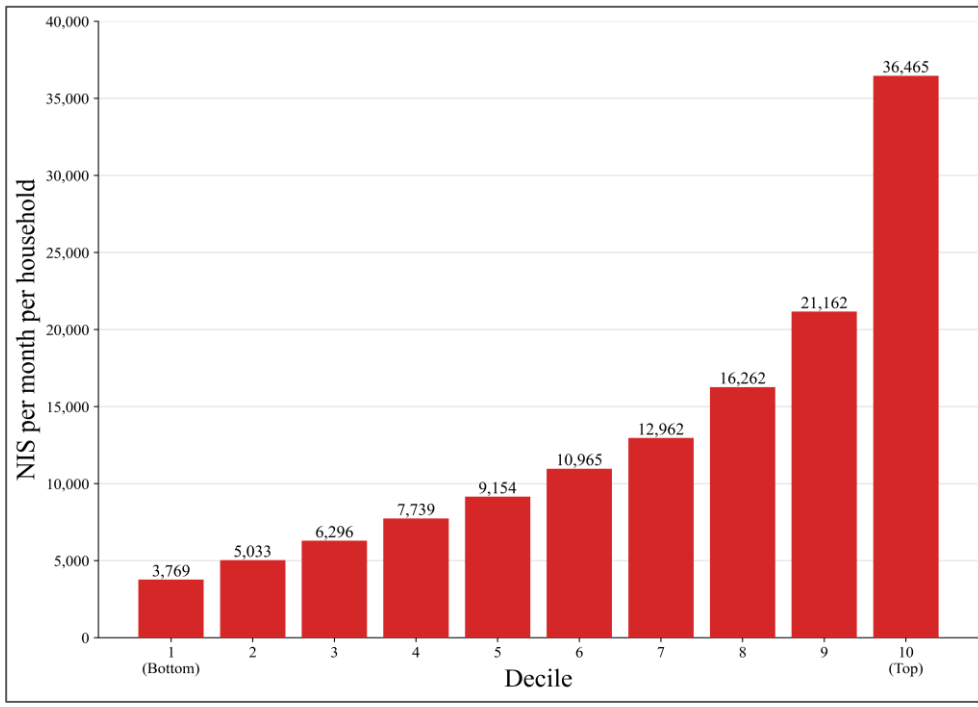
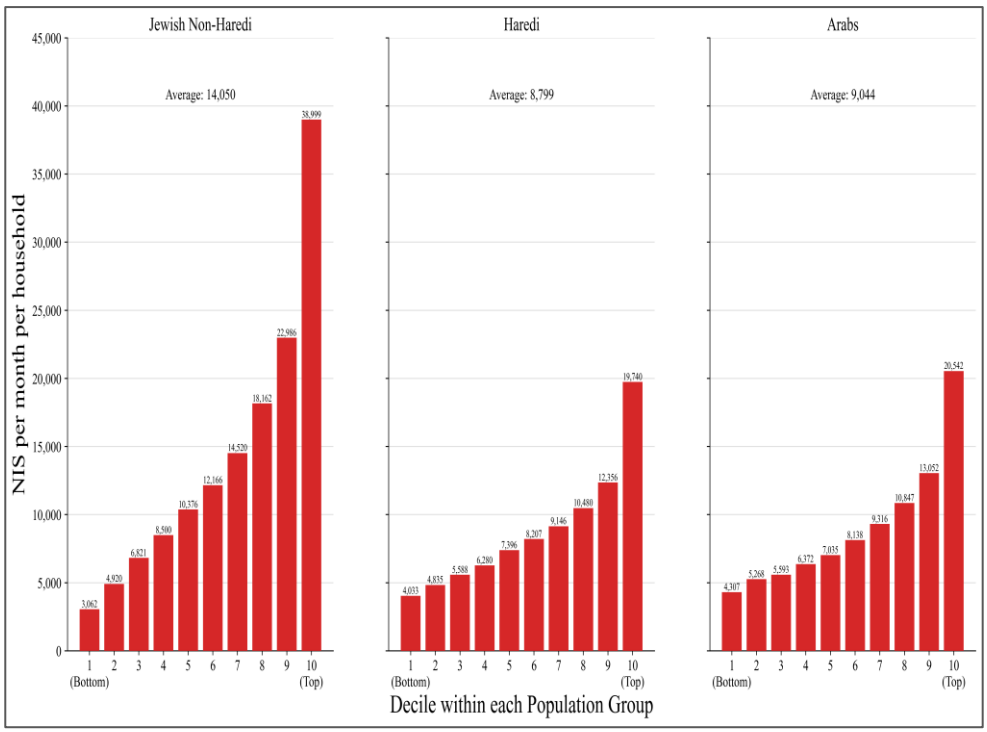


Figure 7 presents the average tax burden by group and deciles within group. Non-Haredi households pay more taxes (approximately NIS 14,000 a month on average) than Arab (approximately NIS 9,000) and Haredi households (approximately NIS 8,800). The gap is particularly visible in the top decile in each group.

Figure 7
Average Total Tax Payments, by Group and Income Deciles within Group

General government revenues from taxes - income taxes on individuals, social security and health tax, VAT, corporate tax, financial activity tax and nonprofit VAT, sales and fuel taxes, residential and other property taxes, real estate taxes and customs. Total: NIS 405.47 billion.



We now detail the distribution of the various taxes.

Individual Income Tax

In 2018, income taxes imposed on individual income constituted close to 21 percent of the total tax collection in Israel, or approximately NIS 96 billion. These taxes include income tax on labor (NIS 91.4 billion in 2018) and dividend and capital gains tax (4.11 billion shekels in 2018).[6] The Income tax is composed of tax brackets, so that the marginal tax rate increases with income (Israel Tax Authority, 2018).

[6] Since they are presented together under the variable "Income Tax" in the Survey, it is not possible to separate between tax payments on income from work and capital gains tax. Additionally, the data appearing in the survey is households' actual payment of income tax, after various tax benefits (such as credit points, for example) were taken into account.

The research literature on distribution of the income tax burden is scarce, and most studies assume that the income tax burden is borne entirely by employees (Bigot et al., 2014; Congressional Budget Office, 2021; Falk, 2018). However, some empirical examinations show that at different income levels (particularly higher incomes) there is some shifting of the tax burden from the employees to employers, so that the tax burden is not borne entirely by employees (Bingley and Lanot, 2002; Hassett and Mathur, 2006).[7] The research literature is extremely limited for dividend and capital gains tax as well, and the few studies that examined it find that the tax burden is borne almost entirely by the taxpayer. In light of this, we assumed, in the main analysis, that the income tax burden is borne entirely by employees. We also conducted sensitivity tests for the distribution of income tax payment under different assumptions about the tax burden distribution. We saw no significant difference in the results—full details can be found in the technical appendix.

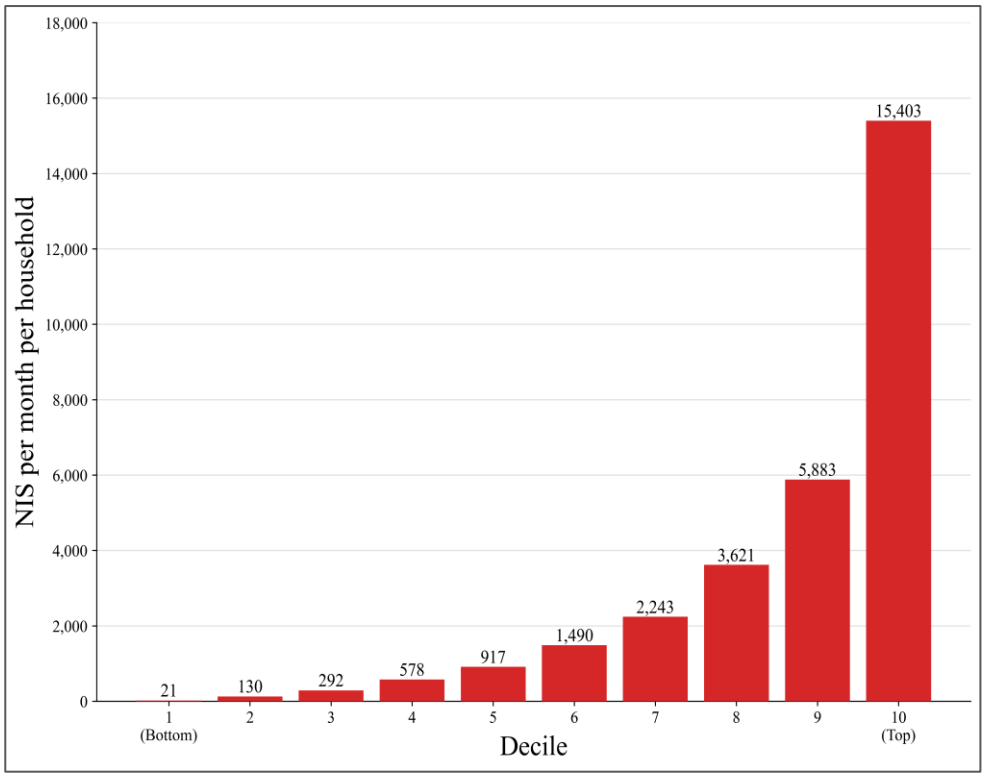
In the survey data, the total collection of income tax and capital gains tax was NIS 73.33 billion. To adjust this estimate to the known administrative data in the Ministry of Finance's "Digital-Fiscal" dataset (NIS 95.51 billion), we multiplied the tax payment for each household by the ratio between the fiscal data and the estimate from the survey.

Figure 8 shows the average payment of these taxes per household by income deciles. Households in the top decile paid an average of approximately NIS 15,400 per month—almost three times that of households in the ninth decile. In contrast, these taxes were hardly paid in the lower deciles, and households in the bottom decile paid an average of only NIS 21 per month.

[7] To illustrate, imagine an employee with a high salary (and therefore a high tax bracket) whom a competing company is trying to recruit. Because of income tax, a relatively large change in gross salary (before income tax) may result in only a small change in net salary (after income tax). It is reasonable to assume that the company interested in her services is aware of this, and will therefore increase the gross salary it offers her. So, in practice, the income tax burden is thus divided between the employee and the company that hired her.

Figure 8
Average Income and Capital Gains Taxes Paid by Income Deciles

Ratio of top three deciles to bottom three: 56.2
Total: NIS 95.51 billion



Value Added Tax

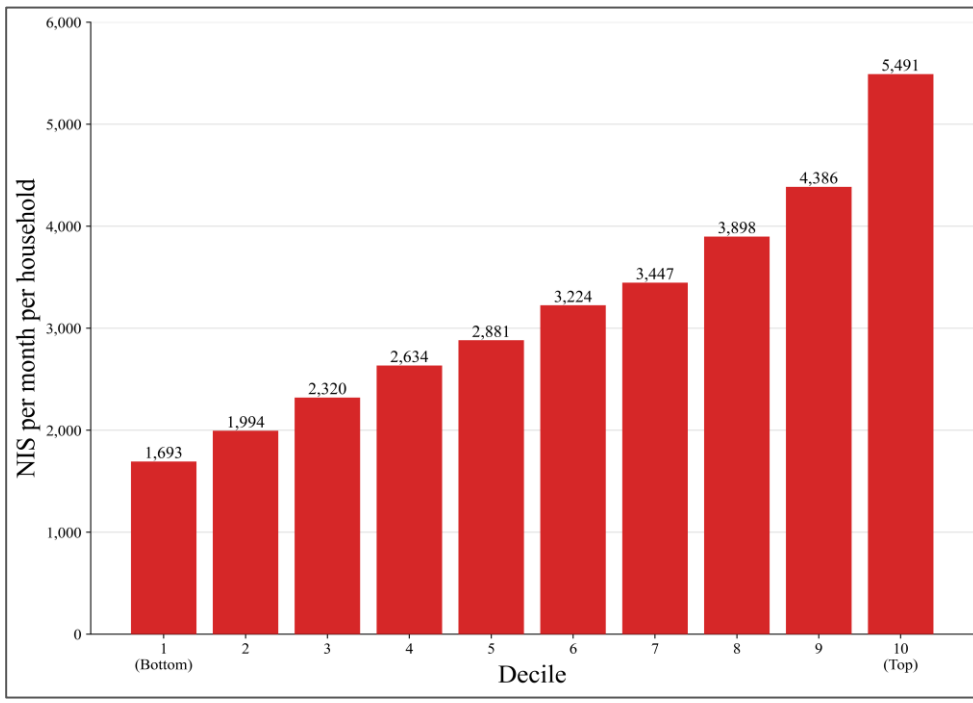
In 2018, the Value Added Tax (VAT) constituted close to 23 percent of all tax collection (approximately NIS 99 billion). VAT is imposed on all products and services, except for a few exemptions (such as fruits and vegetables and purchases in Eilat). Its rate was 17 percent from 2015 to 2024. As its name implies, VAT is imposed on the added value that each stage in the production and supply chain adds to the product or service. The different stages in the chain offset the VAT they pay, with the end of the chain being the actual consumer of the product, who pays the VAT without the possibility of offsetting it. According to the research literature (Benedek et al., 2020; Benzarti et al., 2020; Buettner and Madzharova, 2021) it appears that the VAT burden falls entirely on the consumer. In order to attribute VAT payment to households, we identified the expenditures on which VAT is imposed from each household's consumption data, and based on that calculated the total VAT paid. In the case

of VAT (and other consumption taxes), we performed sensitivity tests, by changing the assumption on tax burden distribution. Changes in the distribution were minimal, and details can be found in the technical appendix.

The estimated total VAT collection in the survey amounted to NIS 73.97 billion.[8] To adjust this estimate to the published administrative data (NIS 99.44 billion), we multiplied total VAT for each household by the ratio between them. As depicted in Figure 9, households in the top income decile paid on average approximately 5,500 shekels per month on VAT, while households in the bottom decile paid approximately 1,700 shekels, and payments increase continuously as one moves up the income deciles.

Figure 9
Average VAT Payments, by Income Deciles

Ratio of top three deciles to bottom three: 2.3
Total: NIS 99.87 billion



[8] The underestimate stems from underreporting of consumption expenditures in the survey, a phenomenon that exists in other surveys around the world as well. See for example, a note by the Institute for Fiscal Studies (IFS) in a study on VAT distribution in Britain: "There is underreporting of VAT-bearing expenditures in the expenditure survey. Therefore, we multiplied these expenditures by 1.4 in order to align them with national accounts" (Crossley et al., 2011).

National Insurance and Health Tax

In 2018, National Insurance and health tax payments constituted close to 17 percent of the general government's total income from taxes (approximately NIS 70 billion). Payment of National Insurance contributions and health tax (hereinafter: National Insurance and health tax) is a legal obligation for every citizen in Israel from age 18 until retirement (aside from a small number of exceptions). National Insurance and health tax are calculated according to income and employment status (salaried, self-employed, or unemployed). Most employed people in Israel are salaried employees. For salaried employees, the tax has two portions—employee and employer (it also has 2 income brackets). In practice, the literature shows that this division is virtual, similar to the self-employed (who are their own employee and employer)—salaried employees bear the employer's portion as well (Congressional Budget Office, 2021; Fullerton and Metcalf, 2002). We discuss this in detail in the technical appendix. For the unemployed, we assume that the tax is borne entirely by the taxpayer, since no employer affects their salary.

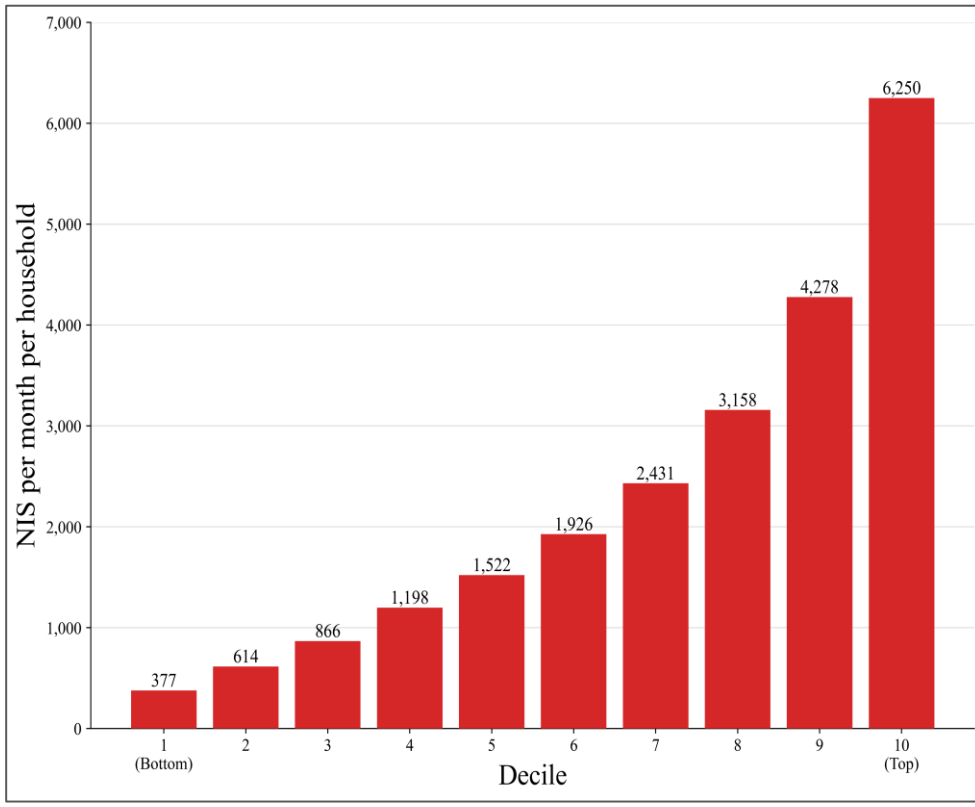
In addition to the research literature, supporting evidence can be found for the fact that National Insurance taxes are borne by employees in the welfare and tax systems of some advanced economies, such as Denmark, Australia and New Zealand. Denmark's expansive welfare state, for example, is financed exclusively by income tax on individuals (which tax burden, as explained above, is borne by employees), with no separate tax for social insurance and no division between employee and employer portions. The tax rate out of labor cost for a non-married employee without children with an average salary in Denmark and Norway is identical, but the internal division in Denmark consists of income tax only, while in Norway the same tax rate is divided between income tax, employees' National Insurance tax, and employers' National Insurance tax.

According to the survey, Israeli households paid 65.86 billion shekels in National Insurance and health tax in 2018 (including the calculation we performed of employer payments for salaried employees). According to National Insurance data, the total was 70.66 billion shekels (National Insurance Institute, 2018). To align the survey estimates with the fiscal data, we multiplied the expenditure of each household on National Insurance and health tax by the ratio between them.

Figure 10 shows that while households in the top income decile paid approximately 6,300 shekels per month on average, households in the bottom decile paid approximately 400 shekels.

Figure 10
Average National Insurance and Health Tax, by Income Decile

Ratio of top three deciles to bottom three: 7.4
Total: NIS 70.66 billion



Corporate Tax, Real Estate Taxes, Financial VAT and Nonprofit VAT

Corporate tax is a direct tax levied on firm profits at a rate of 23 percent (Chief Economist's Division, 2020). There are also reduced rates, for example within the framework of The Encouragement of Capital Investment Law, 1959. In 2018, corporate tax made up close to 10 percent of the general government's total tax revenue (approximately 43 billion shekels). The question of who bears the burden of corporate tax across the different entities in the economy has concerned economists for a long time (Auerbach, 2006; The Economist, 2021), with more recent studies finding that the burden is divided between employees, capital owners, and consumers (Suárez Serrato and Zidar, 2016). As detailed in the technical appendix, our conclusion from our review of the literature (Congressional Budget Office,

2021; Fuest, 2015), is that corporate tax is divided equally between consumers, employees, and capital owners. To put it simply, we conclude from the literature that corporate tax leads to an increase in prices of the company's products and services, a decrease in the salaries of its employees, and a decrease in the profits of its shareholders. Since each party bears one-third of the corporate tax burden, each third of the tax burden is calculated according to each household's proportional share in consumption, income from work, and income from capital.[9]

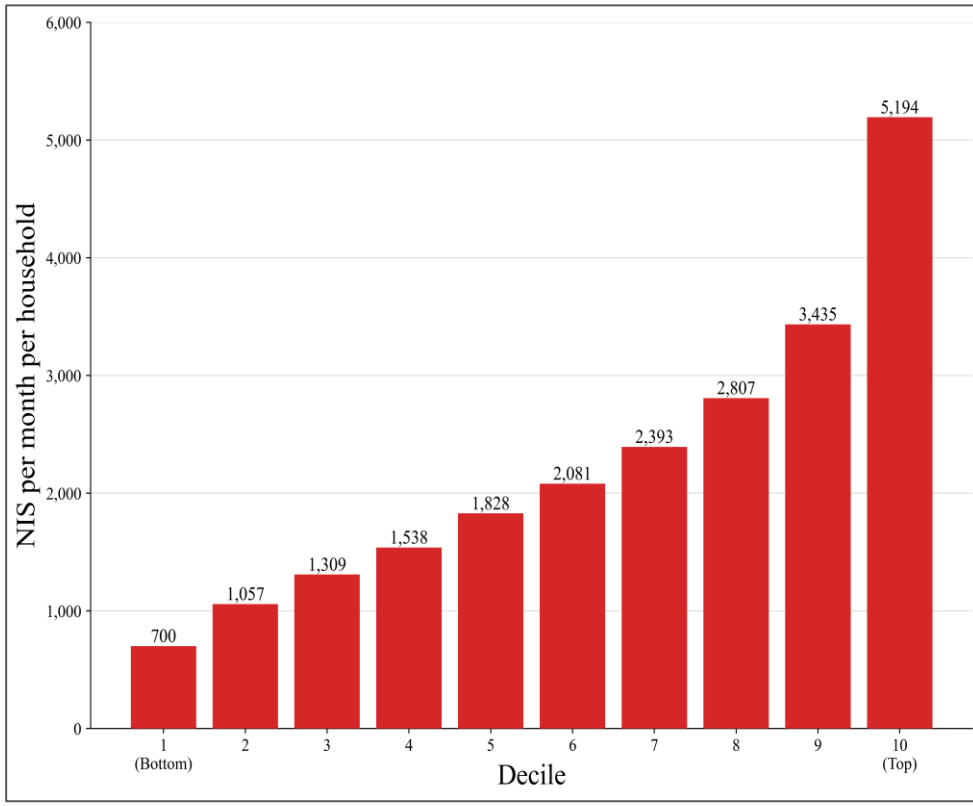
Israel levies several real estate taxes, the main ones being real-estate capital gains tax and purchase tax. In 2018, the receipts from these taxes amounted to approximately 11 billion shekels, or nearly 3 percent of the total tax revenue. In the survey, we identified payment of approximately NIS 1.8 billion, and completed the remainder through attribution in proportion to income from capital, including imputed income from owner-occupied housing. In other words, the gap between the total taxes in the administrative data and the taxes we identified in the survey is divided among households according to their proportional share in income from capital. Additional details can be found in the technical appendix.

In addition to corporate tax, Israel has a financial VAT and nonprofit VAT. The financial VAT is a payroll tax levied at a rate of 17 percent of financial companies' (e.g., banks and insurance companies) employees' gross salary. The nonprofit VAT is levied at a rate of 8.5 percent of nonprofit employees' gross salary. Financial VAT is levied because collecting VAT on financial services is rather complicated, and is not done in Israel. Thus, in order not to tax-discriminate against nonfinancial companies, financial VAT is collected from financial companies, and its receipts in 2018 were slightly more than 3 billion shekels. Additionally, a tax of approximately 12 billion shekels was collected from nonprofits. Like corporate tax, we assumed that the burden of financial and nonprofit VAT is divided uniformly among consumers, employees, and capital owners, as detailed in the technical appendix.

In total, we attributed approximately 70 billion shekels of corporate tax, real estate taxes, and financial and non-profit VAT. These tax payments, depicted in Figure 11, increase with income, with households in the top income decile paying approximately 5,200 shekels per month on average, and those in the bottom decile pay approximately 700 shekels.

[9] The effective corporate tax rate in Israel is not uniform. For example, exporting companies pay lower corporate tax compared to non-exporting companies (such as banks and insurance companies). The above calculation is an approximation that does not take into account the distribution of corporate tax by sector, and the possible effects this distribution has on tax burden (Mazirov et al., 2021). Additionally, part of the corporate tax in Israel is paid by foreign residents who own capital in Israel, just as a portion of corporate taxes around the world are paid by Israeli residents who own capital in other countries. In this paper's analysis we assume that these effects roughly balance each other out.

Figure 11
Average Corporate Tax, Real Estate Taxes, Financial VAT and Nonprofit VAT payments, by Income Deciles



Consumption and Fuel Taxes

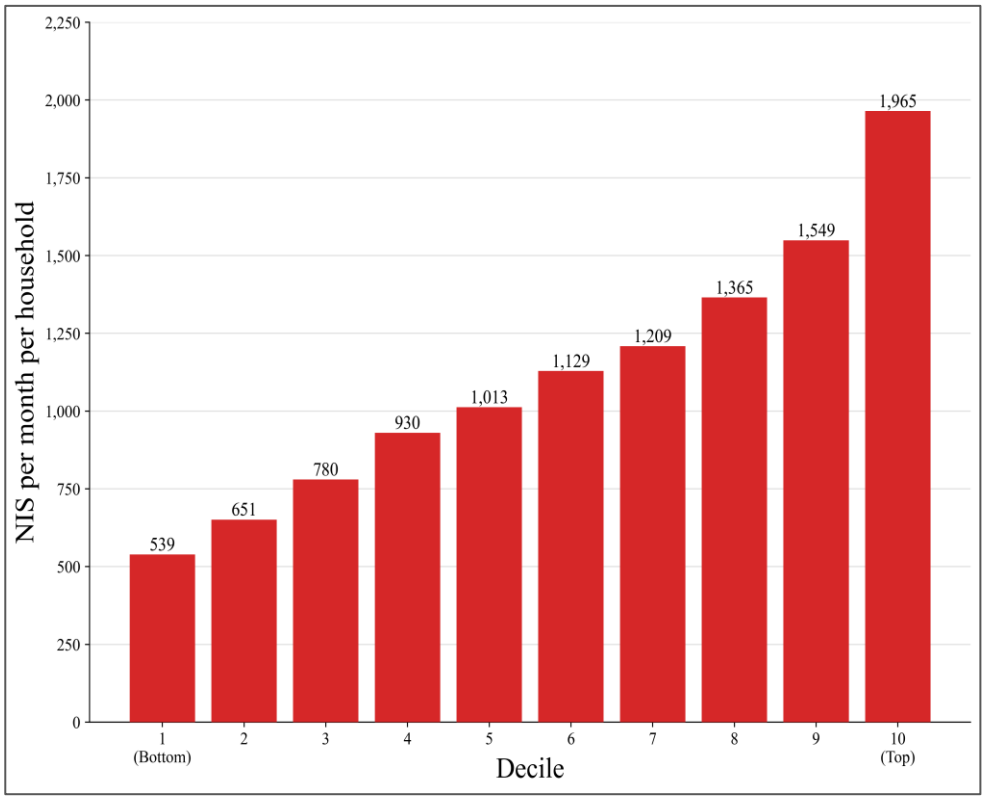
In addition to VAT, Israel levies consumption and excise taxes on some specific products: fuel tax (known in Israel as "Blo"), vehicle purchase, tobacco and alcohol. In 2018, these taxes constituted close to 8 percent of total tax revenue (approximately NIS 35 billion). Beyond the revenue of the general government, some of these taxes are intended to reduce undesirable activity in society and to reduce negative externalities ("vice taxes"). For example, to reduce smoking and its negative health effects, the state levies a tax on tobacco products, which causes a price increase and therefore a reduction in consumption (an expanded discussion on this subject is in the technical appendix). The research literature shows that consumption taxes are borne entirely by the consumer (Gehrsitz et al., 2020; Gruber and Koszegi, 2004; Kenkel, 2005; Marion and Muehlegger, 2011; Schweitzer and Taylor, 2008). In total, we accounted for approximately 34.8 billion shekels in such taxes, according to the following breakdown: fuel tax of 17.18 billion shekels, vehicle purchase tax

10.5 billion shekels, tobacco and cigarette tax 6.13 billion shekels, and 0.96 billion shekels for alcohol tax.[10] There is some underreporting of fuel purchases in the survey, leading to an underestimate of fuel tax; therefore we used regression models to estimate fuel consumption for households that use cars but did not report purchasing fuel. The technical appendix contains a detailed discussion of this model.

As shown in Figure 12, households in the top income decile paid approximately 2,000 shekels per month on average on fuel and consumption taxes, and households in the bottom decile paid approximately 500 shekels.

Figure 12
Average Consumption and Fuel Tax Payments, by Income Deciles

Ratio of top three deciles to bottom three: 2.5
Total: NIS 34.77 billion



[10] Blo tax on fuel is also collected for the Palestinian Authority, and this item amounted to almost NIS 3 billion in 2018. We did not attribute to Israeli households this part of the blo tax, which is ultimately transferred to the Palestinian Authority and does not contribute to an increase in government transfers to households in Israel.

Municipal Taxes (Arnona)

In 2018, municipal taxes (called Arnona) constituted close to 6 percent of total tax revenues (approximately 27 billion shekels). These taxes are collected by local authorities (cities and towns, local councils, and regional councils). The Arnona tax is divided into residential Arnona, totaling approximately NIS 12 billion, and other Arnona (mainly commercial), totaling approximately NIS 15 billion. Two approaches exist in the literature regarding municipal taxes: The first is that they constitute a type of "fee" for local authority services, under which authorities collect the tax to finance their activities. The second approach views it as a property tax (mainly real estate). In most advanced economies there is no division between residential and other municipal tax, and the tax amount is determined mainly according to property value.

The situation in Israel is unique, as the tax is collected according to the property area, and there is a differentiation between residential Arnona and other Arnona (which is collected mainly from businesses). Residential Arnona is levied at relatively low rates, which are not sufficient to cover all the expenses of the local authority for services to its residents (Fitussi, Yakir, and Sarel, 2015). In contrast, other Arnona is much higher than the cost of services that local authorities provide to businesses. In fact, income from other Arnona subsidizes services to residents.

In line with previous studies, our conclusion is that when it comes to residential Arnona, the burden falls entirely on the household that pays it. For other Arnona, we assume that since it is imposed mainly on businesses, the burden affects business returns, employee wages in businesses, and the prices of products and services – similar to corporate tax (Oates and Fischel, 2016; Zodrow, 2007). Additional details are included in the technical appendix.

Figure 13 shows the distribution of residential Arnona payments. While households in the top decile paid an average of 640 shekels per month, the bottom decile paid 150 shekels.

Figure 13
Average Residential Arnona Payments, by Income Deciles

Ratio of top three deciles to bottom three: 2.9
Total: NIS 11.39 billion

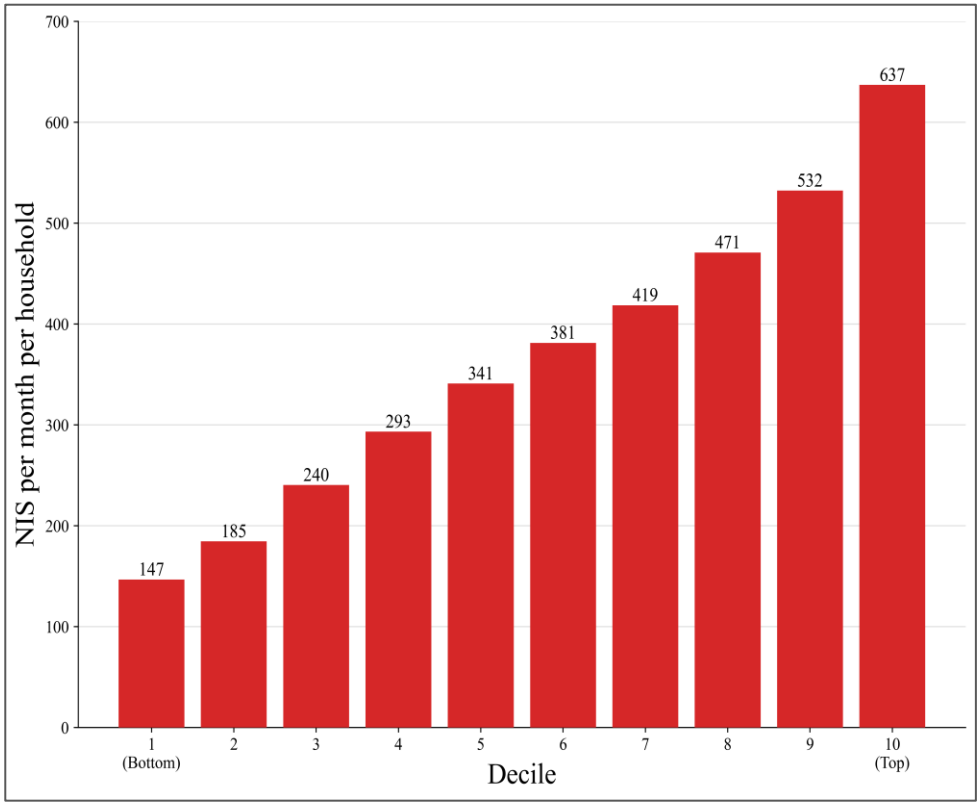
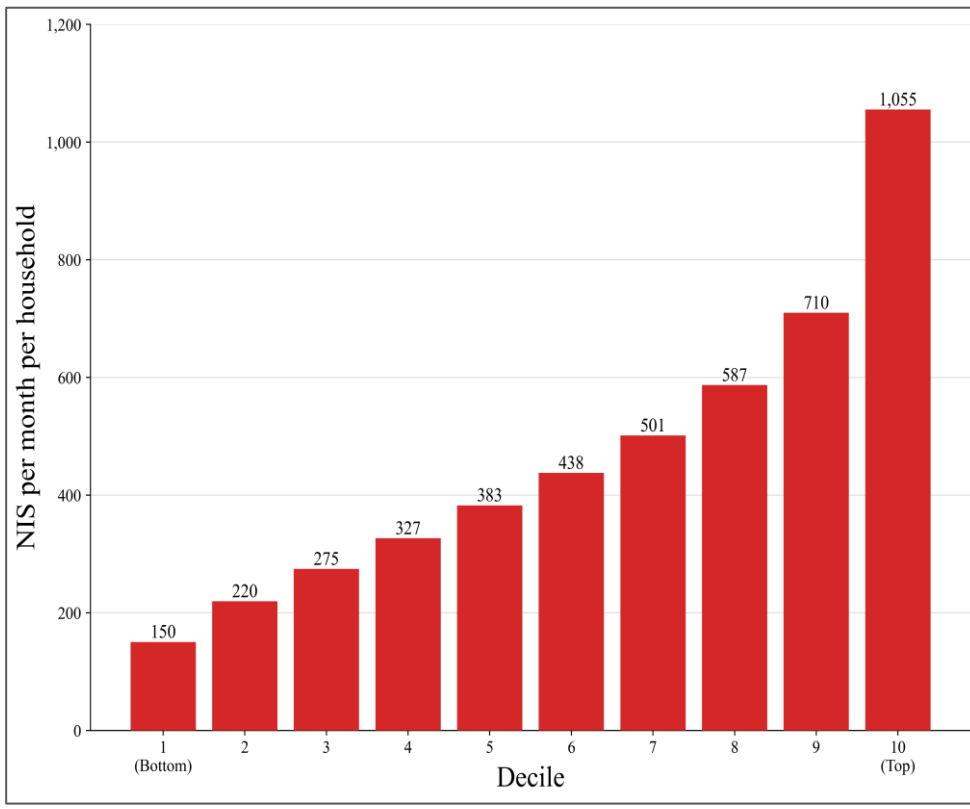


Figure 14 shows the distribution of the other Arnona taxes (mainly business). While households in the top decile paid an average of 1,060 shekels per month, the bottom decile paid 150 shekels.

Figure 14
Average Business Arnona Payments, by Income Deciles

Ratio of top three deciles to bottom three: 3.6
Total: NIS 14.51 billion

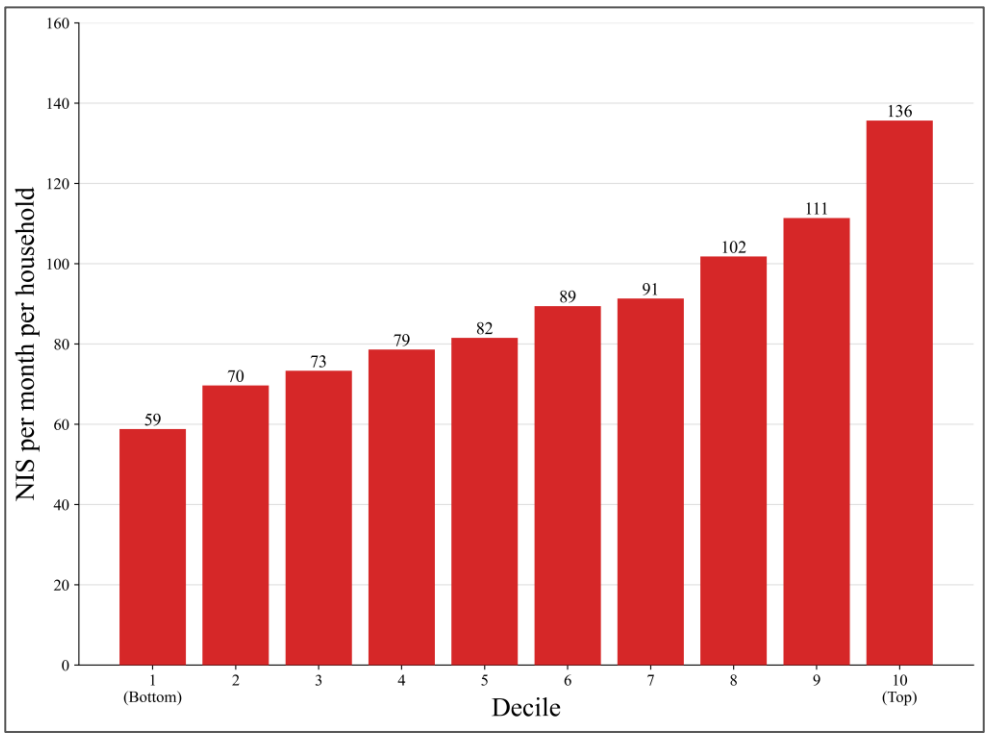


Tariffs and Fees

The State of Israel imposes tariffs on some products it imports. In 2018, the total receipts from tariffs were almost 3 billion shekels. However, the main economic burden of tariffs is in preventing or reducing imports and making domestic products more expensive. Estimating this burden is beyond the scope of this study, and we account only for the "arithmetic" cost of tariffs (meaning, the cost of tariffs without taking into account the effect on product prices). To estimate this, we calculated for each household the total consumption of products on which tariffs are levied, and divided the total income from tariffs according to the household's consumption share of the total. As can be seen in Figure 15, the payment of the arithmetic cost of tariffs is divided fairly uniformly among the income deciles.

Figure 15
Average Tariff Payments, by Income Deciles

Ratio of top three deciles to bottom three: 1.7
Total: NIS 2.79 billion

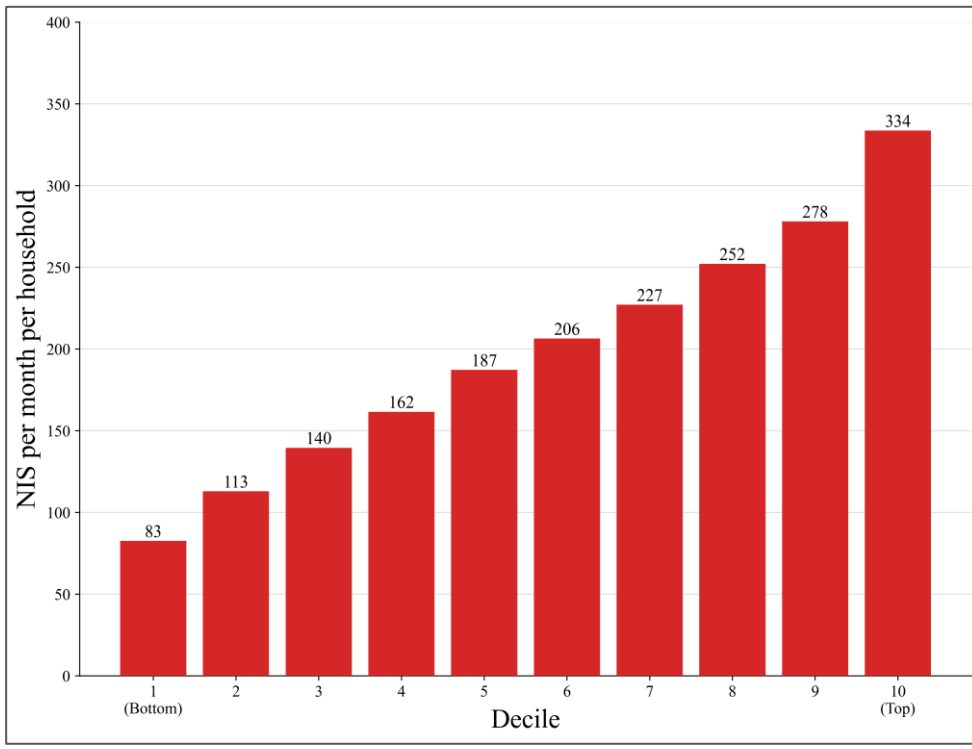


In 2018, the payments of fees reached a total of approximately 6.2 billion shekels. A fee is a payment that residents pay the state in return for the consumption of a government service, usually with the aim of covering its costs. According to this logic, there is no need to attribute fees to households as a tax, since they constitute payment for a product or service chosen voluntarily by the households (unlike taxes, which are compulsory). Nevertheless, the connection between the cost of the fee and the cost of the service appears to be weak (for example: vehicle license fees, which constitute a significant portion of income from fees, are much higher than the cost of the service provided when renewing a vehicle license); therefore, it is reasonable to view a fee as mostly a tax levied on the consumers of various government services. A substantial portion of fees is paid by businesses, and thus the burden of fees is divided between businesses and their consumers according to the supply and demand characteristics in the market in which the businesses operate. Therefore, we attributed the portion of fees that we identify directly in the survey (4 billion shekels) in full to the household, according to their payment. The remaining portion (2.2 billion shekels),

paid by businesses, we attributed similarly to corporate tax (one-third consumers, one-third capital, one-third labor). As shown in Figure 16, the average fee payments increase with income. Additional details are presented in the technical appendix.

Figure 16
Average Fee Payments, by Income Deciles

Ratio of top three deciles to bottom three: 2.6
Total: 6.19 billion NIS



Other Income

The State of Israel derives income from other, non-tax sources, such as the sale of services to households (such as tuition payments), loans to cover the state budget's current deficit, seigniorage from issuing currency, grants from foreign governments, income from government-owned capital (land leasing, for example), and more. Of all these, only seigniorage effectively constitutes taxation, but the scope of income from it is negligible. Therefore, we did not attribute it to households. A more detailed discussion of these issues appears in the technical appendix. In 2018, the total of such income stood at approximately 62 billion shekels.

4. GENERAL GOVERNMENT EXPENDITURE AND ITS DISTRIBUTION AMONG ISRAELI HOUSEHOLDS

We now examine how the general government's expenditures (transfers, services, subsidies, etc.) are distributed among households. Figure 17 shows the distribution of total general government expenditures that we attributed in the main analysis of this paper—direct transfers (allowances), public education, higher-education subsidies, public health, welfare, public transportation, public housing, culture, sports, leisure, and religious services—by income deciles. In the analysis presented in this chapter we account for 50.6 percent of all general government expenditures (267.7 billion shekels), although in sensitivity analyses and in the technical appendix we account for additional expenditures. The figure shows that general government expenditures are distributed relatively evenly among the deciles. The two lowest income deciles receive more than the upper deciles, but the gap is not particularly large, and as will be seen later, is related, among others, to the relative size of households in the different deciles.

Figure 17
Average Value of Total General Government Expenditure, by Income Deciles

Ratio of top three deciles to bottom three: 0.8 General government transfers - health, education, cash transfers, welfare services, public transport, religion, culture, sports and leisure, and public housing.
Total: NIS 267.74 billion.

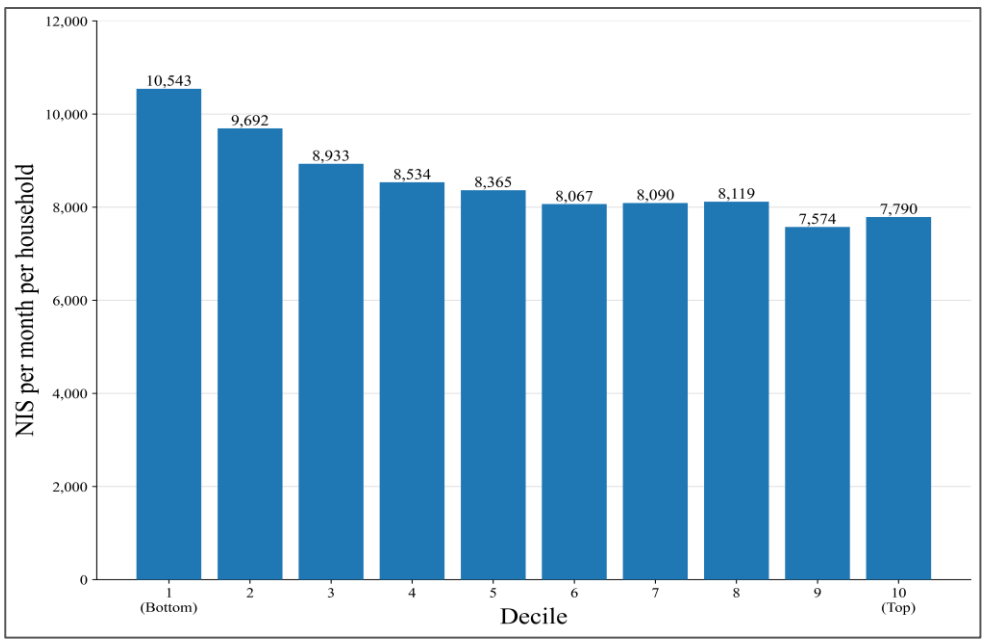
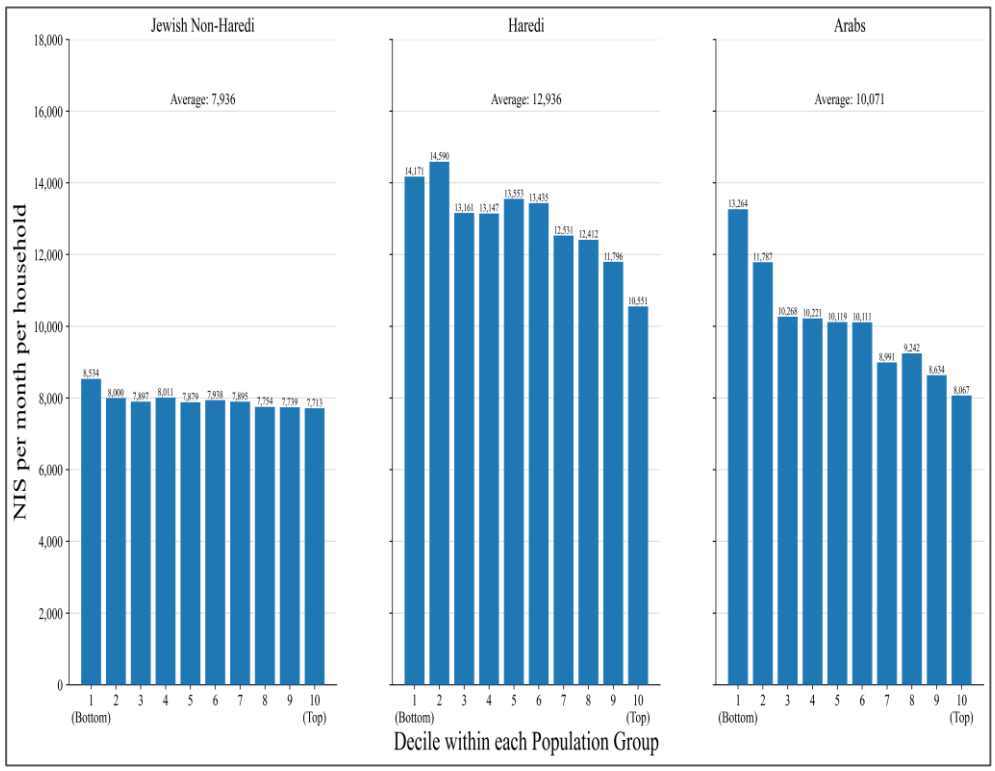


Figure 18 shows the distribution of general government's expenditures by population group and intra-group income deciles. This figure shows that Haredi households receive larger transfers, worth approximately 12,900 shekels on average per month, Arab households receive on average 10,100 shekels, and non-Haredi Jewish households 7,900 shekels on average per month.

Figure 18
Average Value of Total General Government Expenditure, by Group and Intra-Group Income Deciles



We now detail the distribution of the various expenditures.

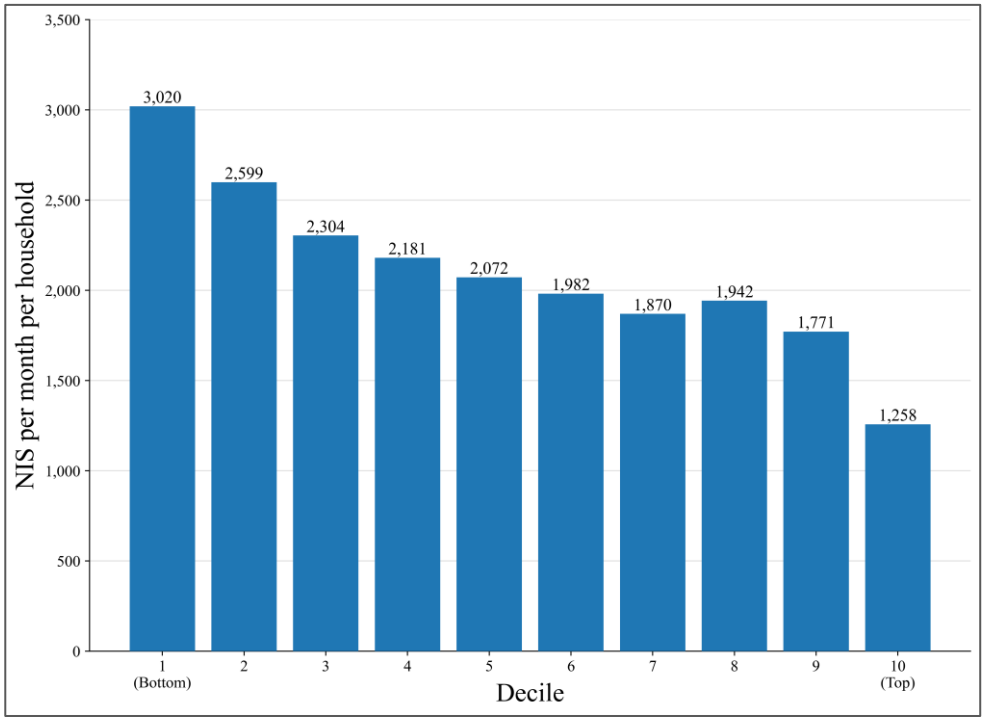
Education

In 2018, the national public expenditure on education from preschool to high school reached 64.48 billion shekels (Central Bureau of Statistics, 2021a), making up approximately 12 percent of the general government's total expenditure. In order to attribute education expenditure to households, we estimated the expenditure per student according to educational

stage (pre-school, primary, middle school, and high school) and population group (non-Haredi Jews, Haredi Jews, and Arabs), taking into account the ages of the children in each household. This attribution enables us to account for both the different distribution of expenditure per student by educational stage (expenditure for a high school student is higher than for an elementary school student, for example) and the distribution between the different groups.[11] It is important to emphasize that we refer to the total net expenditure of the general government, including the expenditures of local authorities. Additional details can be found in the technical appendix.

As Figure 19 shows, households in the lowest income decile receive public education services worth an average of approximately NIS 3,000 per month, while households in the highest decile receive services worth an average of approximately NIS 1,250 per month.

Figure 19
Average Value of Education Services (Preschool to High School), by Income Decile



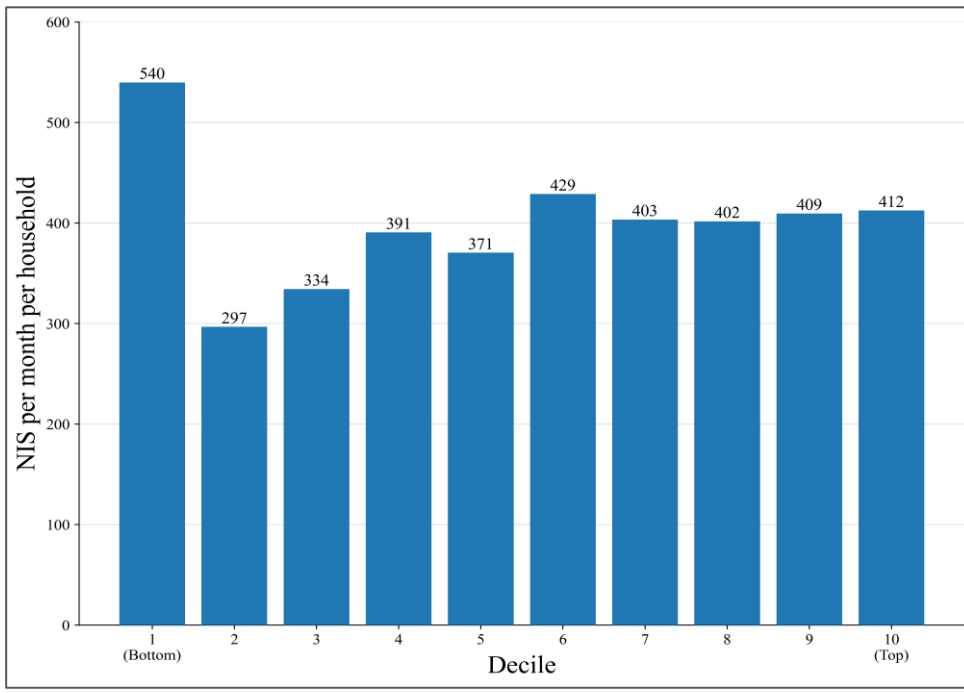
[11] The expenditure for a Haredi student in 2018 was lower than the expenditure for a non-Haredi Jewish student. However, since then, proposals have been submitted for changes in policy and budgeting on this issue. For further details, see Ministry of Finance—Budget Department (2023).

In addition to the public provision of education from preschool to high-school, academic studies in Israel are partially subsidized by the state as well, so that tuition paid by students to public colleges and universities do not cover the actual costs of their education. In 2018, the general government's expenditure on higher education was 12.4 billion shekels, and an additional 500 million shekels for non-academic post-secondary education. We attributed this expenditure to households according to the number of persons reporting that they are students enrolled in higher education institutions, taking into account the rate of students in private institutions that are not funded by the general government. Additional details appear in the technical appendix.

Figure 20 shows there is no clear trend in the relationship between the extent of higher education services and income. The relatively high value in the lowest decile stems partly from the fact that some households in the data are young students who do not live with their parents in the same household, and their current income (as measured in the survey) is low, even though their parents may be in higher income deciles (for more on the income of students' families, see Zussman, Lipiner, and Rosenfeld, 2019).

Figure 20
Average Value of Higher Education Services, by Income Decile

Ratio of top three deciles to bottom three: 1.0
Total: NIS 12.46 billion



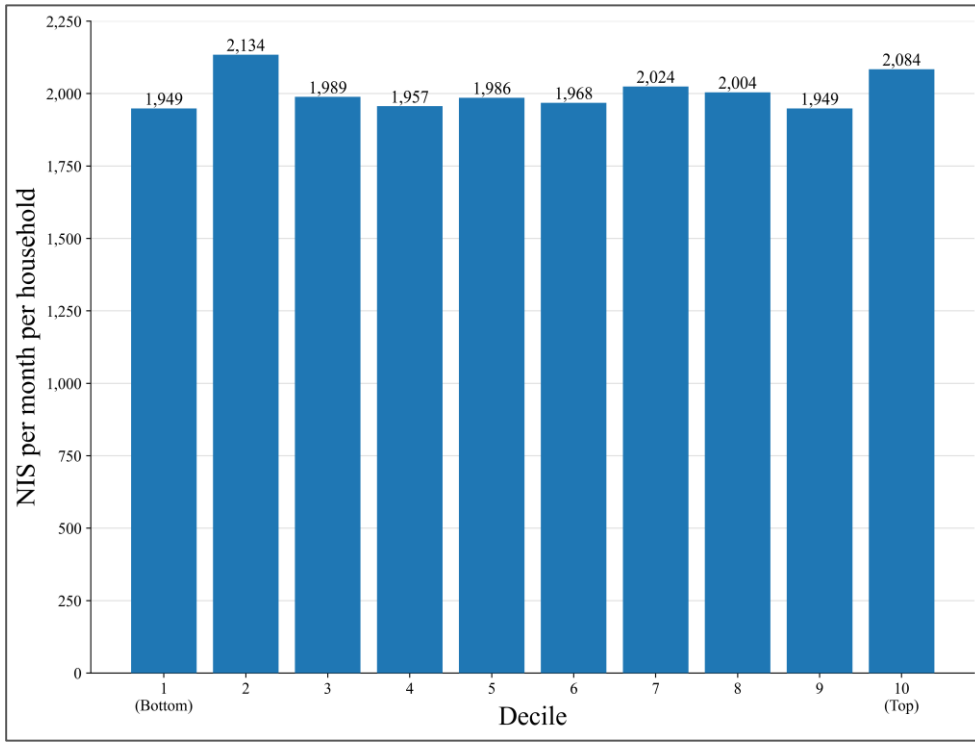
Health

In 2018, public expenditure on health was approximately 64 billion shekels (Central Bureau of Statistics, 2021b), making up approximately 12 percent of general government expenditures. The majority of general government expenditure on health is through Kupot Cholim—health maintenance organizations (HMOs), with the amount of funding determined through the capitation formula. The HMOs receive a different amount for each insured person according to their age, gender, and place of residence (periphery or center). We attributed this expenditure to households using these variables for each individual. Note that even if a household did not actually consume any public health services, it should be attributed this expenditure, since they were entitled to public health—i.e., this is an insurance approach representing money households saved on the purchase of medical services or medical insurance, had they not received public health services (Verbist and Förster, 2019). In total, we attributed approximately 62 billion shekels to households; the remaining 2 billion shekels are health infrastructure, which we discuss later. Additional details appear in the technical appendix.

Figure 21 shows the distribution of public health expenditures to households by income decile. The distribution is relatively uniform, and is set at about 2,000 shekels per month per household.

Figure 21
Average Value of Health Services, by Income Decile

Ratio of top three deciles to bottom three: 1.0
Total: NIS 62.62 billion



Allowances and Other Direct Transfers

In 2018, various allowances (Kitzbaot) and direct transfers constituted approximately 15 percent of general government expenditures (close to 79 billion shekels).[12] National Insurance allowances received by households appear directly in the survey data and total approximately 54 billion shekels, while transfers from other state institutions total approximately 7 billion shekels. The disparities between the survey and the administrative data (approximately 18 billion shekels) stem, for example, from long-term care allowances, which are estimated in the survey at approximately 0.8 billion shekels, while the administrative figure stands at approximately 7 billion shekels. In this allowance, and in others as well, a significant portion of the gap results from the provision of in-kind services

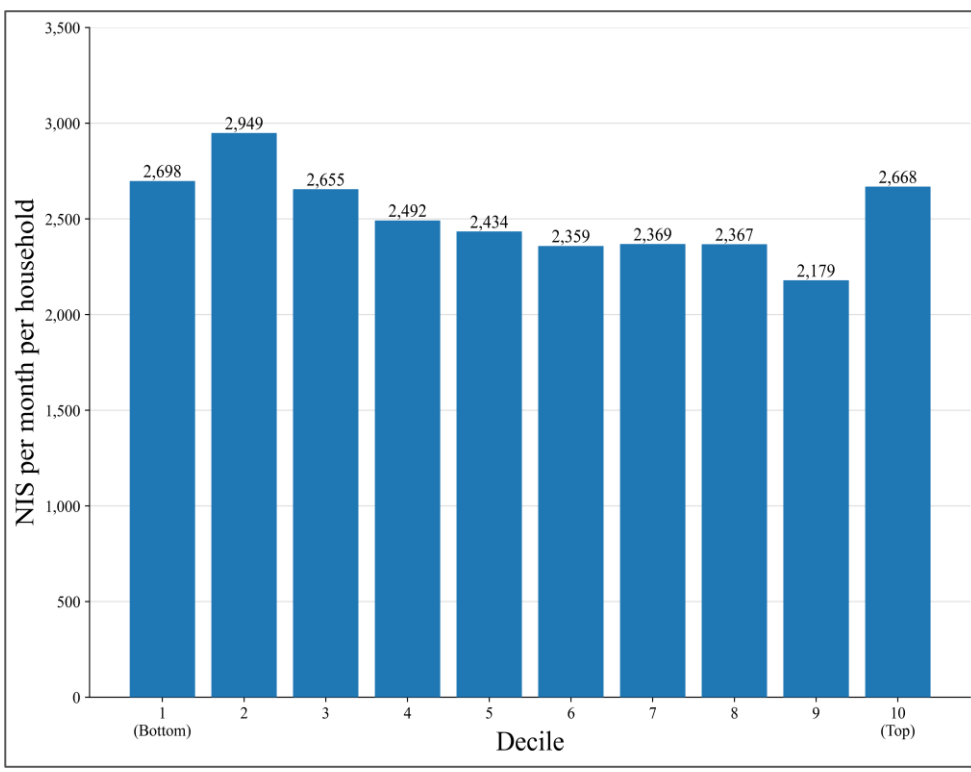
[12] The Survey includes an item for negative income tax (il42075). This category is included in the value of services and transfers received by the household, but there is a discrepancy between it and administrative data. For further details, see Karlinsky (2021).

(approximately 12 billion shekels) by the National Insurance Institute. We deducted the benefits provided in the form of services from the administrative data of the allowances, and then adjusted the receipt of allowances in households to the remaining amount. This entire process is detailed in the technical appendix. In addition, the allowance named "Savings Plan for Each Child" of 50 shekels a month does not appear in the survey, and we therefore calculated it for each household according to the number of its children under the age of 18.

Figure 22 presents direct transfers from National Insurance and other state institutions. It shows that direct transfers are divided relatively evenly among income deciles, with a slight decrease from the second decile, and a slight increase in the highest decile. The main explanation is apparently related to the different age composition among the deciles and its effect on the receipt of old-age pensions, as presented later in detail.

Figure 22
Average Value of Direct Transfers, by Income Decile

Ratio of top three deciles to bottom three: 0.9
Total: 78.63 billion NIS

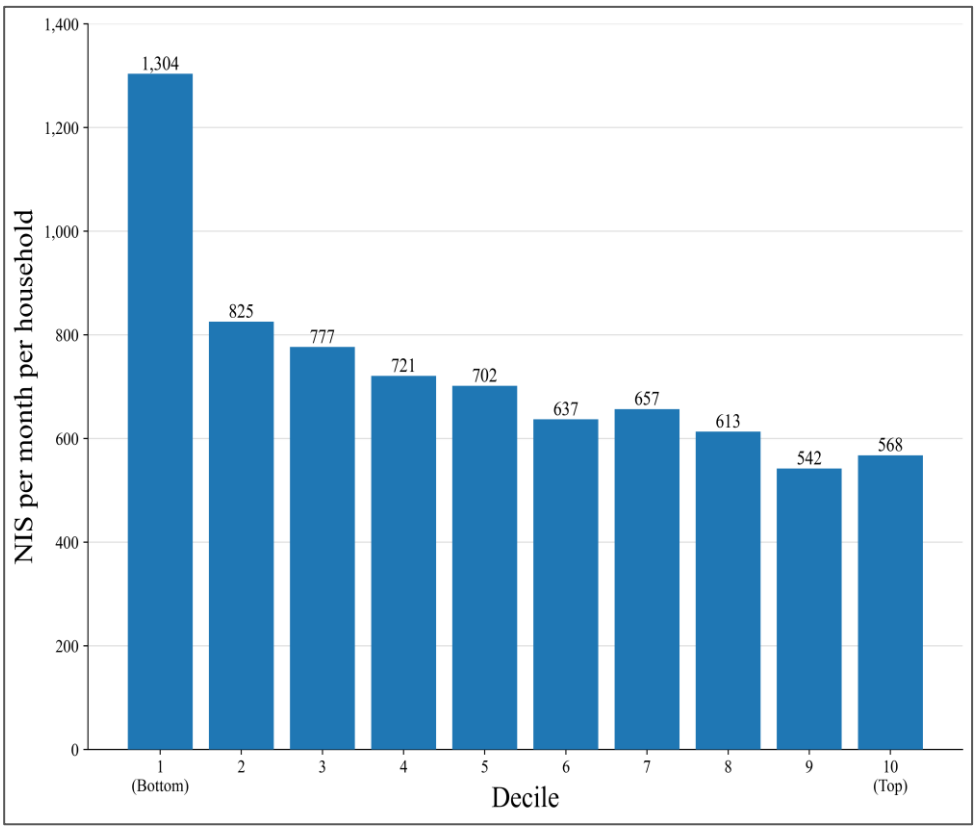


Welfare Services

In 2018, the value of in-kind welfare services (which include, for example, services provided by social workers) totaled close to 23 billion shekels, constituting approximately 4 percent of general government expenditures. Figure 23, which presents the distribution of welfare services, shows that households in the lowest income decile receive a relatively large portion of these services, approximately 1,300 shekels per month on average, with the amount decreasing as one moves up the income deciles, at least until the sixth decile.

Figure 23
Average Value of Welfare Services, by Income Decile

Ratio of top three deciles to bottom three: 0.6
Total: NIS 22.95 billion



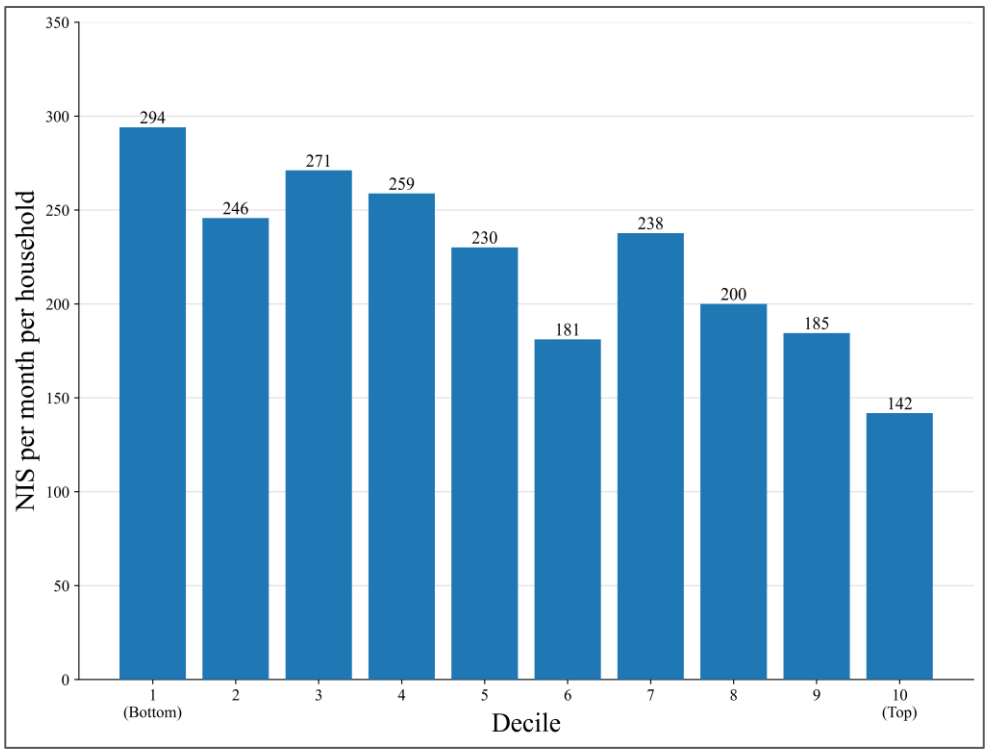
Public Transportation

In 2018, the general government spent close to 7.01 billion shekels on public transportation (Ministry of Finance, 2023), making up approximately 1 percent of the total general government expenditure. Most of this expenditure is subsidies to bus operators, Israel Railways, and the like. The amount of subsidy per household can be attributed by using the survey's report on public transportation (bus or train) expenditures and the amount of the subsidy by bus or train. Details of the calculation are presented in the technical appendix.

In the survey, we estimated 4.79 billion shekels in public transportation subsidies directly to households. In order to adjust this amount to the above fiscal figure, we attributed the gap to households according to the ratio between the administrative and survey data. As can be seen in Figure 24, those in lower deciles generally use public transportation more and therefore receive more subsidies compared to higher deciles, although there is some volatility in the relationship between the value of public transportation service and income deciles.

Figure 24
Average Value of Public Transportation Services, by Income Decile

Ratio of top three deciles to bottom three: 0.6
Total: NIS 7.01 billion



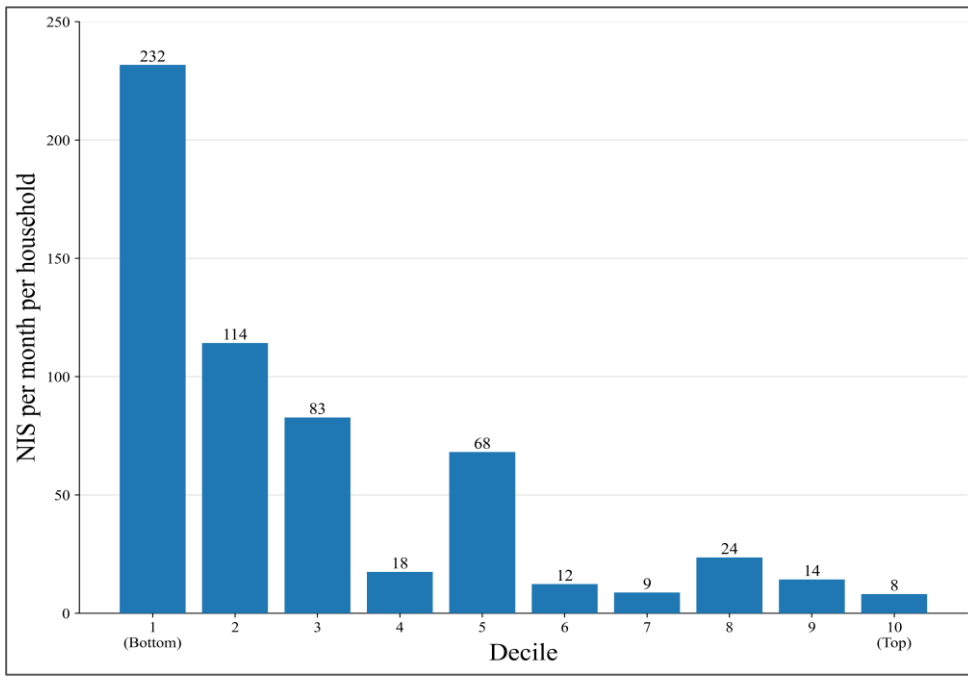
Public Housing

In 2018, the value of services and transfers for public housing in Israel stood at slightly less than half a percent of the general government's expenditures (approximately NIS 2 billion). The main transfer in this category is a rental benefit, in the form of reduced rents at public housing companies, but there is also a purchase benefit received by households that lived in a public housing apartment and subsequently purchased it. Both types of benefits were attributed to households. We calculated the rental subsidy as the gap between the monthly rent that the household pays to public housing companies compared to the monthly rent for a similar apartment in the free market. We calculated the purchase subsidy based on data on apartment sales by public housing companies, identifying those households participating in the survey that purchased their apartment from a public housing company. Details of the calculation are presented in the technical appendix.

Figure 25 presents the distribution of the value of public housing services by income deciles. As shown, the lowest decile enjoys the highest average value, with a non-uniform downward trend in value the higher the income decile.

Figure 25
Average Value of Public Housing, by Income Decile

Ratio of top three deciles to bottom three: 0.1
Total: 1.82 billion NIS



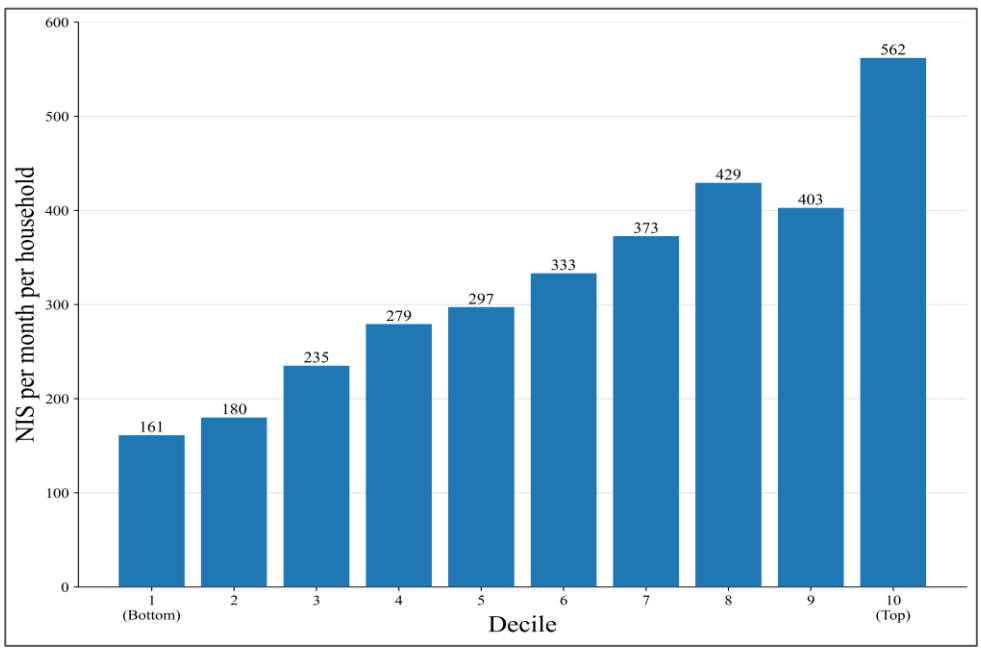
Sports, Culture, and Leisure

In 2018, the general government's total expenditure on sports, culture, and leisure stood at 10.16 billion shekels (Central Bureau of Statistics, 2019), constituting approximately 2 percent of general government expenditures. These expenditures include both subsidies for paid events (meaning that in the absence of the subsidy, the price of tickets to a sports or cultural performance would be higher) and free or nominally priced events. In order to attribute these expenditures to households, we identified the beneficiaries by their reported expenditure in the survey on "cultural, sports, and entertainment performances", as well as by estimating the frequency of consumption of sports, culture, and leisure events (even without payment or with partial payment) using the CBS's social survey for 2014 in which individuals were surveyed on this topic. Details of the calculation are presented in the technical appendix.

Figure 26 shows the average value of culture, sports, and leisure services by income deciles. It shows that while households in the lowest income decile receive services (and subsidies) with an average value of approximately 160 shekels per month, the highest decile households receive an average value of approximately 560 shekels per month.

Figure 26
Average Value of Sports, Culture, and Leisure Services, by Income Decile

Ratio of top three deciles to bottom three: 2.4
Total: 10.16 billion NIS



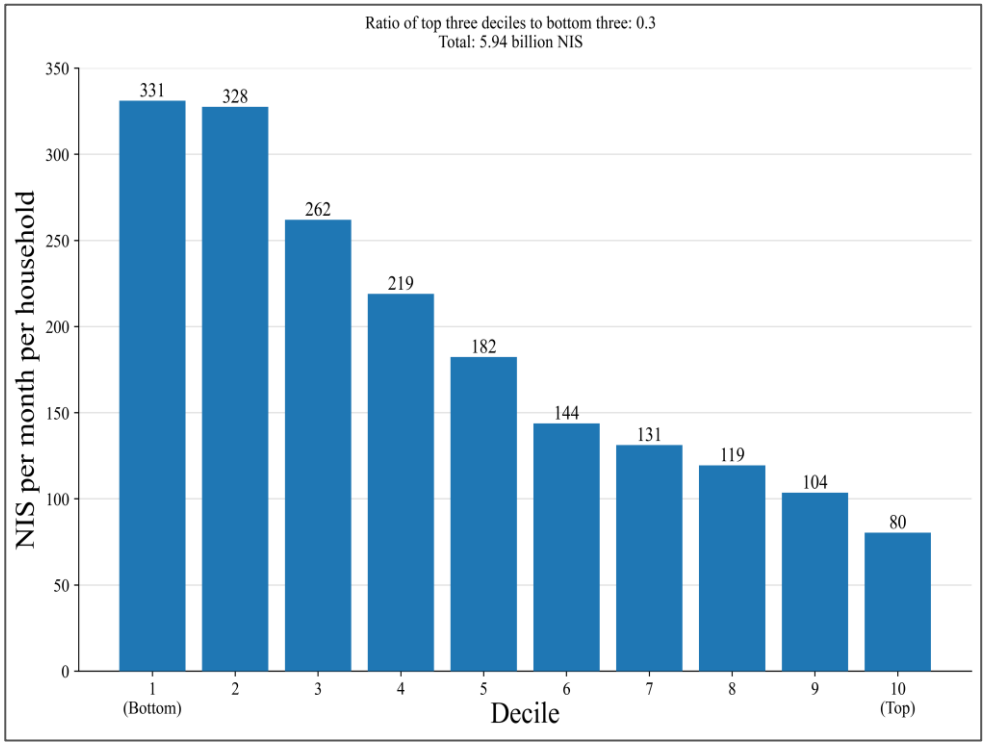
Religious Services

According to the GFS, the total expenditure by the general government on religion in 2018 stood at 5.94 billion shekels (approximately 1 percent of total general government expenditure). This amount includes the net expenditures of religious institutions in Israel such as the Ministry of Religious Services, religious expenditures of other ministries, religious expenditures of local authorities and religious councils, as well as expenditure on yeshivas not included in the education expenditure. In order to attribute these expenditures to households, we identified the beneficiaries by those who reported in the survey having received income from a "state institution: yeshiva" as well as by estimating the frequency of visits to a synagogue, church, mosque, or khalwa (Druze prayer house), using the CBS's social survey for 2009 in which individuals were surveyed on this topic. Details of the calculation are presented in the technical appendix.

Figure 27 shows the average value of religious services by income deciles. It shows that households in the lowest income decile receive religious services with an average value of approximately 330 shekels per month, while households in the highest decile receive an average value of approximately 80 shekels per month.

Figure 27
Average Value of Religious Services, by Income Decile, 2018 Data

Ratio of top three deciles to bottom three: 0.3
Total: 5.94 billion NIS



Defense and Internal Security

In 2018, expenditures on defense and internal security constituted approximately 18 percent of general government expenditures (close to 96 billion shekels). This expenditure was not attributed to households in our main analysis, since it is a quintessential public good. A public good is one that is non-rivalrous and non-excludable: its consumption by one person does not detract from the ability of others to consume it, and there is no possibility of preventing someone from consuming the good. Thus, attributing public goods to households is difficult, since all residents of Israel consume all the expenditure on public goods. An attempt to divide these expenditures among Israel's residents raises complex questions regarding the method of attribution: Should the expenditure be attributed per capita? per household? Should it be attributed according to income, since those who earn more benefit more from the protection provided by defense and internal security? In our review of the literature we did not find a

persuasive answer regarding these questions, so that the result of any attribution would, in fact, stem directly from the chosen assumptions.

However, in the technical appendix we present sensitivity tests in which we attribute the value of defense and internal security transfers to each household, using three different approaches: attribution according to household income, attribution according to household consumption expenditure, and attribution according to the number of persons in the household.

The Economic Burden of Military Service

In regard to security, there exists, aside from the expenditure for the households, also a (possibly inevitable) tax in the form of mandatory military service. The differences in the net transfers we estimated between the different population groups (non-Haredi Jews, Haredi Jews, and Arabs) do not take into account the burden of military service, which is a legal obligation in Israel for a portion of the population, consisting almost entirely of non-Haredi Jews. Young men and women who perform mandatory service are severely restricted in their ability to devote their time and energy to other pursuits, such as academic or professional studies, employment, travel, etc. The only option available to them aside from military service is to break the law and risk severe sanctions.

Obviously, the true economic burden of military service is far higher than that recorded in the budget books, since loss of income is in fact a "hidden tax" imposed on those serving in the military. In most cases, payments to those serving are much lower than the economic benefit of their mandatory service. As a result, the effective tax rate on their theoretical income is extremely high, despite no record of it in the budget books. The fact that this tax is unrecorded does not mean that it is low compared to recorded expenditures.

Gaibel and Sarel (2020) adopt (with some modifications) the spirit of Zeira's (2021) calculation, and estimate the long-term economic cost of mandatory military service at approximately 3.7 percent of GDP (approximately 49 billion shekels in 2018). Generally, military service affects all an individual's working years, as a result of the delay in human capital acquisition (work experience and education) by several years. Those serving mandatory military service bear most of this economic burden themselves. If their military service contributes significantly positively to their human capital, the cost may be smaller.

Additionally, there is a burden placed primarily on people who served mandatory military service in the past and still serve in the reserves (Miluim), especially if they work part-time or are self-employed. It is possible in these cases that the payment they receive for reserve duty days is significantly lower than the economic damage they sustain due to their reserve service.

As mentioned, the excess economic burden resulting from mandatory military service and reserve service placed on the service members is highly significant. It cannot be calculated precisely or distributed by household due to the lack of detailed data (there is no direct information in the survey regarding the present or past mandatory service of individuals), but

it can be determined that this burden is placed mainly on the non-Haredi Jewish group; therefore, the total negative net transfers that this group bears is greater than the estimates in this paper.

Infrastructure

General government expenditures on infrastructure totaled close to 8.7 percent of total expenditures in 2018—approximately 45 billion shekels (CBS, 2022, Table 8b). This expenditure includes expenditure on energy, water and sewage infrastructure, sea and air ports, railways and public transportation, and communications infrastructure. In addition, we included expenditures on the construction of education (e.g., schools) and health infrastructure and the like, which were not attributed in the main analysis (as detailed above).

Since infrastructure has certain characteristics of public goods (although it is not a pure public good), there are significant methodological and substantive difficulties in attributing it to households or potential consumers (Proag, 2021). In addition, infrastructure benefits not only current users but future generations as well. Since this research deals with a cross-sectional snapshot of the distribution of general government income and expenditure, we do not consider it correct to attribute this expenditure. Therefore, similar to expenditures on defense and internal security, it is not included in the main analysis.

However, we included in the technical appendix calculations of the value of infrastructure expenditure to households using three approaches: attribution according to household income, attribution according to household consumption expenditure, and attribution according to the number of persons in the household—similar to the analysis we performed for public goods.

Other Expenditures

The general government has other expenditures—budgetary (defined benefits) pensions, interest on the national debt, and the like. Moreover, some of these are recorded as accrued expenditures only, without actually being carried out (see further details in the appendix). These expenditures reached 15 percent of the general government's expenditure for 2018 (approximately NIS 82 billion). We did not attribute these to households in the main analysis presented in this paper due to their unique characteristics, as we detail below.

Interest on the National Debt

In 2018, the interest payments on the public debt stood at NIS 32.36 billion. The debt was created in the past, and it is not clear how to correctly attribute the interest payments paid on it in the present. To clarify, whether we attribute it as an expenditure or as a tax, it is not clear how the present debt payment is distributed on either side of the calculation. For these and other reasons, we chose not to attribute the interest on debt. The technical appendix includes a detailed discussion of this issue.

Public Budgetary Pensions

Public budgetary pensions are pension benefit payments that the state pays to some of its retired employees. Part of this expenditure is classified, partly because of security forces retirees. Also, it is impossible to derive from the survey data which households receive budgetary pensions. For example, the survey data does not include information on the employment sectors in which individuals worked before their retirement; accordingly, indirect attempts to attribute budgetary pensions are not possible with the current data.

In addition to these methodological problems, budgetary pensions can also, to a large extent, be considered a debt created in the past (similar to the national debt), and it is not clear whether it is correct to attribute its repayment now, nor how to do so. For example, the government committed in the past to civil service employees (e.g., teachers and bureaucrats) that in the distant future they would receive a budgetary pension after retirement. These employees subsequently provided services to Israeli citizens, partly due to that commitment to receive a budgetary pension. Since this commitment was created in the past, while later on the government transferred all its new employees to an accumulative pension (defined contributions), it is unclear whether and how it would be correct to attribute the present payment of this debt.

Summary of Taxes and Expenditures

Table 1 summarizes all taxes and expenditures referred to in this paper and presented above, presenting the different amounts in administrative data (such as the GFS or the relevant CBS national expenditure publications), the amounts per the survey, and the attribution that aligned the Survey data with the relevant administrative data.

Table 1
General Government's Income and Expenditure, 2018 Data

Income/Expenditure* (billions of Shekels)	Administrative Data	Directly in Survey	Actual Attribution	Attribution as % of Administrative Data
Total revenue of General Government	480.91	-	-	
Other income	61.8	-	-	
General Government Tax Revenue	419.11	324.03	405.47	96.74%
Individual Income Tax	95.51	69.71	95.51	
National Insurance contributions & Health Tax	70.66	65.86	70.66	
Value Added Tax (VAT)	99.87	73.97	99.87	
Financial VAT & Nonprofit VAT	15.32	15.32	15.32	
Corporate Tax	42.93	42.93	42.93	
Real-Estate Taxes	11.54	1.89	11.54	
Fuel Tax (Blo)	17.18	11.12	17.18	
Vehicle Purchase Tax	10.5	7.61	10.5	
Tobacco Tax	6.13	2.82	6.13	
Alcohol Tax	0.96	0.28	0.96	
Tariffs and Fees	8.98	6.62	8.97	
Residential Municipal Tax (Arnona)	11.39	12.17	11.39	
Other Municipal Tax (Arnona)	14.51	14.51	14.51	
Additional Taxes not included in study	13.63	-	-	
General Government Expenditures	528.32	241.72	267.76	50.68%
Expenditures included in main analysis	267.76	241.72	267.76	
Education	78.55	78.62	78.62	
Health	62.62	62.62	62.62	
Direct Transfers (Allowances)	78.63	60.46	78.63	
In-Kind Welfare Services	22.95	22.95	22.95	
Public Transportation	7.01	4.79	7.01	
Public Housing	1.82	1.82	1.82	
Sports, Culture and Leisure	10.16	10.16	10.16	
Religion	5.94	5.94	5.94	
Additional expenditures in sensitivity analyses	178.74	-	-	
Defense & Internal Security	96.45	-	-	
Infrastructure	45.89			
Environmental Protection	7.26	-	-	
Fiscal services, Ministry of Foreign Affairs and government institutions	10.13	-	-	
Economic Affairs	19.01	-	-	
Expenditures not included in study	81.82	-	-	

* Totals may not add up due to rounding

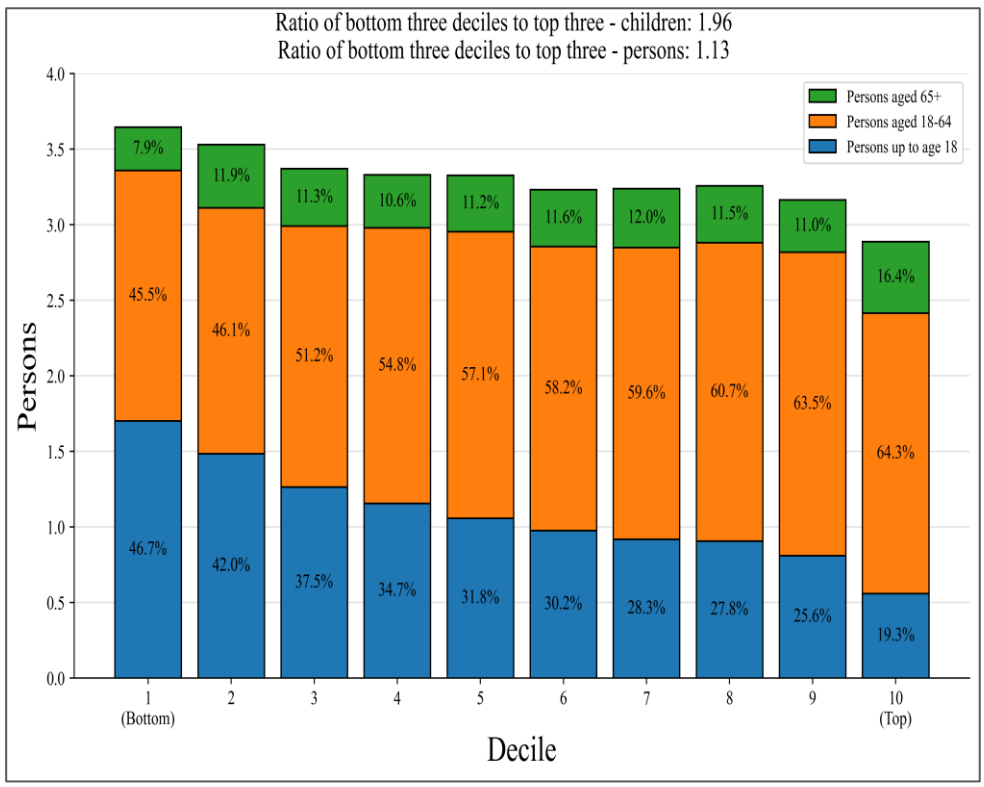
5. ADDITIONAL ANALYSES

In this chapter, we conduct further analyses based on our dataset: First, we examine the demographic composition of households by deciles, to explain some of the findings previously discussed. Second, we analyze some of the State's income and expenditure by household structure and number of children. Thirdly, we estimate the net transfers by expenditure deciles. Finally, we measure the Gini coefficient for inequality by different types of income according to our estimates.

Demographics

The number of people in a household in the various income deciles is not distributed uniformly, and there is much variability in the age distribution as well. Figure 28 shows that households in the lowest income decile have 3.65 persons on average while those in the top decile have 2.89. The average number of children drops sharply the higher the decile, while the number of adults steadily rises.

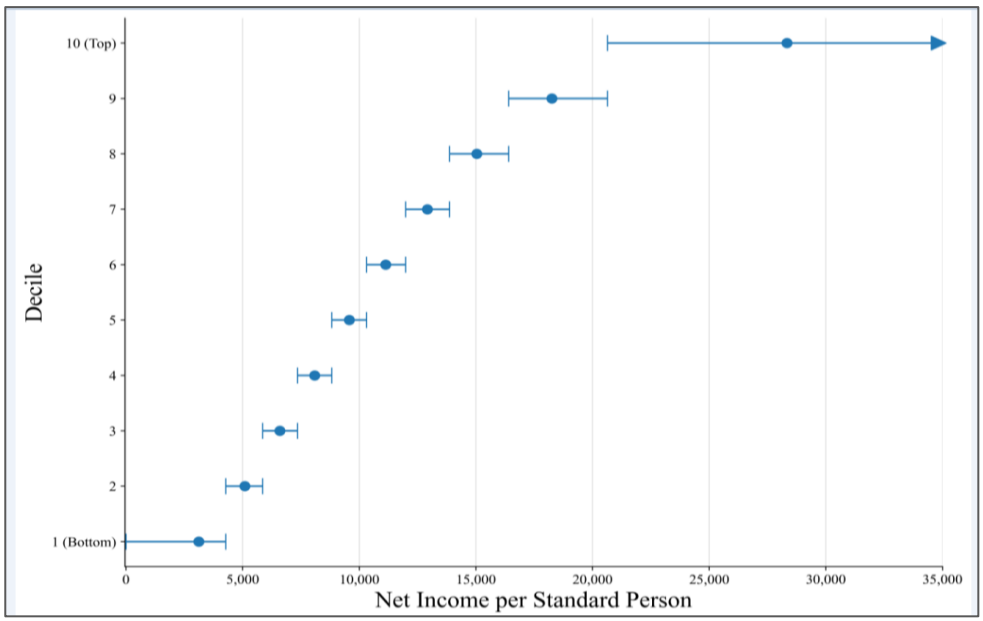
Figure 28
Average Number of Persons, by Age Group and Income Decile



The age distribution explains some of the results seen in previous chapters, particularly regarding households' receipt of services and transfers. For example, Figures 21 and 22 showed that the top income decile received welfare and health transfers and services at a value no less (and even more) than the value to the lowest deciles. One possible explanation for this is the relatively large number of older people in the top decile, leading to the receipt of more old-age allowances and welfare services (proportionate to the decile's population) and more health services (since the capitation formula is largely based on age). Similarly, the age distribution also explains the distribution of education services' value across deciles (Figure 19). Children are the ones who receive those services in practice, and given that the number of children in the lower deciles is higher by far than that in the upper deciles, households in the lower deciles receive more education services than the other deciles.

Figure 29 shows the average equivalized net income of households in different income deciles. This also explains part of the results we saw in previous analyses, since they are affected by both taxation on the one hand and transfers on the other: Taxation is affected by the direct taxes paid on household income, as well as indirectly by the products and services that households consume with this income. Transfers are also affected, because households with less means tend to receive more transfers from the state, for example through benefits and welfare services.

Figure 29
Average and Range of Equivalized Net Income, by Deciles



Breakdown by Household Size

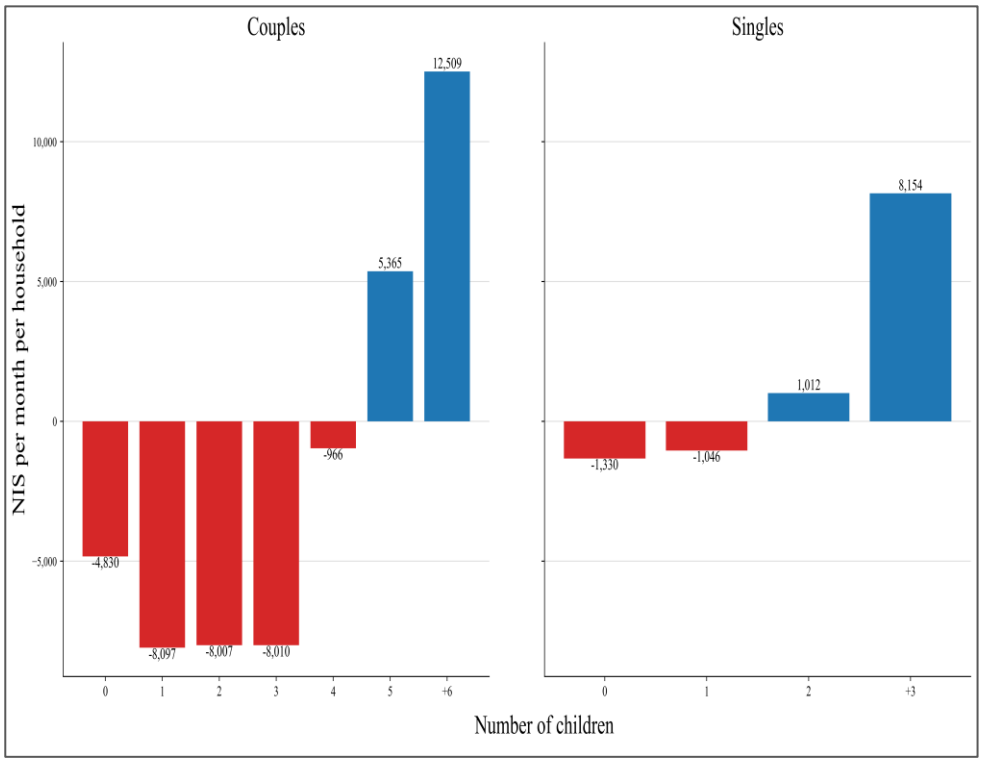
We also present a breakdown of net transfers, total taxes, and total transfers by household structure (single parent/adult or couple) and number of children. Due to limited observations of single-person households with multiple children, the analysis groups differ—among single-adult households, the groups of 3 children and above were combined into one group, while among couples households, the upper group is 6 children and above.

Net Transfers

Figure 30 shows the net transfers to households by household structure and number of children, with households divided into two- and single-parent/adults households. Generally, it shows that for the most part (though not always) a higher number of children translates into a higher net transfer, for both couples and singles. Additionally, for every given number of children, net transfers for single parents are larger than net transfers for couples with the same amount of children.[13]

[13] This analysis includes only households with one or two parents (excluding, for example, households with roommates). The number of children includes the biological children of the single parent or parent couple, as well as grandchildren and foster children under the age of 18.

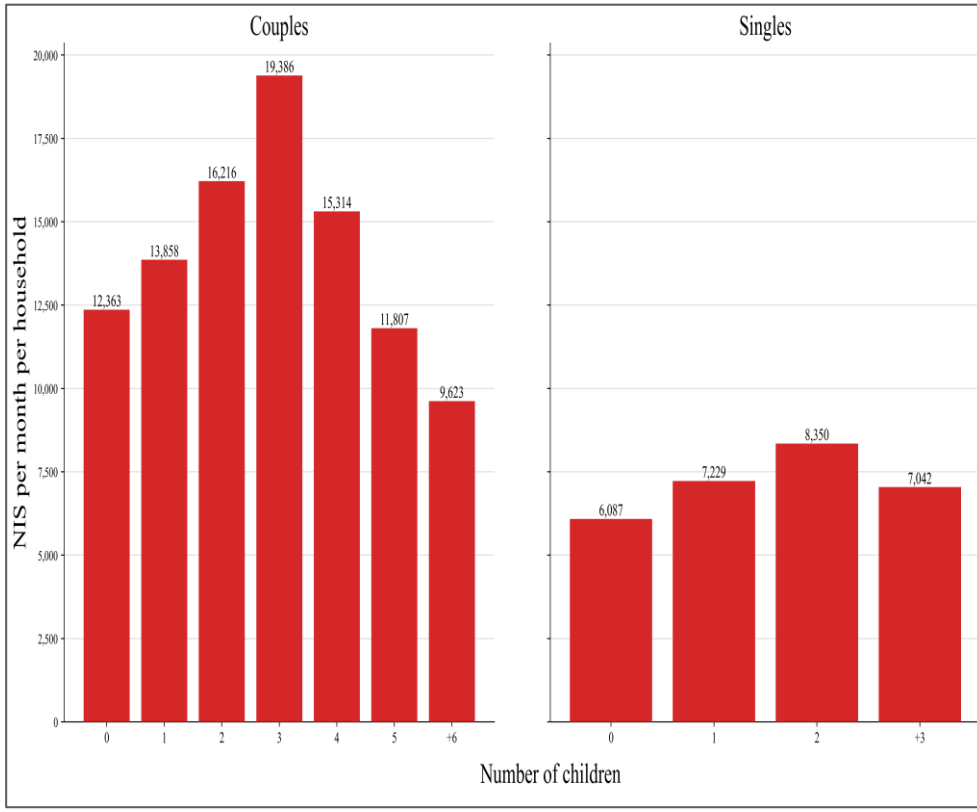
Figure 30
Net Transfers (Services Minus Taxes), By Household Structure and Number of Children



Tax Payments

Figure 31 shows households' average payment of taxes by household structure and number of children. For the same number of children, couples pay more taxes compared to single parents. Among couples, expenditures on tax payments decrease from the fourth child onward.

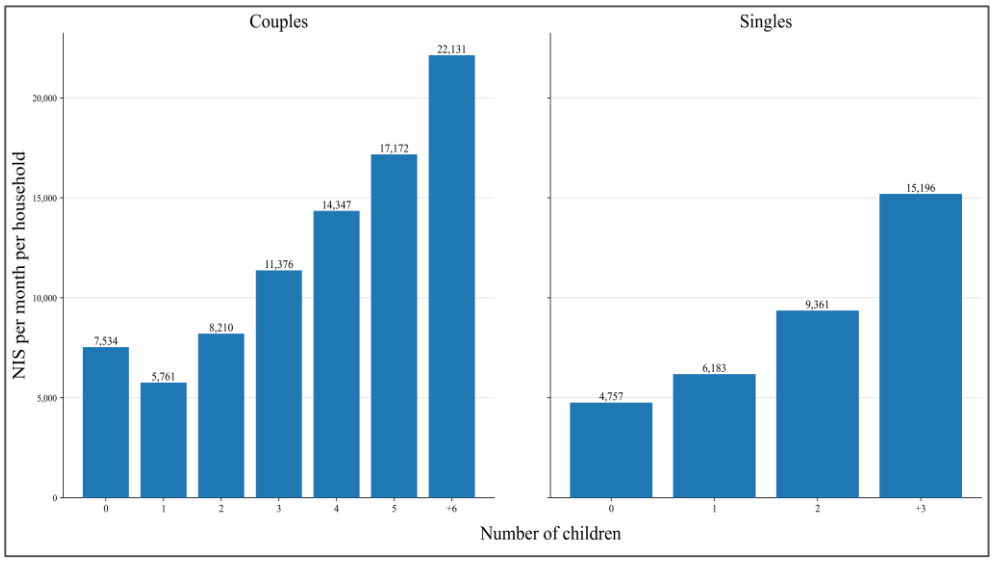
Figure 31
Average Payment of Total Taxes, by Household Structure and Number of Children



General Government Transfers

Figure 32 shows the distribution of the general government's expenditures by household structure and number of children. Generally, households with a higher number of children are characterized by receipt of services. Likewise, single parent households receive services at a value higher than other families, for every given number of children. It must be noted that many households with no children are characterized by older persons, who get more health services and old-age allowances.

Figure 32
Average Value of Total General Government Expenditure, by Household Structure and Number of Children



Analysis by Household Expenditure Deciles

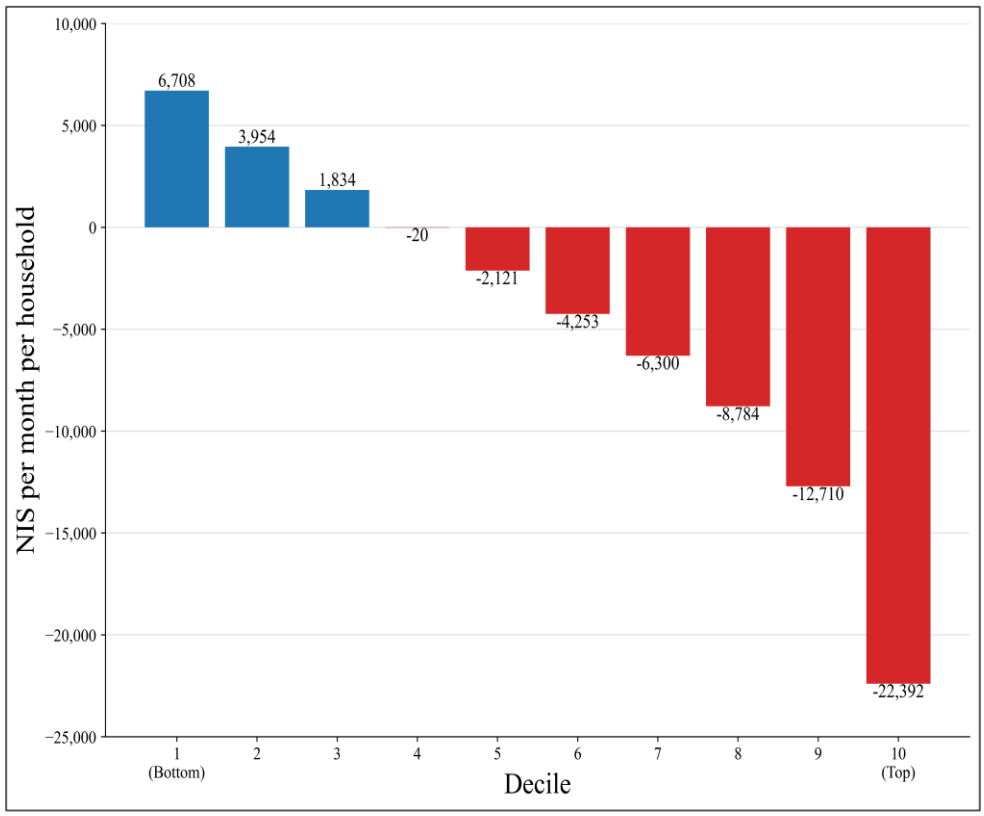
The Household Expenditure Survey is a cross-section, and as such, it measures households' income and expenditure at a specific point in time, without tracking them over time. According to well-known economic theories, primarily Friedman's Permanent Income Hypothesis (Friedman, 1957), income varies more sharply over the life cycle than expenditure. In simple terms, while expenditure (consumption) is relatively stable throughout life, income varies between different periods. For example, "young" households will typically be characterized by a current income that is lower than their expenditure, as will older households who mostly rely on their savings. In contrast, households where the breadwinners have significant employment tenure and are maximizing their earning capacity will typically be characterized by income that is higher than their expenditure. Therefore, current expenditure can sometimes reflect the standard of living more reliably than current income (Chief Economist Division, 2019), especially when dealing with cross-sectional data.

Accordingly, we conducted an additional analysis of net transfers by expenditure deciles. Figure 33 shows the results of this analysis. It shows that households in the top expenditure decile paid on average approximately NIS 22,100, net, per month in taxes more than they received in transfers, while households in the bottom decile received approximately NIS 6,500 more than they paid in taxes. The distribution of net transfers to households by expenditure deciles is very similar to that by income deciles, as shown in Figure 2.

Figure 33
Average Value of Net Transfers (Services Minus Taxes), by Expenditure Deciles

General Government revenues from taxes—Income taxes on individuals, social security and health tax, VAT, corporate tax, Financial Activity Tax and nonprofit VAT, sales and fuel taxes, residential and other property taxes, real estate taxes and customs. Total: 405.47 billion NIS.

General Government transfers—Health, education, cash transfers, welfare services, public transport, religion, culture, sports and leisure, and public housing. Total: 267.74 billion NIS.



Inequality

The Gini coefficient (or index) is an accepted measure of inequality. Its values range from 0 to 1, where 0 describes a state of complete equality and 1 describes a state where all income is concentrated in a single household. Figure 34 shows the Gini coefficient for income per standard person, for different definitions of household income.

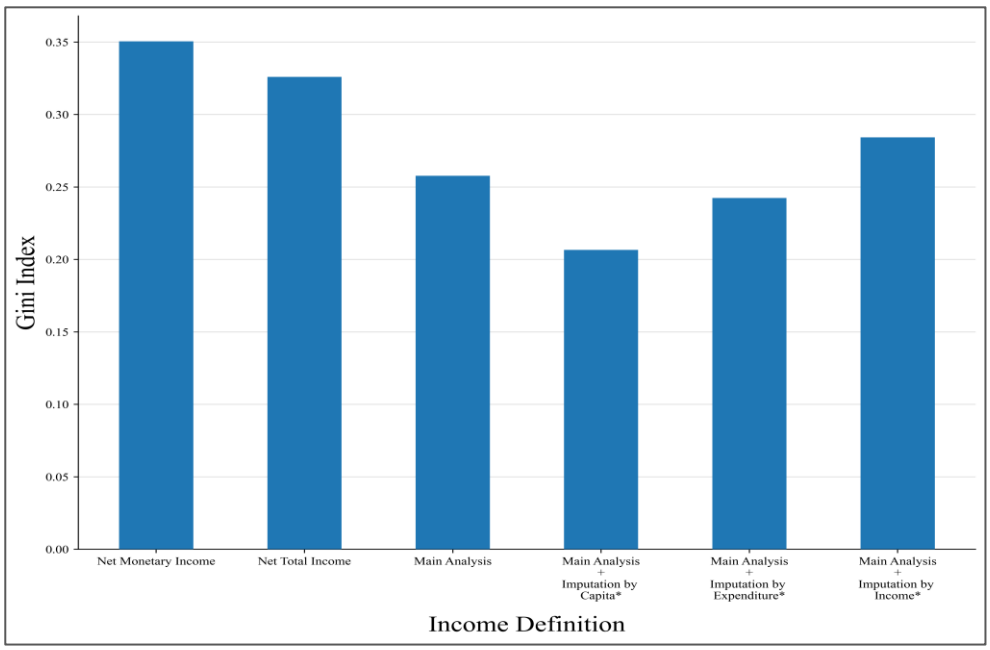
The leftmost column in the figure presents the Gini coefficient in net monetary income, similar to the Poverty and Social Gaps Report (National Insurance Institute, 2023b). In the second column from the left, the coefficient is calculated on total net income, which also takes into account the value of homeownership (as we described in the household income structure section).

The third column in the figure, calculates the coefficient on total net income, plus the net transfers that we used in the main analysis of this paper—that is, all taxes and all transfers and services to households. The inequality index decreases significantly between the first two columns and the third column, because the additional taxes (such as VAT and corporate tax) by the state and the use of the resources they generate for it to fund services for households (such as education and health) heavily reduces inequality between households.

In the three columns on the right, the index is calculated on total income, alongside net transfers to households, while also attributing public goods (such as national security and law) and infrastructure investment (such as road construction), according to three different attribution methods, as detailed in the technical appendix.

The result of comparing the left column in the figure to the other columns is that ignoring some of the taxes that the state collects and some of the services it provides to households leads to an upward bias in calculating the degree of inequality. In practice, the degree of inequality is more moderate than that presented in most publications.

Figure 34
Gini Coefficient According to Various Definitions of Income



Other Analyses

Aside from the main analysis presented thus far, we conducted numerous additional analyses, all laid out in the technical appendix. These include, among others, various sensitivity tests, particularly the attribution of public goods by different methods and using different assumptions regarding who bears the burden of various taxes, as well as specific expenditures that were not included in the main analysis. Generally, the results of these sensitivity tests are very similar to the main analysis results.

6. DISCUSSION AND CONCLUSION

In this study, we estimated the distribution of taxes and general government expenditure at the household level in Israel based on an extensive review of the literature on tax burdens (see the list of sources in the paper as well as in the technical appendix), which includes theoretical and empirical sources, combined with administrative data and data from the Household Expenditure Survey. Although there are many studies that have dealt with this subject, this paper makes a significant contribution both to the existing research literature in the field and to the formulation of socioeconomic policy. This study is unique in the scope of taxes, services, and transfers it examines and in the methodology used.

Two contributions of this paper are of note. First, this paper facilitates a data driven discussion of the scope and manner of the general government's redistribution of income among various groups (for instance, income deciles or population groups such as non-Haredi Jews, Arabs, and Haredi Jews). This is based on the taxation system and the expenditure of the state as a whole, while concurrently taking into account the impact on citizens' welfare that the services provide. Similarly, this paper enables a discussion of all taxes, transfers, and services, not only those easily observed, which often results in a biased and partial overall picture. This partial picture often serves as a basis for economic-social arguments, as though it were fully factual and data-based, despite being different from reality. Furthermore, this research allows for a clearer understanding of how general government's policy reduces income inequality among households.

Second, this paper can serve in the future as a basis for international comparisons of taxation systems and general government's provision of services and transfers. For example, this research allows a future comparison (given available data in other countries) between the tax burden's distribution in Israel with that in other countries, unbiased by the different composition of the taxation system in each country.

All in all, our main analysis accounted for approximately 96 percent of taxes and approximately 50 percent of the general government's expenditures. This represents a much broader scope than that analyzed in previous publications on the subject, which included approximately 27 percent of taxes and 14 percent of expenditures.

In the sensitivity tests included in the technical appendix, we account for an even higher proportion of expenditures, in the form of public goods, attributing these expenditures in several different ways.

The analysis by income deciles shows that households in the lower income deciles receive positive and quite large net transfers (transfers minus taxes), such that the value of the services and transfers they receive is higher than the total tax they pay. In general, the lower income deciles receive average transfers and services of higher value than those received by higher income deciles (except for old-age related services and transfers, which are more common among the higher income deciles).

The analysis by population groups shows that Haredi and Arab households receive significantly more services and transfers from the general government than the taxes they pay. The analysis by household size and composition demonstrates that a significant portion of state transfers is affected by household structure and the number of children.

Beyond the contribution to research, the dataset we created makes it very easy to conduct simulations of various policy decisions, with a higher level of accuracy than before. For example, under certain assumptions, it will be possible to examine how a change in the scope of general government services in the health sector will affect the net income of households in various income deciles. It will also be possible to calculate the distribution of the costs of policy measures, according to different financing methods by which general government finances its expenditures (through raising VAT, raising income tax, etc.). However, it is important to emphasize that such simulations generally assume no behavioral change due to policy changes, which means the simulation results should be interpreted with great caution, or alternatively, the level of complexity of the simulations should be increased to include behavioral changes.

Furthermore, it will be possible to conduct a more informed and evidence-based discussion regarding policy proposals aimed at assisting one population group or another at the expense of other groups among the public, while more accurately examining the net transfers already being given today to that group.

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