Who Benefits from Public Goods? Public Services and Inequality in Post-Apartheid South Africa

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Abstract

This article studies the distributional incidence of public goods and implications for the measurement of poverty and inequality. I combine newly digitized budget data with census and survey microdata to estimate the distribution of all government transfers received by income group in South Africa from 1993 to 2019. My estimates account for changes in the progressivity of different types of policies and allocate all public services to individuals, including education, healthcare, police services, transport infrastructure, housing subsidies, and local government services. All public goods reduce inequality, but with large variations. About 60% of education expenditure is received by the bottom 50%, compared to only 7% of spending on transport infrastructure. There have been major improvements in access to public services since the end of apartheid: accounting for the consumption of public goods raises the real income growth rate of the poorest 50% by 80%. These findings highlight the critical need to incorporate in-kind government transfers in poverty and inequality statistics.

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1. Introduction

The standard concept used to track poverty and inequality within countries is posttax disposable income, defined as the sum of labor and capital incomes, plus cash transfers received, minus direct taxes paid. This concept has the advantage of capturing money that effectively ends up in households' bank accounts and can be used to purchase goods and services. Yet, it suffers from a key limitation: it entirely ignores in-kind transfers received by households in the form of services freely provided by the government. As a result, standard income distribution statistics still provide a very partial picture of the ways through which government redistribution reduces inequality. This is especially true in developing countries, where cash transfers tend to only represent a tiny fraction of public spending. Instead, much of redistribution involves transfers in public goods as diverse as education, healthcare, transport infrastructure, police services, and water supply.

This article makes a first attempt at incorporating detailed estimates of public goods provision in poverty and inequality statistics. The context is post-apartheid South Africa, which provides a particularly ideal case study to analyze government redistribution in kind. Since 1993, newly elected governments have massively invested in education, healthcare, and other public services, often with the explicit objective of reducing the extreme inequalities inherited from the apartheid regime of racial segregation. Drawing on various surveys, census microdata, and newly digitized budget reports, I build a comprehensive database covering the joint distribution of pretax incomes, taxes, cash transfers, and in-kind transfers every year from 1993 to 2019. Unlike existing studies, which focus on specific types of public services at a specific point in time, I allocate all public goods to individuals and account for changes in their progressivity over time. While these estimates still suffer from significant limitations, I view them as a useful first step towards more comprehensive measures of public service delivery, which can be refined as better data sources become available in the future.

I find that most government policies tend to be strongly progressive (less concentrated than income), but with large variations across functions of government. In 2019, the poorest 50% received about 77% of cash transfers, compared to 61% of education spending, 52% of public healthcare, 38% of local public goods, 38% of police services, and only 10% of transport expenditure. Overall, they benefit from about 43% of total government spending. This is less than their share in the South African population, but substantially higher than their share of pretax income, which falls below 3%. In other words, public services unambiguously reduce inequality.

Redistribution in kind is not only progressive; it is quantitatively substantial. In 2019, over 14%

of South Africa's national income accrued to the bottom 50% in the form of in-kind transfers. This represented over three times total cash transfers received. As a result, incorporating public services in measures of posttax income significantly changes estimates of poverty and inequality. The share of income received by the bottom 50% is only 6.5% in terms of posttax disposable income. After accounting for public goods, it rises to almost 15%, corresponding to a threefold increase in the average income of the poorest half of the South African population.

Finally, I find that there has been a dramatic rise in government redistribution since the end of apartheid. From 1993 to 2019, total cash and in-kind transfers received by the bottom 50% expanded by over 50%, from 12% to 19% of national income. This transformation results from the combination of three factors. First, total government expenditure rose significantly, both in real terms and as a fraction of national income. Second, the share of public spending dedicated to the most progressive types of policies also increased, in particular education and healthcare. Third, there were significant improvements in the progressivity of most government policies, which increasingly accrued to low-income groups. This transformation has acted as a major driver of inclusive growth: accounting for in-kind transfers almost doubles the growth rate of the real income of the bottom 50% since 1993.

This article connects to a growing literature attempting to bridge conceptual gaps between surveys and national accounts in the measurement of inequality. Piketty, Saez, and Zucman (2018) estimate Distributional National Accounts (DINA) for the United States every year since 1913, yielding distributional statistics that are consistent with macroeconomic growth rates. A number of studies following this framework have been conducted on other countries since then, including detailed studies of government redistribution covering Europe (Blanchet, Chancel, and Gethin, 2022), France (Bozio et al., 2022), and Latin America (De Rosa, Flores, and Morgan, 2022).[1] The main limitation of these studies is that they do not attempt to estimate who benefits from public services; instead, they typically assume that all in-kind government expenditure is distributed proportionally to posttax disposable income.[2] To the best of my knowledge, this paper is the first to build detailed estimates of the progressivity of all public services and its evolution over time. I show that public goods act as a major driver of inequality reduction, which calls for the necessity of better incorporating them in measures of poverty and inequality (see Gethin (2023) for a preliminary attempt at expanding this analysis to the study of the

[1] See also Germain et al. (2021), Bruil et al. (2022), and Jestl and List (2022) on France, the Netherlands, and Austria, respectively. See Chancel et al. (2022) for a presentation of other studies following the DINA methodology.

[2] Piketty, Saez, and Zucman (2018) allocate all non-health in-kind transfers proportionally to posttax disposable income. Blanchet, Chancel, and Gethin (2022) consider two polar scenarios, one in which in-kind transfers are distributed proportionally to posttax disposable income, and one in which they are received as a lump sum. De Rosa, Flores, and Morgan (2022) allocate education and health spending based on fiscal incidence studies, as in this paper, and all other government spending proportionally to posttax disposable income.

world distribution of income).

This paper also contributes to extending our knowledge of who benefits from public services. Some studies have attempted to estimate the distributional incidence of specific public goods, in particular health and education (see Goldman, Woolard, and Jellema (2020) in the context of South Africa).[3] I depart from these studies in two ways. First, I follow the DINA methodology and allocate in-kind transfers in a framework that is rooted in the national accounts. This contrasts with the existing literature, which tends to scale down public services to match aggregates observed in surveys, in ways that tend to be variable and inconsistent with macroeconomic statistics. Second, I focus on *all* public goods, while existing studies typically restrict themselves to specific types of public spending. In doing so, I directly follow some of the principles outlined in O'Dea and Preston (2010), who provide a set of potential guidelines to estimate the distributional incidence of all government policies.

The rest of the article is organized as follows. Section 3 describes the methodology used to estimate the distributional incidence of all taxes and transfers to individuals. Section 4 presents the results. Section 5 concludes.

2. Conceptual Framework

Measuring the progressivity of public goods is conceptually and empirically challenging, given that their ultimate beneficiaries cannot always be unambiguously identified. I rely on three simple allocation principles to estimate the distributional incidence of public goods, which directly follow the existing literature (e.g., Lustig, 2018; O'Dea and Preston, 2010; Piketty, Saez, and Zucman, 2018). First, public services accrue to individuals based on who receives them at a given point in time. Second, public goods benefit households based on the price they would have to pay to benefit from this service if it was not provided as a public good. Third, public goods are valued in a way that is consistent with the national accounts, that is, at cost of provision (potentially adjusted for government productivity). These three principles are necessary to ensure conceptual consistency with both standard poverty and inequality statistics and macroeconomic growth rates reported in the national accounts.

[3] See for instance Benhenda (2019), Lustig (2018), Paulus, Sutherland, and Tsakloglou (2010), Verbist, Förster, and Vaalavuo (2012), and Wagstaff et al. (2014) on education and health, Aaberge et al. (2010) and Aaberge et al. (2019) on local government services, and Mladenka and Hill (1978) on police expenditure.

2.1. Cash Flow Principle

First, I distribute public goods to individuals benefiting from their consumption at a given point in time. For instance, education spending is distributed to households who send their children to school, health spending is distributed to individuals using more intensively the public healthcare system, and public transport expenditure is distributed to individuals relying more extensively on public transportation. This ensures that public goods are valued in a way that is conceptually consistent with standard fiscal incidence analysis, which focuses on the incidence of taxes and transfers over a given period. Put differently, public services are allocated in the same way as they would theoretically be if households were to receive a cash transfer at time t and immediately use it to buy the corresponding service on a private market.

2.2. Equivalent Pricing Principle

Second, public goods accrue to households based on the price that they *would have to pay* for the public service, rather than the price they *would be willing to pay*. This ensures again that cash transfers and public goods are valued in a conceptually comparable way: if the household was to receive cash instead of the public good, it would have to pay the market price of the corresponding service to benefit from it, not the maximum value it would be willing to pay.

Standard poverty statistics focus on consumption and do not attempt to estimate the individual welfare value of each good bought by each household. Accordingly, I distribute public goods based on who benefits more from them, not based on who puts lower or greater value on each type of service. For example, the welfare perspective would imply that high-income households may be willing to pay significantly more for police services, as they may have more to lose from burglaries and other property crimes than low-income households.[4] This would call for allocating police services proportionally to wealth. In contrast, assuming that the cost of solving a crime is the same across income groups, the income perspective implies that detective services should benefit households proportionally to the number of crimes that they experienced. Consistency with standard consumption aggregates thus requires allocating police expenditure proportionally to reported crimes, not wealth, because a household suffering a crime would have to pay the price of solving the crime, not the price of its entire wealth, if it was to buy the same service from a private investigator.

[4]Notice however that low-income households tend to suffer from significantly higher violent crime, including murders, whose cost may be valued at an equally, if not higher level than property crime.

2.3. Consistency With National Accounts Principle

Third, I follow the principles of Distributional National Accounts (Piketty, Saez, and Zucman, 2018), which aim to provide a set of guidelines to allocate the totality of net national income to individuals. The guiding principle of this methodology is to close the gap between micro and macro estimates of the income distribution: inequality statistics should be consistent with macroeconomic growth rates. In the context of this article, this implies valuing public services at cost of provision, simply because this is what national statistical institutes do when constructing estimates of GDP growth.

Departing from cost of provision would imply revising estimates of GDP growth, specifically "deflating" public services in a way that is different from the average good consumed. This represents a particularly challenging task, which probably explains why national accountants have preferred to use cost of provision as a reasonable assumption until now. That being said, I investigate at the end of this paper the robustness of my results to adjusting for the quality of public services received over time and throughout the income distribution (controlling for cost of provision), drawing on recent work in which I benchmark public spending to educational and health outcomes (Gethin, 2023).

3. Data and Methodology

This section outlines the methodology used to estimate the distributional incidence of public services in South Africa. I start from the microfile constructed in Chatterjee, Czajka, and Gethin (2023), which provides comprehensive information on the distribution of income in South Africa since 1993. I then present in turn the methods used to allocate public spending on education, healthcare, local government services, housing, transport, other economic affairs, public order and safety, and other functions of government.

3.1. Distribution of Factor Income and Pretax Income

The starting point of this paper is a microfile covering the distribution of factor and pretax incomes at the individual level, every year from 1993 to 2019. Chatterjee, Czajka, and Gethin (2023) construct this file by combining surveys, tax data, and national accounts to allocate the entirety of net national income to individuals. The database records information on the composition of the household, sociodemographic characteristics of each household member, and income received from different sources. It also covers household wealth, expenditure by

type of good, different types of taxes paid, and cash transfers received from the government.

The bulk of my analysis focuses on allocating in-kind transfers to individuals. In broad strokes, I first identify different functions and policies of the South African government, and collect new budget data on spending in each of them. I then combine different microdata sources to estimate who benefits from spending on these functions alongside the income distribution. Finally, I incorporate these estimates into the microfile, so as to get a comprehensive picture of their joint distribution with respect to income since 1993.

Figure 1 plots the level and composition of general government expenditure in South Africa since 1993, expressed as a share of national income. Table 1 provides an overview of the microdata and macrodata sources used to allocate government expenditure to individuals, as well as the corresponding distributional assumptions. I now turn to presenting these sources and methods for each function of government in more detail.

3.2. Education (9% of NNI)

I distribute public education proportionally to use intensity of the public education system, accounting for differences in public education spending by province and level of education.

The 1996, 2001, 2011, and 2016 censuses, as well as the 2007 community survey, provide information on school attendance, current grade, and the type of school attended (private/public).[5] I match them with provincial budget data to allocate expenditure to individuals following public education by five levels: early childhood development, primary education, secondary education, tertiary education, and adult basic education. I assume that each individual within a given province-function cell receives the same transfer, equal to the per-student expenditure on this function.[6] Finally, I proportionally rescale education transfers received so as to match total national education expenditure.

3.3. Health (5.1% of NNI)

I distribute health expenditure proportionally to use intensity of the public healthcare system, accounting for differences in public health spending by province and type of institution (clinics

[5]The 1996 census microfile unfortunately does not provide information on type of institution, so I assume that all individuals attending school benefit from public education expenditure.

[6]Administrative data on the distribution of education expenditure in South Africa shows that this is a reasonable assumption. See for instance Motala and Carel (2019), table 4.3, who show that personnel expenditure per learner is highly equalized across school quintiles (which are defined by the living standards of the community around the school and used by the South African government to allocate resources).

versus hospitals).

To measure intensity of use of public healthcare, I combine two different sets of surveys: the October Household Surveys (1995-1996) and the General Household Surveys (2004-2019). Both surveys have collected data on (1) whether household members have used the public healthcare system in the past month (2) the type of institution (private/public) usually visited by household members and (3) whether the institution usually visited is a clinic or a hospital.

First, I combine these variables to generate cells of public hospital and public clinic use intensity by pretax income ventile, race, and province. Second, I interpolate and extrapolate these cells so as to cover the entire 1993-2019 period. Third, I merge these cells with the harmonized DINA microfile, so as to a get a measure of the intensity of use of public clinics and public hospitals by group. Fourth, I combine the microdata with estimates of public health spending by province and by institution (clinics/hospitals), which I have collected from the archives of the National Treasury. Finally, I proportionally rescale health transfers received so as to match total national health expenditure.

3.4. Local Government Services (9.6% of NNI)

The local government sector is large in South Africa, and has been growing in the past decades thanks to increasing transfers from the central government. Municipalities are in charge of providing households with electricity, water, sanitation, waste removal, and other basic services, some of which are distributed free of charge to poor households in the form of "free basic services" since 2001. They also deliver a number of local public services related to public safety, healthcare, administration, and other public goods.[7]

To distribute local government spending from 1993 to 2019, I first collect new historical budget data from a number of sources. I then allocate them to individuals by matching budget series with survey and census microdata. Finally, I incorporate these estimates into the DINA microfile.

Harmonization of Local Government Budget Data I combine data on local government expenditure from four sources. The first one are tables A2 published by the National Treasury in the context of the Medium Term Revenue and Expenditure Framework (MTREF), which cover operating expenditure by function in each of South Africa's municipalities from 2006 to 2019. The second one are tables A1 from the same source, which specifically cover expenditure made by municipalities for the provision of Free Basic Services. The third one are tables published in

[7] See appendix figure F1, which plots the level and composition of total local government expenditure from 2001 to 2019.

the 2008 Local Government Budgets and Expenditure Review, which cover total expenditure by municipality from 2003 to 2006. Finally, I digitize data on consolidated municipal operating expenditure by district council over the 1996-1999 period from the 2000 edition of the Local Government Budgets and Expenditure Reviews. As above, I interpolate and extrapolate total expenditure as a share of national income, so as to cover every year from 1993 to 2019.

The last step of harmonization consists in incorporating local government expenditure series into general government expenditure. Indeed, part of local expenditure is already accounted for in consolidated budgets: the part that is financed by transfers to municipalities from the central government. While most of these transfers are included in the "Community Development" function, some transfers, especially in recent years, consist in conditional grants that appear indirectly in other consolidated government functions. Unfortunately, exact estimates of which fraction of each function is spent through municipalities are not available. For simplicity, I assume that all transfers are spent through either Community Development or Water Supply. That is, I completely remove these two expenditure items from the national budget and replace them by the series of total local government spending estimated above.

Allocation of Local Government Expenditure I allocate local government expenditure to individuals by matching these newly constructed budget series with census microdata. To do so, I rely on the 1996, 2001, 2011, and 2016 censuses, as well as the 2007 community survey. I incorporate municipal expenditure into the microfile in three steps.

First, I match budget and census data at the municipal level in each census, recoding municipality names and codes when necessary. I do so for both local/metro and district municipalities, so as to distribute these two layers of local government one after the other. For 1996, I match individuals at the district level, given that I have no information on expenditure at a lower geographical level.

Second, I distribute local/metro and district municipal expenditure on a lump basis to individuals, assuming that all adults living in a given municipality benefit from the same transfer.[8]

Finally, I incorporate these estimates into the DINA microfile. First, I aggregate municipal expenditure by pretax income ventile, race, and province. Second, I interpolate and extrapolate average expenditure received by each cell so as to cover the entire 1993-2019 period. Third,

[8]One can compare this strategy to a more complex one, distributing separately free basic services, water expenditure, electricity expenditure, and other expenditure separately in each municipality, based on households' access to these different types of services. I also compare the results to those obtained by allocating municipal expenditure at the district level instead of the municipal level, using either census (2001-2011) or NIDS (2008-2016) data. I find that these three alternative strategies yield virtually identical results in terms of the distribution of municipal expenditure by income, race, and province.

I match these cells with the DINA microfile. Finally, I rescale proportionally the average transfer received by individuals in each year so as to perfectly match yearly aggregate municipal operating expenditure at the national level.

3.5. Housing (0.9% of NNI)

Housing development expenditure in South Africa mainly corresponds to the Reconstruction and Development Programme (RDP), a large national housing programme initiated in 1994 that allows low-income households to acquire a house built and provided by the government. To distribute public housing expenditure, I rely on the General Household Survey (2002-2019), which has consistently asked survey respondents whether any household member received a government housing subsidy to obtain this dwelling or any other dwelling. First, I aggregate the share of individuals who declared having received a subsidy by cells of consumption decile and province. Second, I merge these cells with the DINA microfile. Third, I proportionally rescale each cell so as to match total government housing expenditure.

3.6. Transport (2.5% of NNI)

Expenditure on transport services can be separated into two components: public transport expenditure and expenditure on transport infrastructure.

Public transport expenditure corresponds to expenditure on the public transport system, including buses and commuter rail, and represents about 20-25% of total transport expenditure.[9] I distribute total public transport expenditure proportionally to household expenditure on public trains and buses, which is directly reported in household income and expenditure surveys (COICOP codes 07311110 to 07321210).

Infrastructure expenditure corresponds to expenditure on roads, railroads, and other infrastructure used by households, firms, and publicly owned vehicles to transport goods and people. Accordingly, I split the benefit received by individuals into a household part, a firm part, and a government part. First, I use input-output tables provided by the OECD and the South African statistical institute to derive an estimate of what fractions of transport infrastructure are used by the household, corporate, and government sectors. Second, I distribute each of these fractions to their ultimate beneficiaries.

[9]Unfortunately, budget reports only provide a decomposition of transport expenditure into public transport and infrastructure from 2007 to 2019, so I assume that this decomposition was the same throughout the 1993-2006 period.

For the household sector, I assume that infrastructure expenditure benefits individuals proportionally to their fuel consumption, as reported in income surveys. This amounts to assuming that households disproportionately using their car, for instance, benefit from a greater government transfer on transport infrastructure.

For the corporate sector (mainly corresponding to the transport of goods), I use input-output tables to derive measures of the "transport intensity" of household consumption by expenditure category (COICOP). I then allocate infrastructure expenditure proportionally to this intensity measure, observed at the household level. This amounts to assuming that households disproportionately consuming goods that need to be transported (for instance, goods produced in another country) indirectly benefit from public expenditure on the roads used to transport these goods.

Finally, I distribute the public sector fraction proportionally to the public transport transfer received by each individual, as estimated above. This amounts to assuming that individuals using public transport not only directly benefit from using public vehicles, but also indirectly benefit from the fact that these public vehicles use roads or railways provided by the government.

3.7. Other Economic Affairs (2.8% of NNI)

Expenditure on other economic affairs mainly include subsidies to specific economic sectors and other policies dedicated to supporting production. The South African budget decomposes it into six functions: General economic, commercial, and labour affairs; Agriculture, forestry, fishing and hunting; Fuel and energy; Mining, manufacturing and construction; Communication; and Recreation and Culture.

As in the case of taxes on international trade and transport infrastructure expenditure, I allocate expenditure on these different sectors proportionally to their consumption intensity.[10] First, I use input-output tables to estimate the indirect consumption intensity of these different sectors by COICOP category. I then allocate total government expenditure on these sectors proportionally to the total intensity of household consumption expenditure in this sector. This amounts to assuming, for instance, that households consuming goods that require more energy to be produced benefit proportionally more from energy subsidies provided to firms.

[10]The exception is general economic, commercial, and labour affairs, for which no sector can be clearly identified. I distribute this component proportionally to the total transfer received in other economic affairs.

3.8. Public Order and Safety (3.7% of NNI)

Expenditure on public order and safety includes police services, law courts, and prisons. Police services are in turn broken down by the South African government into “Visible policing," which aims to “Enable police stations to institute and preserve safety and security," and “Detective services" and “Crime Intelligence," whose objective is to investigate and solve crimes (South African Treasury, 2022).

Accordingly, I split public order and safety expenditure into two functions: an “insurance" function equal to visible policing, and a “use" function equal to the sum of detective services, crime intelligence, law courts, and prisons. The insurance function relates to crime prevention and security provision, which primarily benefit households through police presence and responsiveness to emergencies. In contrast, the use function corresponds to the set of services that are provided to households once crimes are already committed, from police investigations to justice and incarceration.

I distribute the insurance function of public order and safety proportionally to police presence by income group.[11] To do so, I rely on Victims of Crime surveys (1998-2017), which have consistently asked individuals about the frequency at which they see a police officer in uniform or on duty in their area or neighborhood.[12] First, I aggregate police presence intensity by income decile in Victims of Crime surveys. Second, I interpolate and extrapolate between years to cover the full 1993-2019 period. Finally, I match these cells with the DINA microfile, and distribute expenditure on the insurance function proportionally to police presence intensity in each cell.

I distribute the use function of public order and safety proportionally to crimes reported to the police by income group. This corresponds to the fact that individuals directly benefit from government services, in the form of police investigations and law courts, when they are victims of a crime (O’Dea and Preston, 2010). I rely again on Victims of Crime surveys, which record all crimes suffered by survey respondents in the past year. First, I aggregate total crimes reported by the police by cells of income decile. Second, I interpolate and extrapolate between years to cover the full 1993-2019 period. Finally, I match these cells with the DINA microfile, and distribute expenditure on the use function proportionally to the number of reported crimes in each cell.

[11] This strategy can be motivated by the literature on the crime-reducing effects of police manpower and police presence on crime (Chalfin and McCrary, 2017; Di Tella and Schargrodsky, 2004; Levitt, 1997).

[12] Respondents are given a choice between “At least once a day," “At least once a week," “At least once a month," “Less than once a month," or “Never." I combine these options to derive a proxy for the number of days per year a respondent sees a police officer (coding each option as 365, 52, 12, 6, and 0, respectively).

3.9. Other Expenditure (3.7% of NNI)

Other government expenditure in South Africa consists in spending on general public services (2.5%) and defense (1.2% of NNI). I consider two polar scenarios: one in which they are distributed on a lump sum basis, and one in which they are distributed proportionally to posttax disposable income (that is, in an extremely unequal way).

4. Public Goods and Inequality in Post-Apartheid South Africa

I now turn to documenting trends in the distribution of public services in South Africa. Section 4.1 presents the main results on the progressivity of in-kind transfers and how it varies by government function. Section 4.2 studies the incidence of public goods on inequality and the distribution of growth. Section 4.3 investigates the robustness of the results to adjusting government transfers received for public sector productivity.

4.1. Who Benefits From Public Goods?

How large is government redistribution in South Africa, and how has it evolved since 1993? Table 2 provides a first answer to this question by documenting the share of total government expenditure, the share of national income, and the average transfer received by the poorest 50% by government function in 1993 and 2019. Three main conclusions can be drawn.

4.1.1. In-Kind Transfers Are Large and Strongly Progressive

Following the standard approach to the analysis of tax or transfer incidence, let us define a transfer as *relatively progressive* if it reduces inequality, that is, is less concentrated than income. Based on this definition, government redistribution in South Africa appears to be very strongly progressive. In 2019, the poorest half of the population received only 2.7% of pretax income, but over 40% of public spending. Every single category of government spending was relatively progressive, both in 1993 and 2019. In other words, government transfers systematically reduce inequality.

In-kind transfers also appear to be very large. In 2019, total transfers received by the bottom 50% amounted to about $3200 at PPP after excluding social protection, corresponding to about five times their average pretax income. Spending on education alone represented twice their average income, and was about 35% higher than total social protection expenditure. Overall,

in-kind transfers accounted for almost 80% of total expenditure accruing to the bottom 50% in 2019.

4.1.2. Progressivity Varies Significantly by Function of Government

Beyond this general result, there are major differences in progressivity across types of government transfers. In particular, only social protection, education, health, and housing expenditure are *absolutely progressive*, that is, received in greater proportion by the poor than by the rich.

Social protection stands out as the most progressive spending category, with over three quarters of expenditure accruing to the bottom 50% in 2019. This is consistent with the fact that most cash grants are explicitly targeted towards the poor. Indeed, the bulk of social protection expenditure in South Africa consists in the old age grant, the child support grant, and the disability grant, all of which are means-tested (see appendix figures C1).

Public education and healthcare also appear to be slightly progressive in South Africa, for two main reasons. First, both services are used more extensively by poor households, who overwhelmingly send their children to public schools and rely on public clinics for healthcare, while top earners primarily rely on private alternatives. Second, they are also used more intensively by low-income groups, who tend to have more children and visit health institutions more frequently. As a result, the bottom 50% received about 61% of public education spending and 52% of public health spending in 2019.[13]

Public housing expenditure is also absolutely progressive, with 58% of spending received by the bottom 50%. Indeed, low-income households are much more likely to live in a state-subsidized dwelling, although some middle- and high-income households do benefit from public housing too. In 2018-2019, as much as 22% of the poorest 50% individuals declared having received some assistance from the government to obtain a dwelling (see appendix figure G1).

Local government spending is regressive in absolute terms: the poorest 50% receive less than 40% of total local government expenditure. This is a direct consequence of richer municipalities having access to greater resources through larger local tax collections, which enables them to spend more on public services. In 2019, the top 10% thus benefited from nearly PPP $1700 per capita in local government expenditure, compared to 800$ for the bottom 10% (see appendix

[13]In 2016, the average number of children attending public schools exceeded 2 among the poorest 50%, compared to less than 0.4 among the top 10% (see appendix figure D4). Over 30% of children within the top 10% attend private schools, compared to less than 10% of children within the bottom 50% (see appendix figure D5). The same differences are visible for public healthcare. The share of individuals having visited a public health institution in the past three months strongly declines with income (see appendix figure E4). Over half of South Africans within the top income quintile are covered by private health insurance and rely primarily on private healthcare, compared to less than 5% of those in the bottom quintile (see appendix figures E5 and E6).

figure F5).

Public order and safety expenditure is absolutely regressive too. This is true of spending on both visible policing and law enforcement. Richer households are significantly more likely to suffer from crimes and report them to the police (see appendix figure H3). They also tend to live in neighborhoods with greater police presence (see appendix figure H4). The correlation between these indicators and income is mild, however, leading top income groups to benefit from only slightly greater transfers. In 2019, the bottom 50% received just below 40% of public order and safety expenditure.

Transport expenditure and expenditure on economic affairs are the most regressive of all functions of government (although there are still progressive in relative terms). Only about a fifth of public transport expenditure accrues to the bottom 50%, mainly because public transport is more intensively used by middle-class households in richer urban areas.[14] Infrastructure scarcely benefits the poor at all, with only 7% of expenditure accruing to the bottom 50% in 2019. This results from the fact that richer households use private vehicles to a much greater extent, and also benefit from higher consumption of transported goods.

Putting all cash and in-kind transfers together, how does total public spending received vary alongside the income distribution? As shown in figure 2, which plots the share of national income received by pretax income decile in 2019, all income groups benefit from large transfers. Overall, the distribution of public spending ends up being slightly absolutely regressive: the top 10% received 6% of national income in 2019, while other deciles each received approximately 4% of NNI each. Cash transfers are strongly concentrated among the poorest 30%, while public spending on transport and other economic affairs is heavily concentrated among the top 20%. Other public goods are more broadly shared.

4.1.3. Government Redistribution Has Increased

There has been a dramatic rise in redistribution since the end of apartheid. Between 1993 and 2019, the average transfer received by the bottom 50% grew by over 100%, from about $2000 to almost $4500 at purchasing power parity (see table 2). This increase was the outcome of three factors. First, average national income per capita expanded by 37% in real terms (see appendix figure A1) Second, general government expenditure grew as a share of national income, from about 37% to 43% of NNI. This rise was concentrated in the functions of government that are the most equally distributed. Social protection spending rose from 3% to 5% of NNI,

[14] See appendix figures I3 and I4: the average number of bus and train trips realized per week is highest among the second, third, and fourth quintiles, and is lowest among the top 20%.

education spending from 8% to 9%, and health spending from 4% to 5% (see table 1). Third, the progressivity of transfers increased: from 1993 to 2019, the share of total government expenditure accruing to the bottom 50% expanded from 32% to 43%. The rise of progressivity happened for virtually all functions of government and can be accounted for by a number of factors, including improved access to education and healthcare and significantly lower spatial inequalities in the provision of local public goods.[15] The outcome of these three forces has been a large increase in the real value of transfers received by the bottom 50%, which extends to all categories of public spending.

Figure 3 plots the level and composition of transfers received by the bottom 50% since 1993, expressed as a share of national income, providing a more detailed perspective on the rise of government transfers received by low-income households. As evident from the figure, the expansion of redistribution has been primarily driven by cash transfers, education, healthcare, and local government spending. Public order and safety, transport, and other economic affairs only represent a minor fraction of public services received by low-income households. Furthermore, a standard analysis of government redistribution focusing only on cash grants would miss an enormous part of transfers received by the poor, both in terms of levels and trends. In 2019, cash transfers represented less than a quarter of total public expenditure accruing to the poorest 50% individuals in South Africa.

4.2. The Incidence of Public Goods on the Distribution of Growth

I now turn to analyzing the distributional impact of redistribution on income and growth. I derive two main conclusions: in-kind transfers strongly reduce inequality, and they have significantly contributed to income growth at the bottom since 1993.

4.2.1. Public Goods Substantially Reduce Inequality

Given that in-kind transfers are large and progressive, it naturally follows that they strongly contribute to reducing inequality. To get a sense of their redistributive power, consider table 3, which provides information on the contemporary distribution of income in South Africa before and after taxes and transfers.

[15] See for instance appendix figure D4: from 1996 to 2016, the average number of children attending public schools remained the same within the bottom 50%, while it was divided by more than two within the top 10%. Figures F3 and F4 show that there has been a dramatic convergence of local government spending across municipalities, as the rise of overall expenditure was strongly driven by the catch-up of low-spending municipalities.

Pretax income is extremely unequally distributed.[16] In 2019, the top 0.1% captured over 8% of pretax income, more than three times the share of income received by the bottom 50% as a whole. The top 10% income share stood at almost 69% (compared to about 47% in the US: see Piketty, Saez, and Zucman, 2018). Meanwhile, the average pretax income of the poorest quintile was not far from an exact zero; this may look striking but should not come as a surprise, in a country where the unemployment rate has regularly exceeded 25% since the end of apartheid. Together, these figures confirm South Africa's position as one of the most unequal countries in the world (see Chatterjee, Czajka, and Gethin, 2022).

Columns 4 and 5 remove direct taxes and add cash transfers to reach posttax disposable income. Cash transfers are large and progressive in South Africa, while direct taxes are mostly borne by the top 10%. As a result, moving from pretax to posttax disposable income increases the average income of the poorest half of the population by over 50%. Both the middle 40% and the top 10% see their average incomes decrease, due to higher direct taxes paid than cash transfers received.

Columns 6 and 7 remove all remaining taxes (including indirect taxes and the corporate income tax) and add in-kind transfers to reach posttax national income. Inequality is substantially lower in terms of posttax national income than in terms of posttax disposable income. In the benchmark scenario, moving from posttax disposable to posttax national income multiplies the average income of the bottom 50% by more than 3. As a result, the bottom 50% income share more than doubles, from about 6.5% pretax to almost 15% posttax. The bottom 20% average income increases from about $400 to $2000; in other words, 80% of the final income of the poorest quintile consists in income received in the form of in-kind transfers. South Africa's poorest individuals thus receive very little cash income, but they benefit from much more significant indirect transfers received in the form of free education, healthcare, electricity, water supply, public housing, and police services.

4.2.2. Public Goods Account for a Large Share of Low-Income Households' Income Gains

Not only do in-kind transfers reduce inequality, they have contributed to significantly increasing incomes at the bottom of the distribution since the end of apartheid. Figure 4 represents the evolution of the bottom 50% average income from 1993 to 2019, before and after adding different layers of government transfers to the analysis. Average factor incomes grew by 14% over this period, which is only about 40% of the average national income growth rate. Adding

[16] Pretax income is the sum of all primary incomes received by individuals, before accounting for taxes and transfers, but after accounting for the operation of the pension and unemployment systems, which are very small in South Africa: see Chatterjee, Czajka, and Gethin (2023).

pensions and unemployment benefits leaves this picture unchanged, since these transfers are very small and almost entirely received by top-income groups.[17]

Accounting for other cash transfers pushes the bottom 50% real income growth rate to 53%. This effect is almost entirely due to the adoption of the child support grant in 1998, which was followed by a gradual rise in take-up rates until today.[18] Accounting for in-kind social protection further increases this figure to 67%, mainly due to the development of various provincial social development programs.

Education, health, and local government spending account for the bulk of in-kind government redistribution. Adding education transfers pushes the average income of the bottom 50% from about $1,500 to over $2,500, and its growth rate from 67% to 80%. Health transfers add about another $500, and local government and housing expenditure bring the bottom 50% average income to over $4,000. Finally, accounting for spending on public order and safety, transport, and other economic affairs increases it to $4,500. The total growth rate of the bottom 50% after all transfers reaches 95%, which is nearly 7 times that of factor income and 80% higher than that of pretax income plus cash transfers. Notice that this figure mechanically underestimates the true contribution of in-kind transfers to bottom real income growth, since it adds them after market income and cash transfers in the analysis.

Figure 5 reproduces the same analysis for the poverty headcount ratio at $6 per day in 2011 purchasing power parity dollars, corresponding to the poverty threshold generally used in middle-income countries. Absolute poverty declined by about 14% in terms of pretax income, 21% when adding cash transfers, and 81% when adding all cash and in-kind transfers. In 1993, government transfers lowered the poverty headcount ratio from about 75% to 55%. By 2019, it reduced it by over 50 percentage points, from 65% to 10%. Public goods have thus played a key role in the historical reduction of poverty in post-apartheid South Africa.

[17] See appendix figures B1, B2, and B3. Private pension contributions and benefits are almost exclusively paid and received by the top 30%, with contributions being approximately equal to benefits within each income decile. The unemployment insurance fund is extremely small and has run large surpluses, with total unemployment benefits paid falling below 0.1% of national income in 2019.

[18] See appendix figure C1, which shows that the bulk of the rise of social protection expenditure since 1993 has been driven by the child support grant. The growth of cash transfers cannot be explained by increases in the value of grants allocated per beneficiary: in fact, their real monthly value has stagnated or even decreased (see appendix figure C3). Instead, there has been a significant increase in coverage: by 2019, about 10% of the adult population received an old age grant from the government, and almost two-thirds of all South African children benefited from a child support grant (see appendix figure C4).

4.3. Accounting for Public Sector Productivity

The above analysis focuses on the distribution of public services evaluated at cost of provision. A natural concern is that the quality of services received, controlling for cost, may vary over time and throughout the income distribution and may also differ between the private sector and the public sector. Following Gethin (2023), I thus investigate the sensitivity of my results to adjusting in-kind transfers using two productivity parameters: aggregate productivity, which refers to the overall efficiency of the South African government at providing public goods, and heterogeneous productivity, which captures inequality in the quality of services received by income group.

4.3.1. Aggregate Productivity

To account for potential inefficiencies in public goods provision in South Africa compared to other countries in the world, I rely on estimates by Gethin (2023), who combines a number of data sources to estimate levels and trends in public education and public healthcare productivity around the world since 1980. First, data is collected on public education and health spending, as well as on educational and health outcomes. Second, an efficient frontier is estimated, corresponding to the maximum educational or health outcome observed for a given level of expenditure. In other words, the country-year performing best at a given cost of provision is attributed the highest productivity. Finally, other country-years are attributed a productivity score based on their distance to the frontier. For instance, a government performing two times worse than the government at the frontier for the corresponding cost level is attributed a productivity of 0.5. The resulting aggregate productivity indicator ranges from 0 to 1, with 0 corresponding to a completely useless government, and 1 corresponding to the most efficient government observed (which is equivalent to making the conservative assumption that this government is just as efficient as the private sector).

Drawing on Gethin (2023), I construct measures of productivity-adjusted public goods received in South Africa by multiplying cost of provision by the corresponding indicators. With this approach, education and healthcare productivity are found to be particularly low in South Africa, about 0.4-0.5 over the period considered. This correction thus amounts to reducing transfers received by as much as 50-60%. In the absence of better information, I also multiply other in-kind transfers received by the average of the two productivity indicators in each year.

4.3.2. Heterogeneous Productivity

Another potential issue is that the quality of public services may vary by income group, even after accounting for differences in spending received. For instance, teachers teaching in poorer areas may be less qualified, even if they are paid the same as teachers in richer areas. Accounting for such "heterogeneous productivity" is an extremely challenging task, as it would ideally imply deriving monetary indicators of how the value added of each type of government service varies by income group.

In the absence of better information, I combine a number of data sources to get a sense of how important variations in the quality of public services alongside the distribution of income might be in South Africa. Table 4 reports data on how service delivery varies by income quintile, based on a battery of indicators covering three complementary dimensions: subjective perceptions of public services, objective indicators of government output, and distance to public institutions. Two main conclusions can be drawn from these figures.

First, there is evidence that poorer households benefit from public services of lower quality in most dimensions of government intervention. With the exception of public schools, local public institutions are always perceived as being of significantly lower quality by the bottom income quintile than by the rest of the population. Low-income households are also characterized by public school teachers with lower knowledge of mathematics, more frequent water and electricity interruptions, and public housing of lower quality. They tend to live further away from public institutions, in particular police stations and hospitals (but not public schools and public transport services).

Second, despite these differences, inequalities in access to public services remain relatively small. In particular, the data point to clear bounds on the maximum potential gap between top and bottom income groups. There is not a single indicator on which the bottom 20% scores less than 70% of the sample mean. The ratio exceeds 0.85 for most measures, in particular when it comes to subjective perceptions. There are some indicators, such as the success of the police at making an arrest after the household reported a crime, on which the government does not appear to perform better for the rich than for the poor.

It is also important to stress that some of these indicators do not account for the fact that higher quality might be the result of greater resources, which are already captured in estimates of progressivity. For instance, estimates of school teachers' knowledge of mathematics are based on the entire South African population, including private and fee-paying schools, which are disproportionately concentrated in the top quintile and benefit from substantial private resources (Venkat and Spaull, 2015). Similarly, quality differentials in local government services largely

reflect the major differences in resources that exist between richer and poorer municipalities (see section 4), which are not accounted for here either. Correcting for differential resources would thus lead to revising inequalities in access to public services downwards. In this context, estimates of heterogeneous productivity derived from these indicators should be taken as upper bounds on the degree of heterogeneous productivity by income group. In the results that follow, I aggregate these different subjective and objective measures by government function, and correct the transfer received by each income group accordingly.

4.3.3. Results

Because adjusting for productivity implies strongly reducing the value of in-kind transfers, it naturally follows that their redistributive impact is lower than when they are valued at cost of provision. Appendix table A1 reports estimates of the distribution of pretax and posttax income in South Africa after adjusting in-kind transfers for aggregate and heterogeneous productivity. Moving from posttax disposable income to posttax national income now increases the bottom 50% income share from 6.5% to 9%. Public goods thus end up having a lower redistributive power, but still very significant, almost as large as that of cash transfers.

Appendix figure A2 reproduces figure 4 after adjusting in-kind transfers for public sector productivity. The average income of the bottom 50% now reaches about $3,000 after accounting for all transfers, compared to about $4,500 in figure 4. By this measure, public sector inefficiencies reduce the average income of the bottom 50% by a third. However, adjusting figures for productivity does not alter the trend: the bottom 50% average income rose by 53% before accounting for in-kind transfers, compared to 92% after doing so.

In summary, large public sector inefficiencies in South Africa could imply that public goods do not reduce poverty and inequality as much as an analysis relying on cost of provision would suggest. However, even under conservative assumptions on the productivity of the South African government, they still end up having large effects on the income distribution and have been major drivers of inclusive growth since the end of apartheid. Given the large rise of spending on public goods and progress made in terms of access to public services among low-income households, the idea that estimates of government redistribution should be restricted to cash transfers is difficult to sustain.

5. Conclusion

Public services remain largely absent from standard poverty and inequality statistics, despite representing the bulk of government redistribution in low- and middle-income countries. Focusing on the case of post-apartheid South Africa, this article argued that accounting for the distribution of public goods is essential to accurately track poverty and the distribution of growth. Not only do public services powerfully reduce inequality; they have become increasingly progressive, contributing to generating large real income gains for low-income households since the end of apartheid. The takeaway is that standard distributional analysis focusing exclusively on cash transfers is likely to miss crucial information on the evolution of the living standards of the poorest individuals. Developing tools to regularly and accurately track the distribution of public goods should be seen as an imperative for policy and future research.

These results call for future research in at least two directions. First, the fact that wages have remained so low at the bottom of the income distribution bears the question of how useful these public services have been at generating pretax income growth. Arguably, they have strongly contributed to improving the quality of life of South African citizens in a number of dimensions, from greater access to electricity and water to better education and health outcomes. At the same time, the fact that better access to these services does not seem to have enabled a fairer distribution of employment and pretax incomes is puzzling. One possibility is that pretax income inequality would have grown even faster in the absence of the rise of government redistribution. Another possibility is that of "redistribution without inclusion," whereby the legacy of apartheid and spatial segregation continues to weigh so heavily in access to economic opportunities that public services have failed to truly enable low-income households to escape the poverty trap.

Another natural avenue for future research is to better understand how low-income households actually value public services, not only in comparison to cash transfers, but also in comparison to one another. Evidence on this question remains extremely scarce, although some surveys suggest that individuals do strongly value public goods, in particular health and education (Khemani, Habyarimana, and Nooruddin, 2019; Thesmar and Landier, 2022). Answering this question would require new methods and data sources that go beyond those mobilized in this article.

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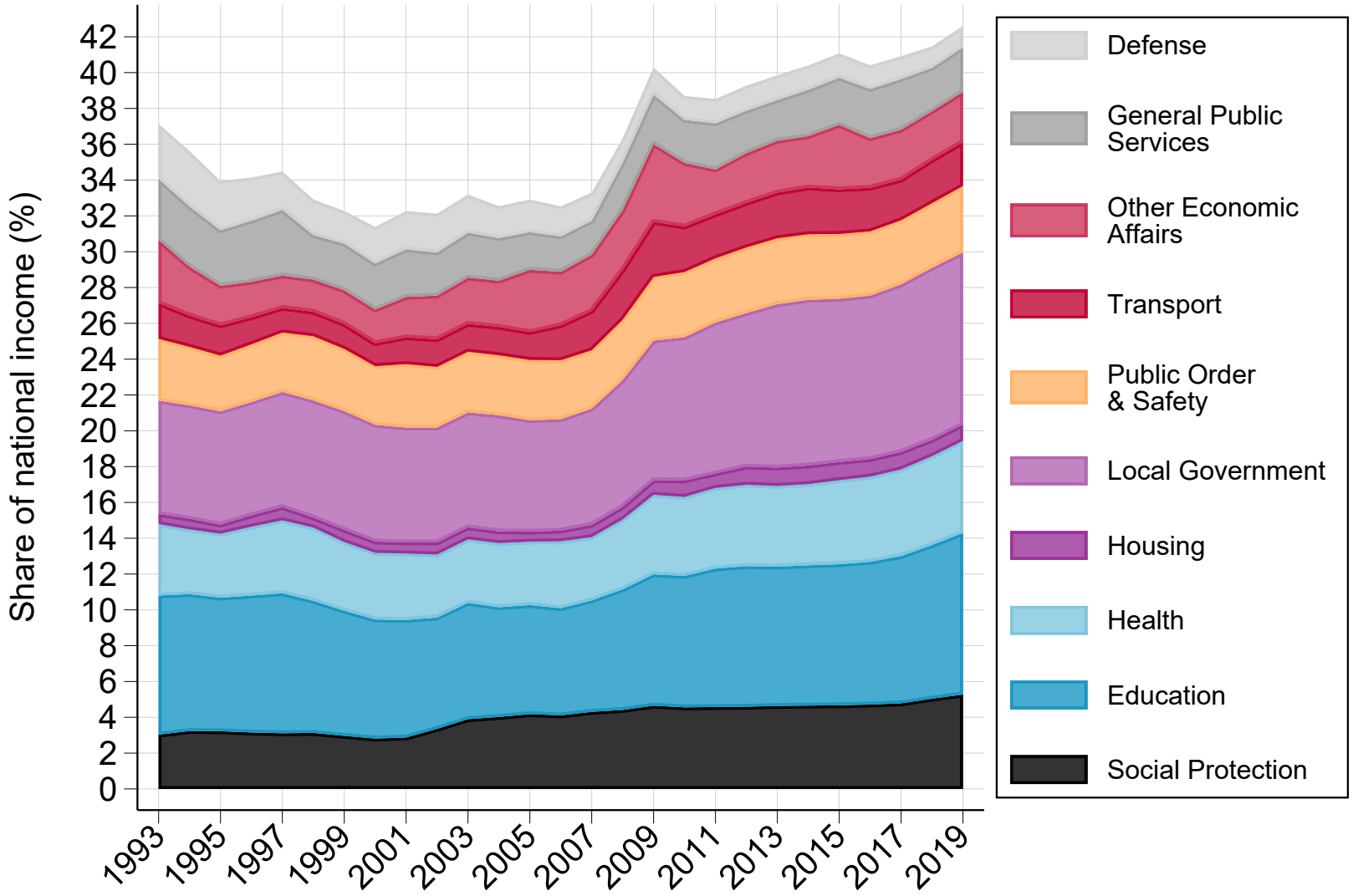
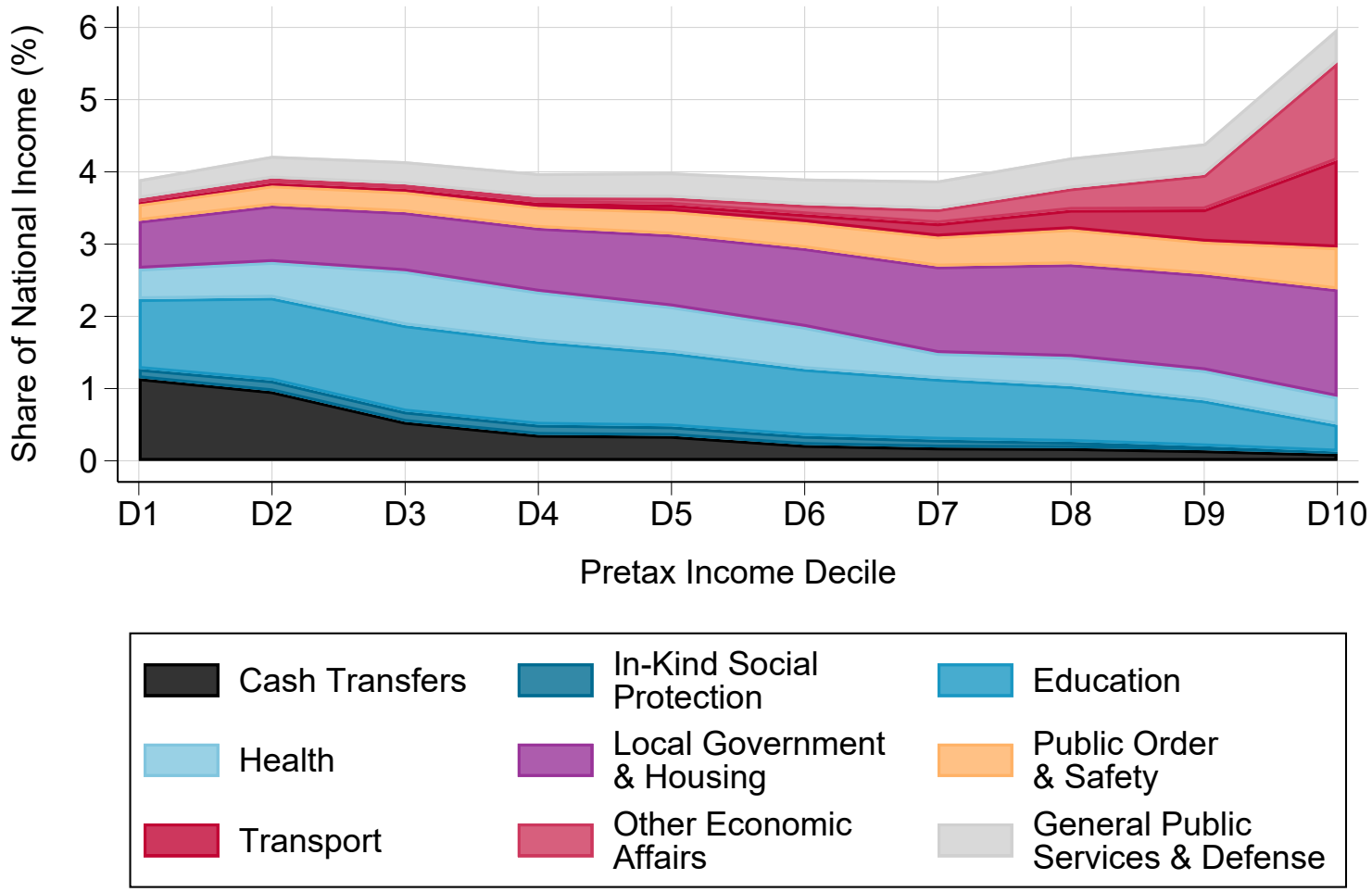
Figure 1 – Government Expenditure in South Africa, 1993-2019



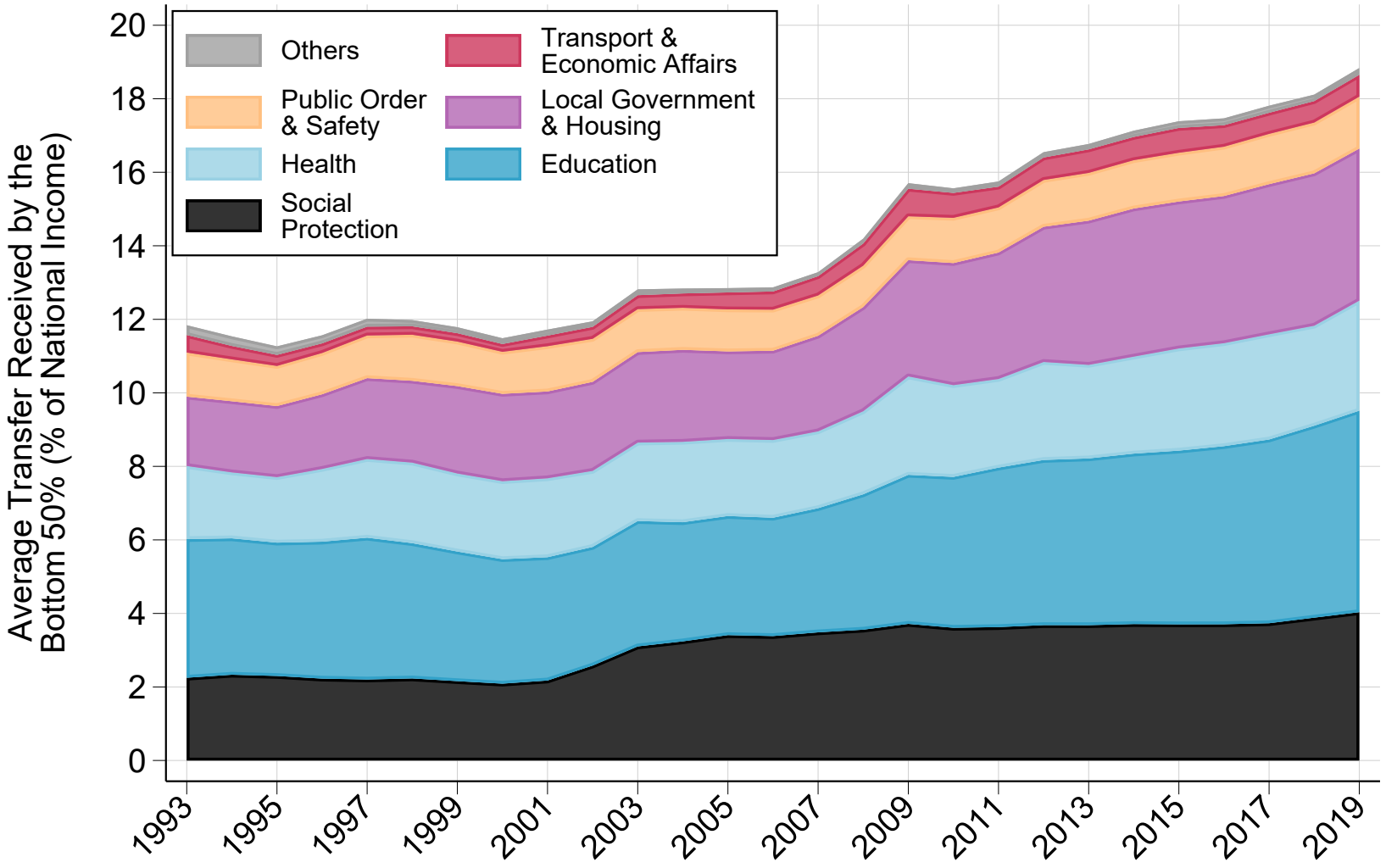
Notes. Author's computations combining data from the South African Reserve Bank, the South African National Treasury, and Local Government Budget Reports.

Figure 2 – Government Transfers Received by Pretax Income Decile, 2019



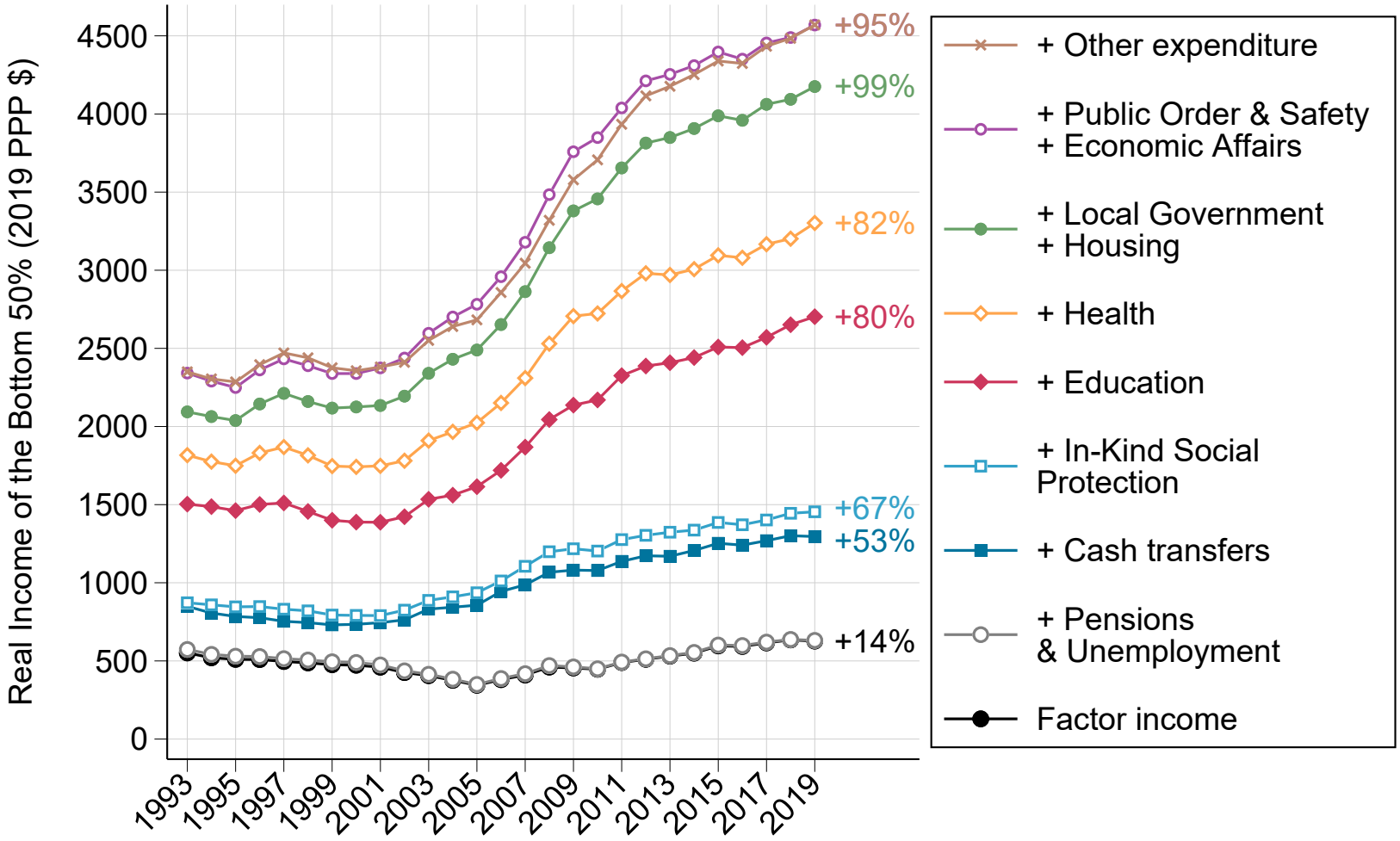
Notes. The figure represents the level and composition of total government transfers received by pretax income decile in 2019. The unit of observation is the individual. Income is split equally among all household members. General public services and defense are assumed to be distributed on a lump sum basis.

Figure 3 – The Rise of Redistribution: Government Transfers Received by the Bottom 50%, 1993-2019



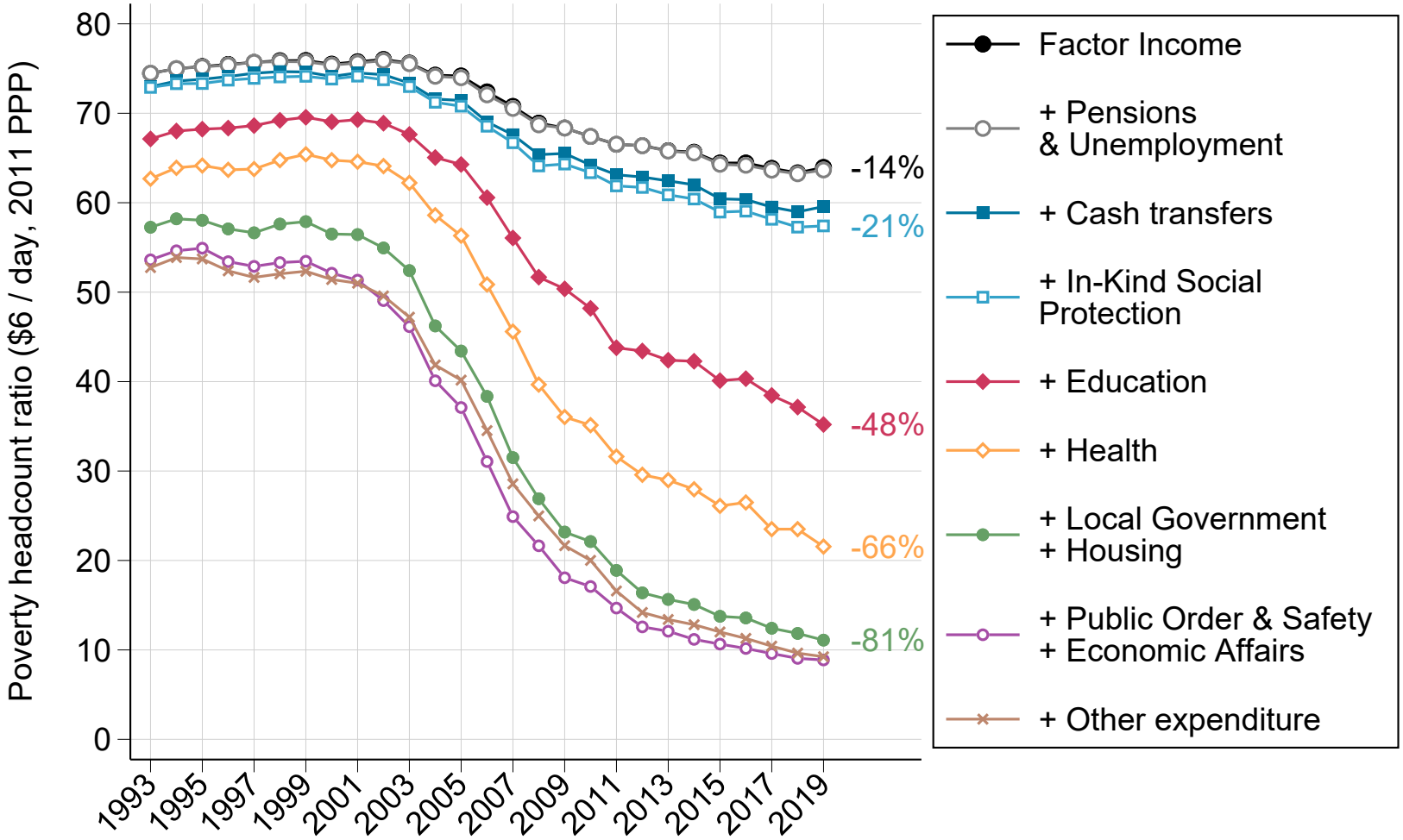
Notes. Author's computations using distributional national accounts microfile. The unit of observation is the individual. Income is split equally between all household members.

Figure 4 – In-Kind Transfers and Poverty Reduction:
Bottom 50% Average Income Before and After Transfers, 1993-2019



Notes. Author's computations using distributional national accounts microfile. The figure represents the evolution of the real average income of the bottom 50%, before and after adding cash and in-kind transfers one by one to the analysis. Other expenditure corresponds to general public services and defense, distributed proportionally to posttax disposable income. The unit of observation is the individual. Income is split equally between all household members.

Figure 5 – In-Kind Transfers and Poverty Reduction:
Poverty Headcount Ratio at $6/Day, 1993-2019



Notes. Author's computations using distributional national accounts microfile. Other expenditure corresponds to general public services and defense, distributed proportionally to posttax disposable income. The unit of observation is the individual. Income is split equally between all household members.

Table 1 – Methodology Used to Distribute Government Expenditure in South Africa

	Method	Microdata	Macrodata	% NNI	
				1993	2019
Social Protection				3.0%	5.3%
Cash Transfers	Microsimulation	IES/LCS	National Budget	2.8%	4.2%
In-Kind Transfers	Proportional to cash transfers	IES/LCS	National Budget	0.2%	1.1%
Education	Lump sum per student, by function and province	Census	Provincial Budgets	7.8%	9.0%
Health	Proportional to healthcare use, by function and province	GHS/OHS	Provincial Budgets	4.0%	5.1%
Housing	Lump sum per beneficiary	GHS	National Budget	0.6%	0.9%
Local Government	Lump sum per municipality	Census	Local Gov. Budgets	6.3%	9.6%
Public Order and Safety				3.5%	3.7%
Visible Policing	Proportional to police presence	VCS	National Budget	1.9%	1.8%
Law Enforcement	Proportional to reported crimes	VCS	National Budget	1.5%	2.0%
Transport				2.0%	2.5%
Public Transport	Proportional to public transport expenditure	IES/LCS	National Budget	0.5%	0.5%
Infrastructure	Proportional to transport-intensive consumption	IES/LCS	National Budget Input-Output Tables	1.5%	1.9%
Other Economic Affairs	Proportional to sector-intensive consumption	IES/LCS	National Budget Input-Output Tables	3.5%	2.8%
All Others	Lump sum / proportional to income	Microfile	National Budget	6.5%	3.7%
Total				37.1%	42.6%

Notes. The table reports the methodology used to distribute the South African government budget from 1993 to 2019, together with the corresponding microdata sources, macrodata sources, and expenditure on each government function as a share of net national income in 1993 and 2019. GHS: General Household Surveys; IES: Income and Expenditure Surveys; LCS: Living Conditions Surveys; OHS: October Household Surveys; VCS: Victims of Crime Surveys.

Table 2 – Government Redistribution in South Africa, 1993-2019:
Level, Composition, and Progressivity of Transfers Received by the Bottom 50%

	Share of Total Expenditure Received (%)			Share of National Income Received (%)			Average Transfer Received (2021 PPP USD)		
	1993	2019	1993-2019	1993	2019	1993-2019	1993	2019	1993-2019
Social Protection	74%	77%	+3%	2.3%	4.0%	+79%	390	950	+146%
Education	49%	61%	+24%	3.8%	5.5%	+44%	650	1290	+97%
Health	47%	52%	+11%	1.9%	2.7%	+44%	320	630	+97%
Housing	45%	58%	+28%	0.3%	0.5%	+105%	40	120	+181%
Local Government	26%	38%	+46%	1.6%	3.6%	+122%	280	850	+205%
Public Order and Safety	35%	38%	+10%	1.2%	1.4%	+18%	210	330	+62%
Visible Policing	38%	38%	+1%	0.7%	0.7%	-7%	120	160	+27%
Law Enforcement	31%	38%	+22%	0.5%	0.7%	+56%	80	170	+113%
Transport	7%	10%	+38%	0.1%	0.2%	+70%	20	60	+134%
Public Transport	14%	21%	+51%	0.1%	0.1%	+62%	10	30	+122%
Infrastructure	5%	7%	+38%	0.1%	0.1%	+77%	10	30	+143%
Other Economic Affairs	10%	13%	+33%	0.3%	0.4%	+5%	60	80	+44%
Total	32%	43%	+37%	11.7%	18.5%	+58%	2010	4350	+116%
Pretax Income				3.3%	2.7%	-20%	570	630	+10%

Notes. The table reports the level and composition of government transfers received by the bottom 50% of the pretax income distribution in South Africa in 1993 and 2019. Columns 2 to 4 show the share of total transfers received by the bottom 50%. Columns 5 to 7 report the corresponding share of net national income received. Columns 8 to 10 report the average annual transfer received by the bottom 50%, expressed in 2021 PPP USD. The unit of observation is the individual. Income and transfers are split equally between all household members. “Total" adds spending on defense and general public services to other rows, assuming that these two components are distributed proportionally to posttax disposable income. The last row shows the pretax income share and the average pretax income of the bottom 50%.

Table 3 – The Distribution of Income in South Africa in 2019

	Pretax National Income		Posttax Disposable Income		Posttax National Income	
	Average Income	Income Share	Average Income	Income Share	Average Income	Income Share
Full population	$ 11,800	100%	$ 7,780	100%	$ 11,800	100%
Bottom 50%	$ 630	2.7%	$ 1,020	6.5%	$ 3,440	14.6%
Bottom 20%	$ 45	0.1%	$ 410	1.1%	$ 1,950	3.3%
Next 30%	$ 1,020	2.6%	$ 1,420	5.5%	$ 4,430	11.3%
Middle 40%	$ 8,410	28.6%	$ 6,530	33.6%	$ 10,300	35.2%
Top 10%	$ 80,700	68.7%	$ 46,600	59.9%	$ 59,000	50.2%
Top 1%	$ 329,000	28.0%	$ 170,000	21.9%	$ 219,000	18.6%
Top 0.1%	$ 970,000	8.3%	$ 519,000	6.7%	$ 633,000	5.4%

Notes. The table reports statistics on the distribution of income in South Africa in 2019 for different income concepts. Posttax disposable income is the sum of primary incomes, minus direct taxes, plus cash transfers. Posttax national income deducts all taxes and adds all transfers. General public services and defense are distributed proportionally to posttax disposable income. The unit of observation is the individual. Income is split equally between all household members.

Table 4 – Indicators of Heterogeneous Public Service Delivery by Income Quintile in South Africa

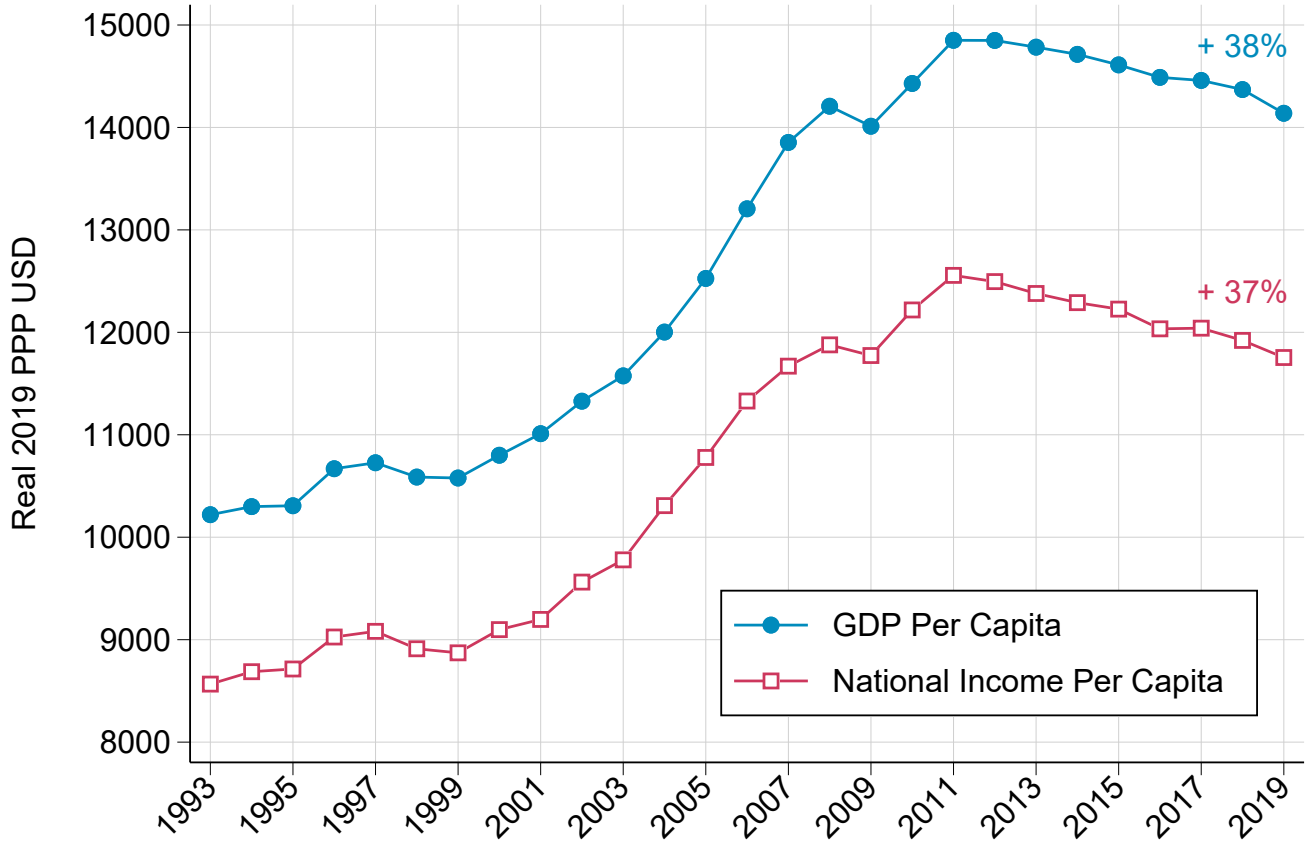
	Q1	Q2	Q3	Q4	Q5	$q^j(Q1)$	Source
Subjective Indicators (% Positively Rating)							
Local public school	69%	69%	69%	68%	69%	1.01***	Census
Local public clinic	46%	45%	46%	46%	50%	0.98***	Census
Local public hospital	47%	47%	47%	48%	51%	0.97***	Census
Local police services	43%	43%	44%	45%	48%	0.97***	Census
Electricity supply	63%	63%	63%	64%	67%	0.99***	Census
Water supply	50%	54%	58%	62%	68%	0.85***	Census
Refuse removal services	49%	54%	57%	60%	66%	0.85***	Census
Sanitation services	52%	56%	59%	64%	74%	0.85***	Census
Government-subsidized dwelling	48%	49%	50%	51%	53%	0.96***	Census
Police response to reported crime	52%	53%	52%	53%	56%	0.98	VCS
Objective Indicators							
School teacher mathematics test success rate	38%	40%	40%	47%	67%	0.82***	SACMEQ
Share of reported crimes leading to arrest	24%	20%	21%	18%	20%	1.15	VCS
Asked to pay a bribe in past 12 months	5%	9%	8%	11%	15%	1.78***	VCS
Water interruption in past 3 months	19%	19%	17%	16%	14%	0.90***	Census
Electricity interruption in past 3 months	32%	28%	25%	21%	16%	0.76***	Census
Value of subsidized dwelling (R 1,000)	177	178	267	308	305	0.72***	GHS
Distance to Nearest Public Services (km)							
Primary school	1.5	1.5	1.6	1.8	2.0	1.12***	LCS
Secondary school	2.9	2.8	2.6	2.4	2.8	0.93***	LCS
Clinic	4.7	4.5	3.8	3.5	3.8	0.86***	LCS
Hospital	13.2	12.6	10.2	8.6	7.3	0.79***	LCS
Police station	8.6	8.1	6.1	4.9	4.6	0.75***	LCS
Public transport	1.1	1.0	1.1	1.0	1.3	1.04*	LCS

Notes. The table reports estimates of heterogeneous government productivity by income group, based on a number of subjective and objective indicators of public service delivery. Q1 to Q5 refer to income quintiles. $q^j(Q_1)$ is the corresponding measure of the relative quality of services received by the bottom quintile, equal to the ratio of the value of the indicator for Q1 to the overall sample mean (or its inverse when the scale of the variable is inverted). Statistical significance stars correspond to a regression of the indicator of interest on a dummy taking one if the individual belongs to the bottom quintile. *** p<0.01, ** p<0.05, * p<0.1. Census: 2016 national census. GHS: 2019 General Household Survey. VCS: 2017 Victims of Crime Survey. LCS: 2014-2015 Living Conditions Survey. SACMEQ: The Southern and Eastern Africa Consortium for Monitoring Educational Quality (estimates from Venkat and Spaull, 2015).

Additional Figures and Tables

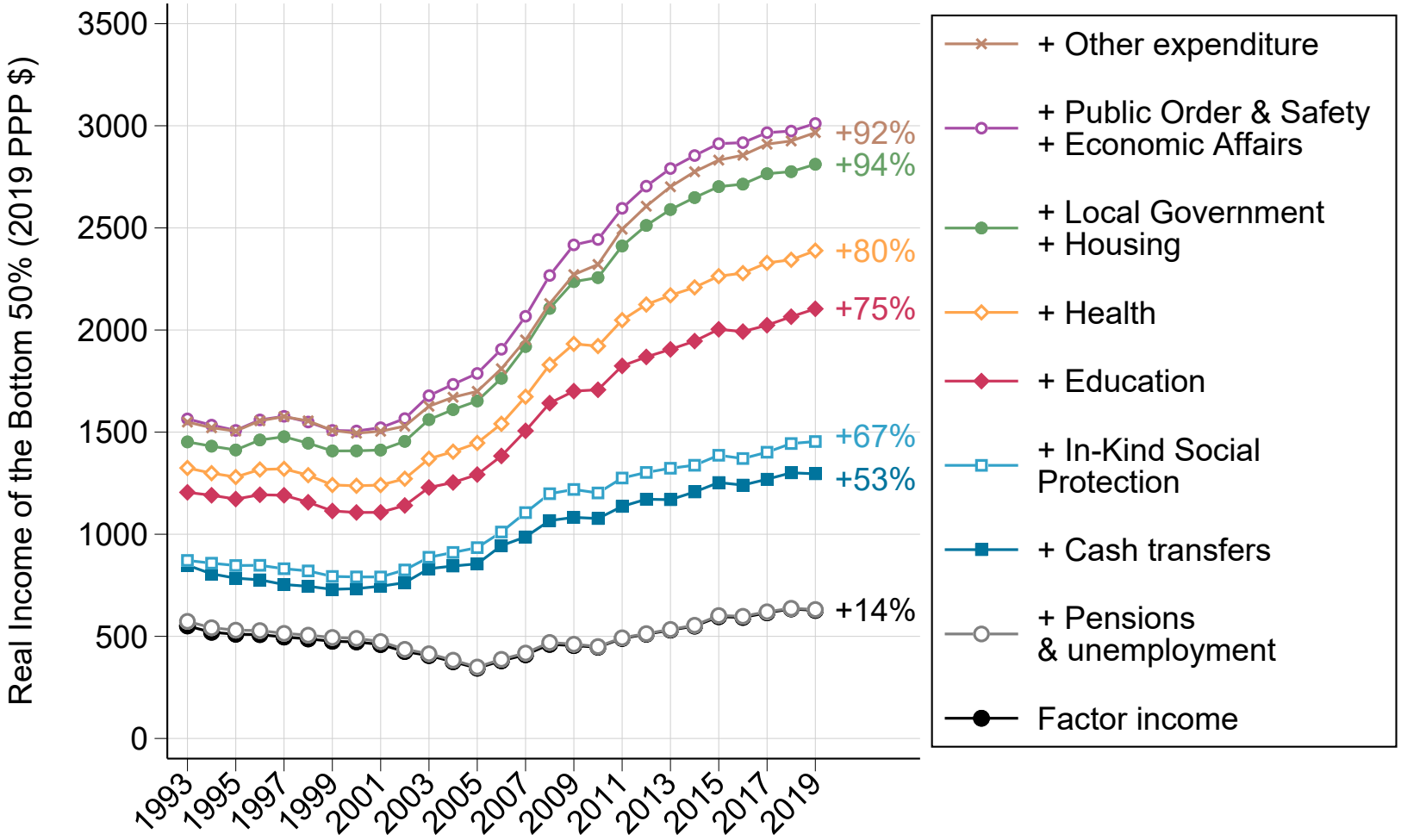
A. Additional Key Results

Figure A1 – GDP and National Income Per Capita in South Africa, 1993-2019



Notes. Author's elaboration using data from the South African Reserve Bank. Growth figures correspond to total real growth rates between 1993 and 2019.

Figure A2 – Bottom 50% Average Income Before and After Transfers, 1993-2019: Productivity-Adjusted



Notes. The figure represents the evolution of the real average income of the bottom 50%, before and after adding cash and in-kind transfers one by one to the analysis. All in-kind transfers are adjusted for aggregate and heterogeneous productivity. Other expenditure corresponds to general public services and defense, distributed proportionally to posttax disposable income. The unit of observation is the individual. Income is split equally among all household members.

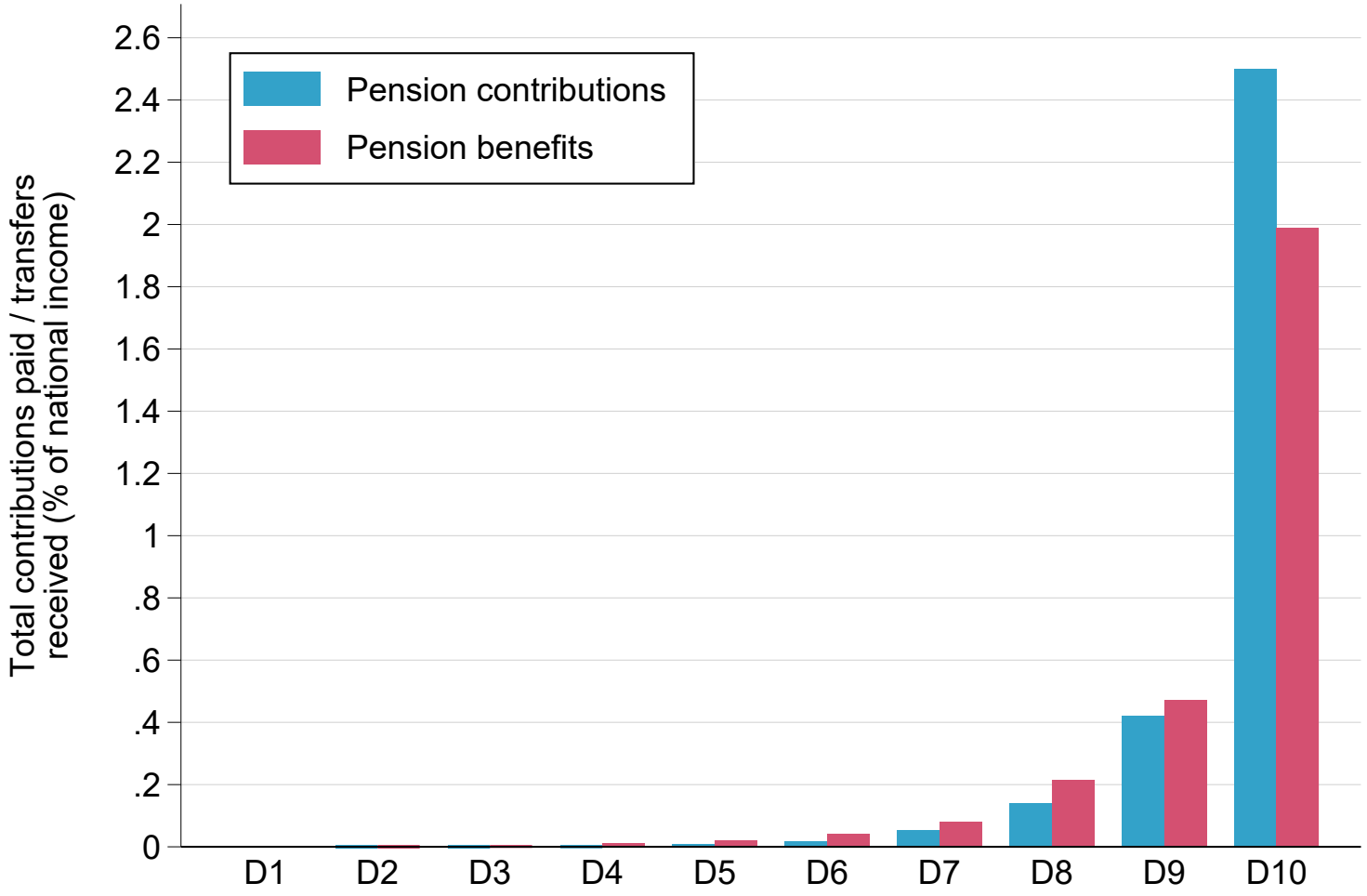
Table A1 – The Distribution of Income in South Africa in 2019: Productivity-Adjusted

	Pretax National Income		Posttax Disposable Income		Posttax National Income	
	Average Income	Income Share	Average Income	Income Share	Average Income	Income Share
Full population	$ 11,800	100%	$ 7,780	100%	$ 9,480	100%
Bottom 50%	$ 630	2.7%	$ 1,020	6.5%	$ 1,690	8.9%
Bottom 20%	$ 45	0.1%	$ 410	1.1%	$ 400	0.8%
Next 30%	$ 1,020	2.6%	$ 1,420	5.5%	$ 2,560	8.1%
Middle 40%	$ 8,410	28.6%	$ 6,530	33.6%	$ 8,020	33.8%
Top 10%	$ 80,700	68.7%	$ 46,600	59.9%	$ 54,300	57.2%
Top 1%	$ 329,000	28.0%	$ 170,000	21.9%	$ 206,000	21.7%
Top 0.1%	$ 970,000	8.3%	$ 519,000	6.7%	$ 609,000	6.4%

Notes. The table reports statistics on the distribution of income in South Africa in 2019 for different income concepts. Posttax disposable income is the sum of primary incomes, minus direct taxes, plus cash transfers. Posttax national income deducts all taxes and adds all transfers. General public services and defense are distributed proportionally to posttax disposable income. In-kind transfers are adjusted for aggregate and heterogeneous productivity. The unit of observation is the individual. Income is split equally between all household members.

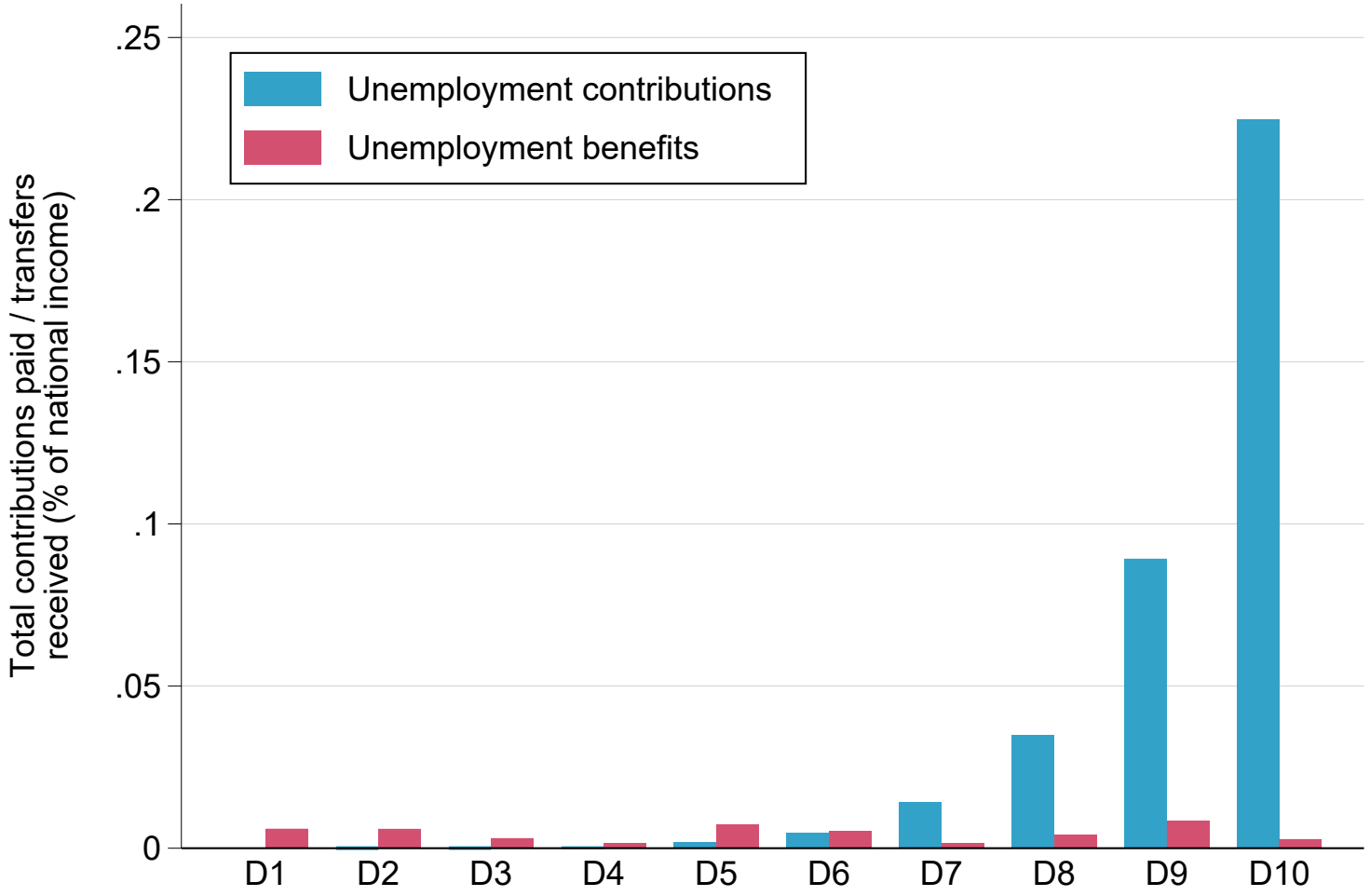
B. Pension and Unemployment Systems

Figure B1 – Pension Contributions and Benefits Paid/Received by Income Decile, 2019



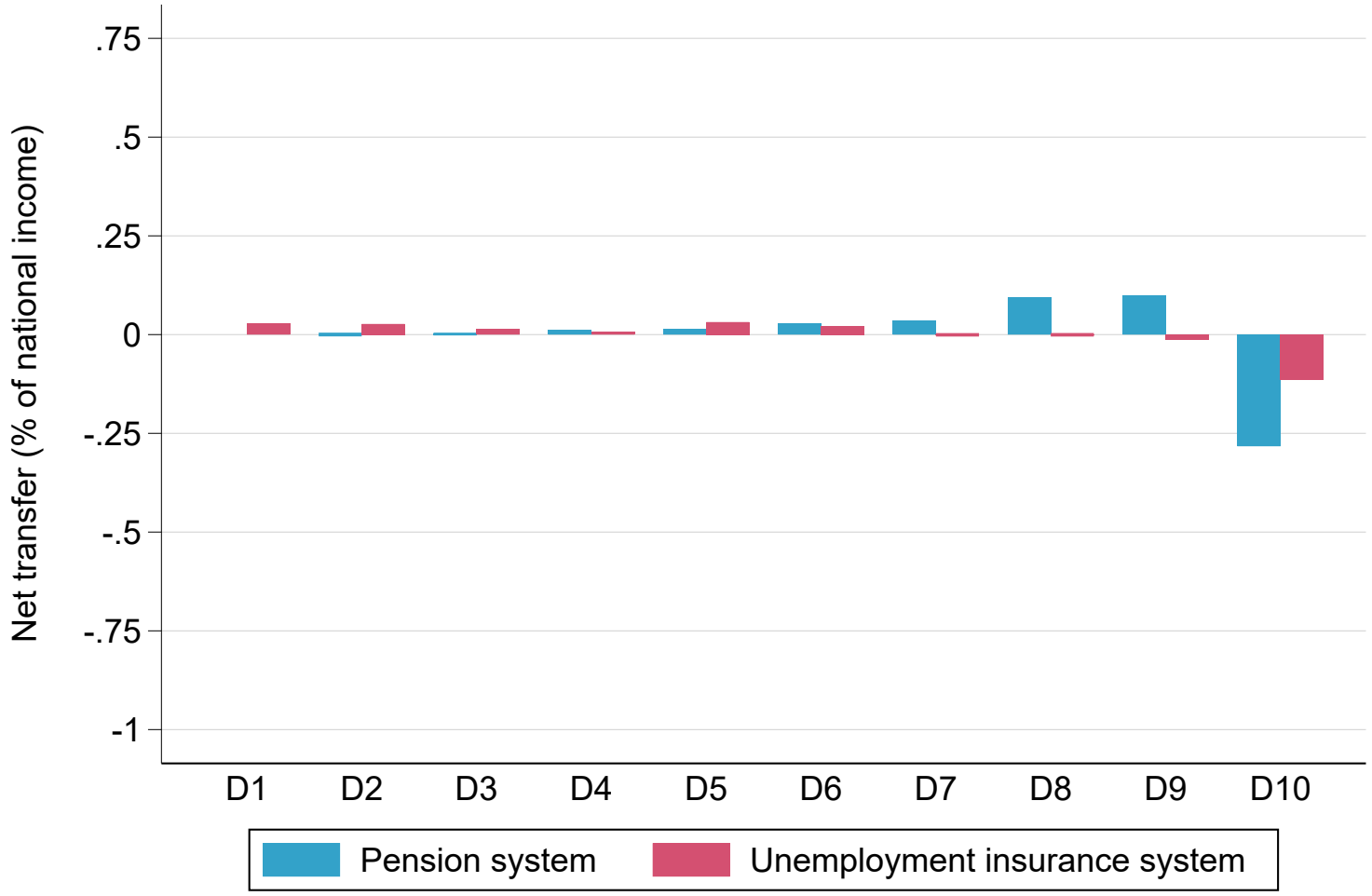
Notes. Author's computations combining surveys, tax, and national accounts data.

Figure B2 – Unemployment Insurance Contributions and Benefits Paid/Received by Income Decile, 2019



Notes. Author's computations combining surveys, tax, and national accounts data.

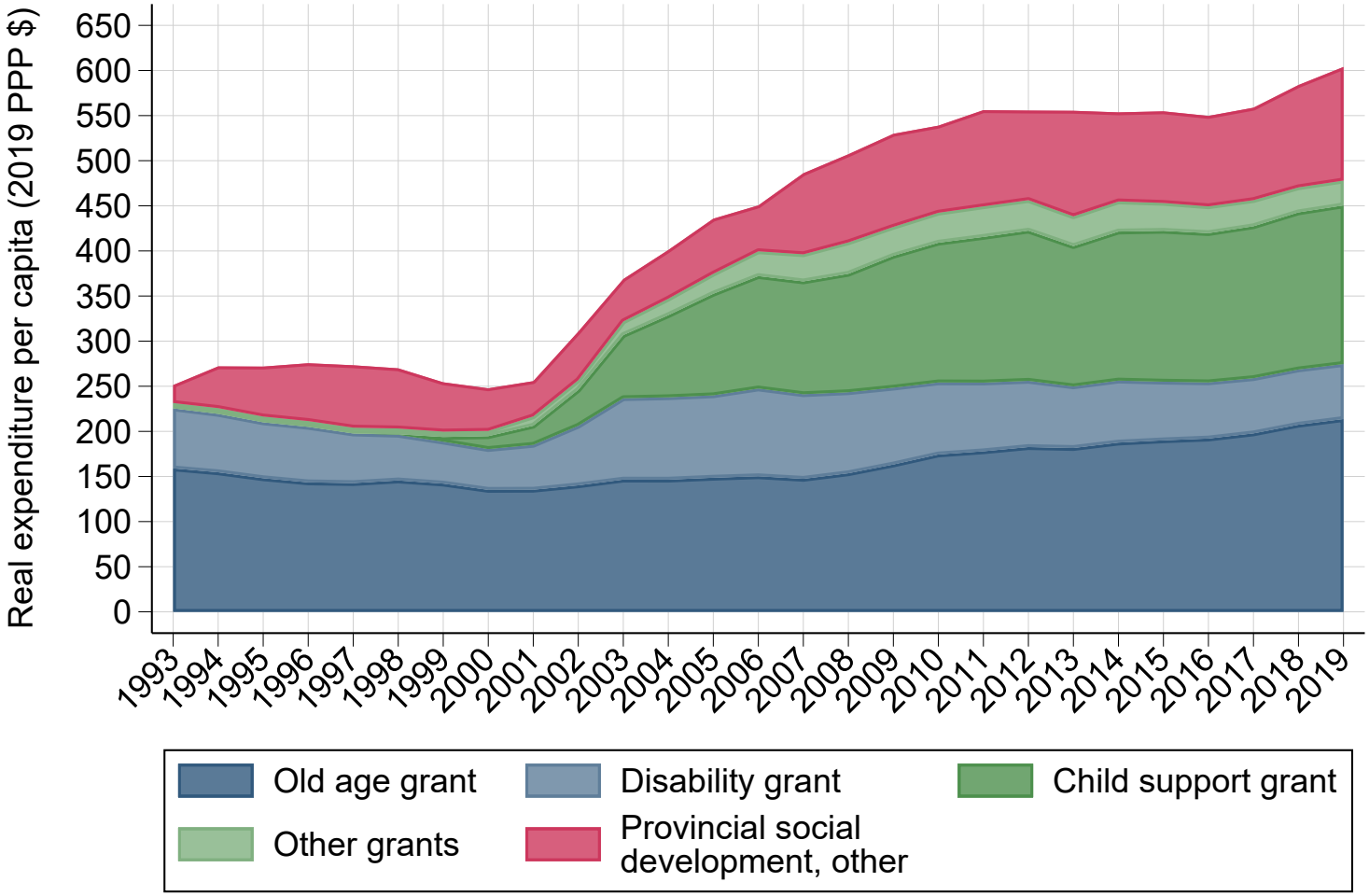
Figure B3 – Net Transfers Operated by the Pension and Unemployment Insurance Systems Between Income Deciles, 2019



Notes. Author's computations combining surveys, tax, and national accounts data.

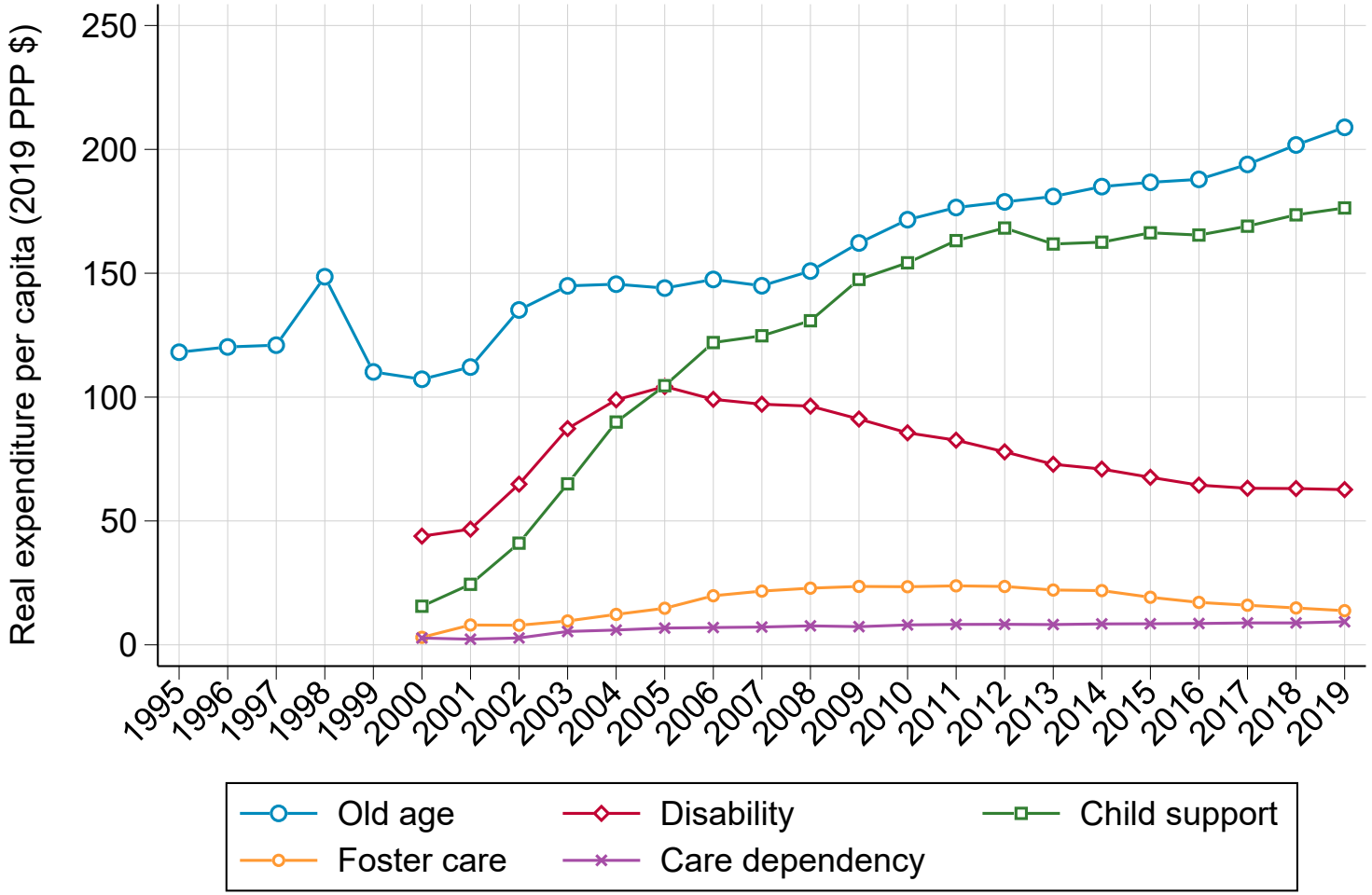
C. Social Protection

Figure C1 – Level and Composition of Social Protection Expenditure in South Africa, 1993-2019



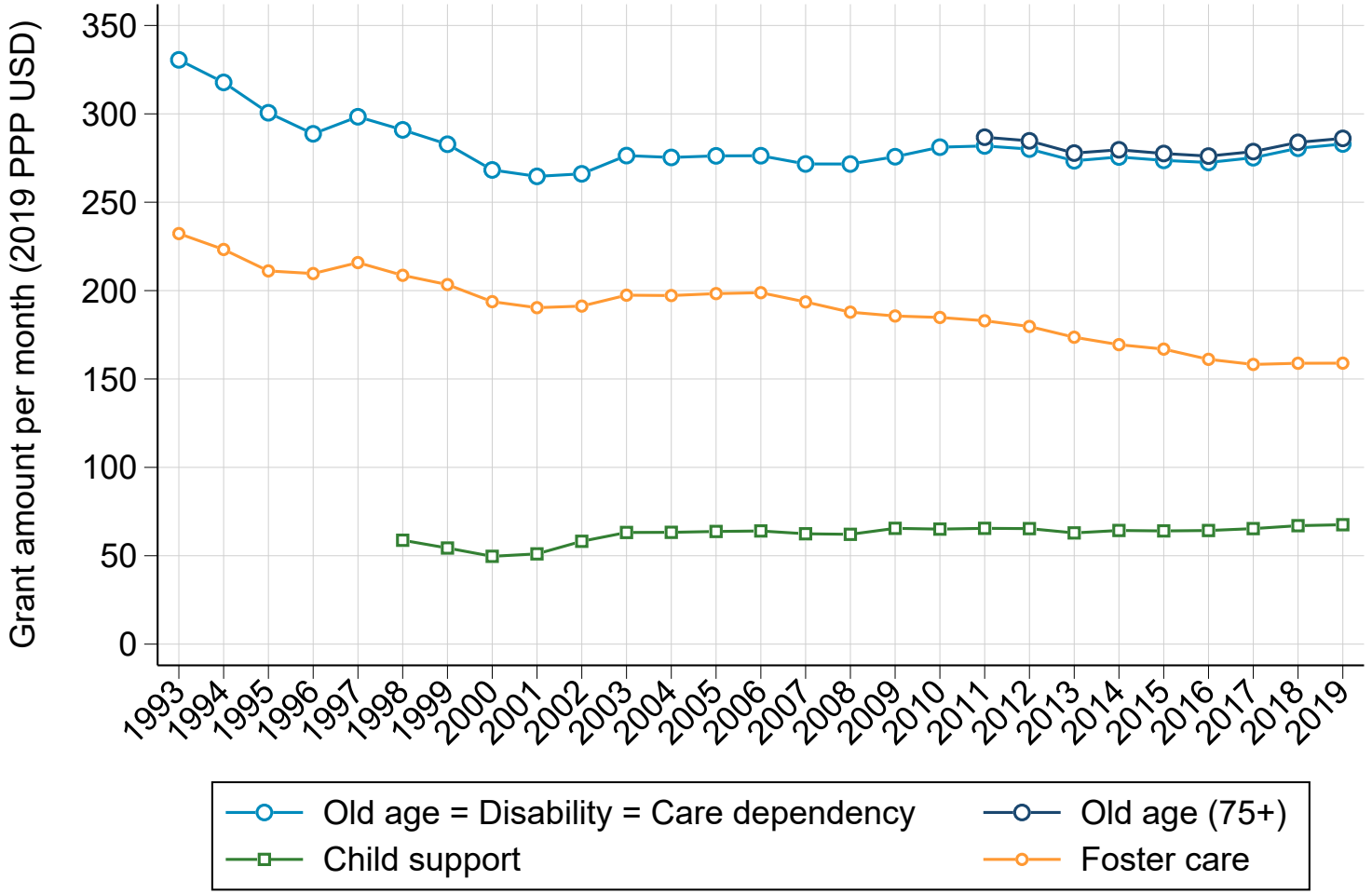
Notes. Author's computations combining data from South African National Treasury Budget Reports (1994-2020).

Figure C2 – Per Capita Expenditure on Social Grants in South Africa, 1993-2019



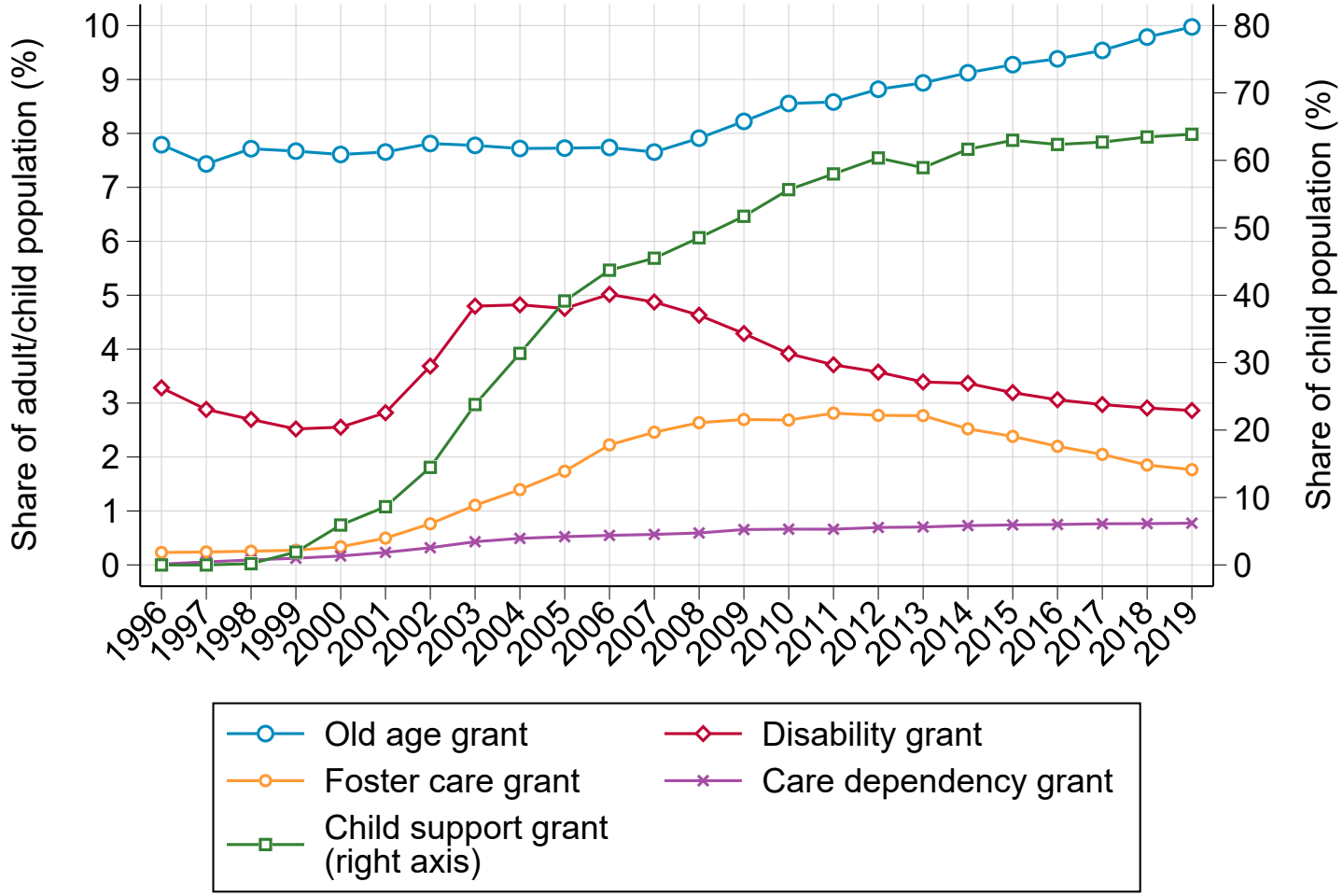
Notes. Author's computations combining data from South African National Treasury Budget Reports (1994-2020).

Figure C3 – Real Monthly Value of Social Grants in South Africa, 1993-2019



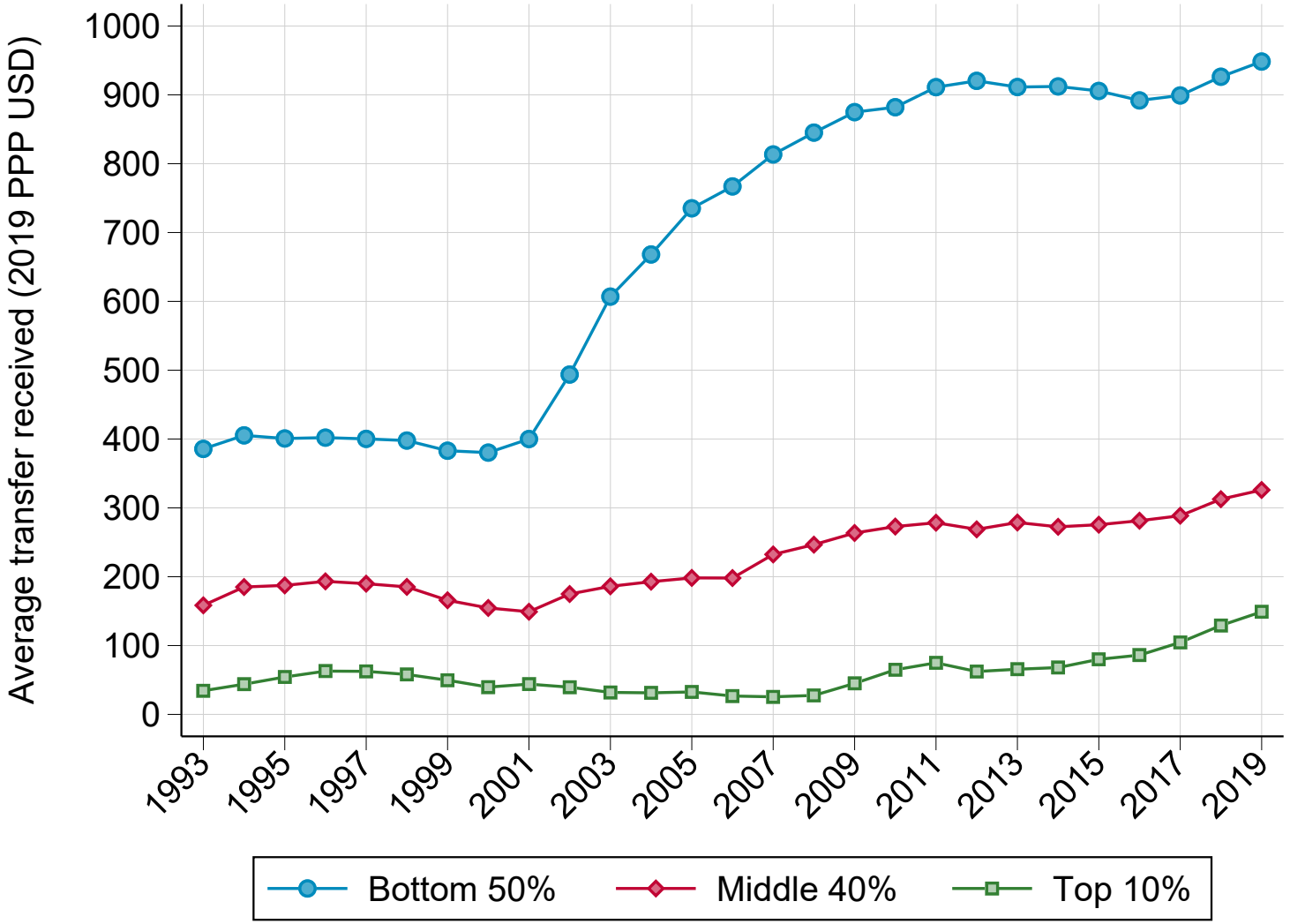
Notes. Author's computations combining data from South African National Treasury Budget Reports (1994-2020).

Figure C4 – Share of Population Receiving Social Grants in South Africa, 1993-2019



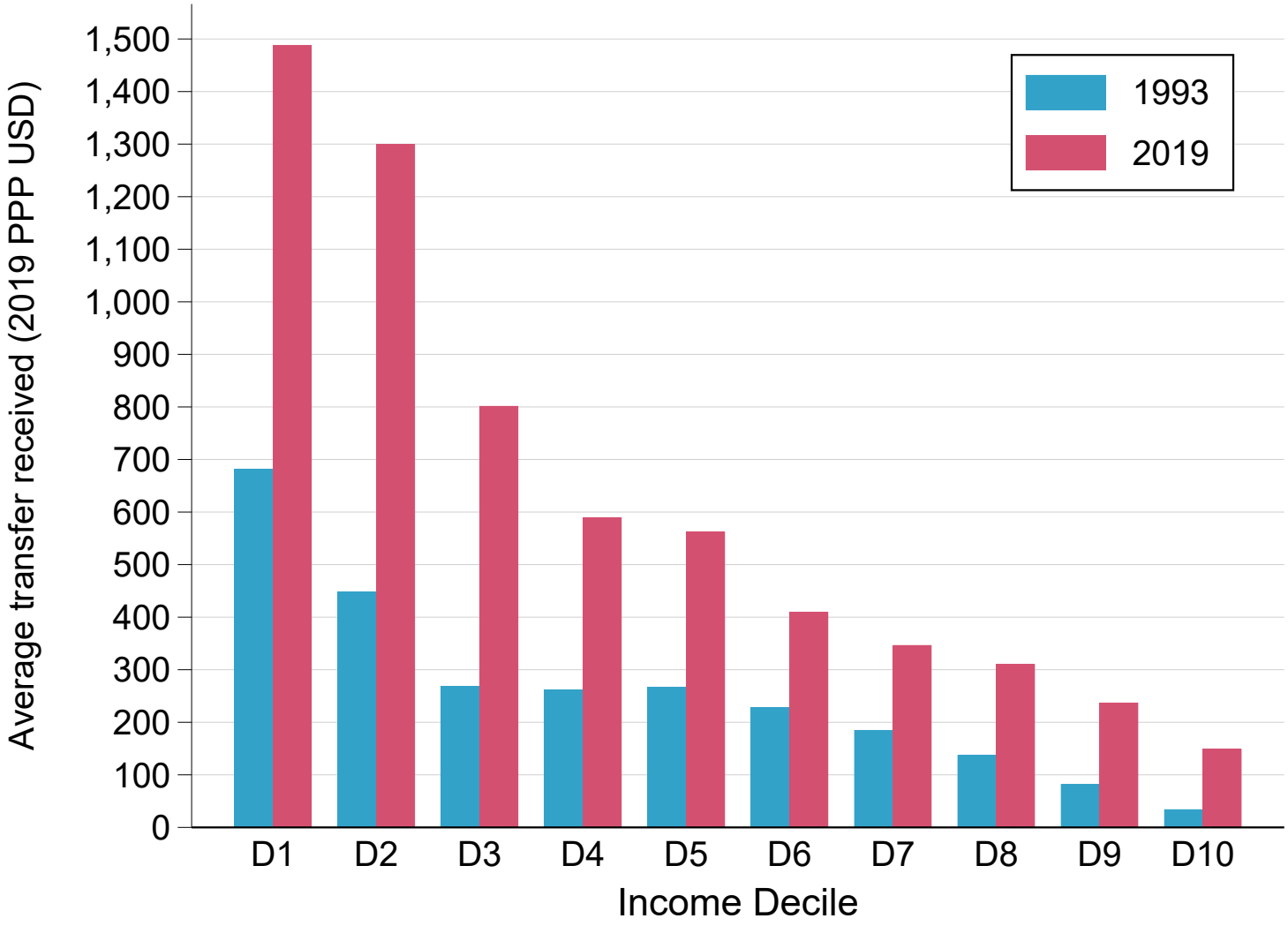
Notes. Author's computations combining data from South African National Treasury Budget Reports (1994-2020).

Figure C5 – Average Social Protection Transfer Received by Income Group, 1993-2019



Notes. Author's computations combining surveys, tax, and national accounts data.

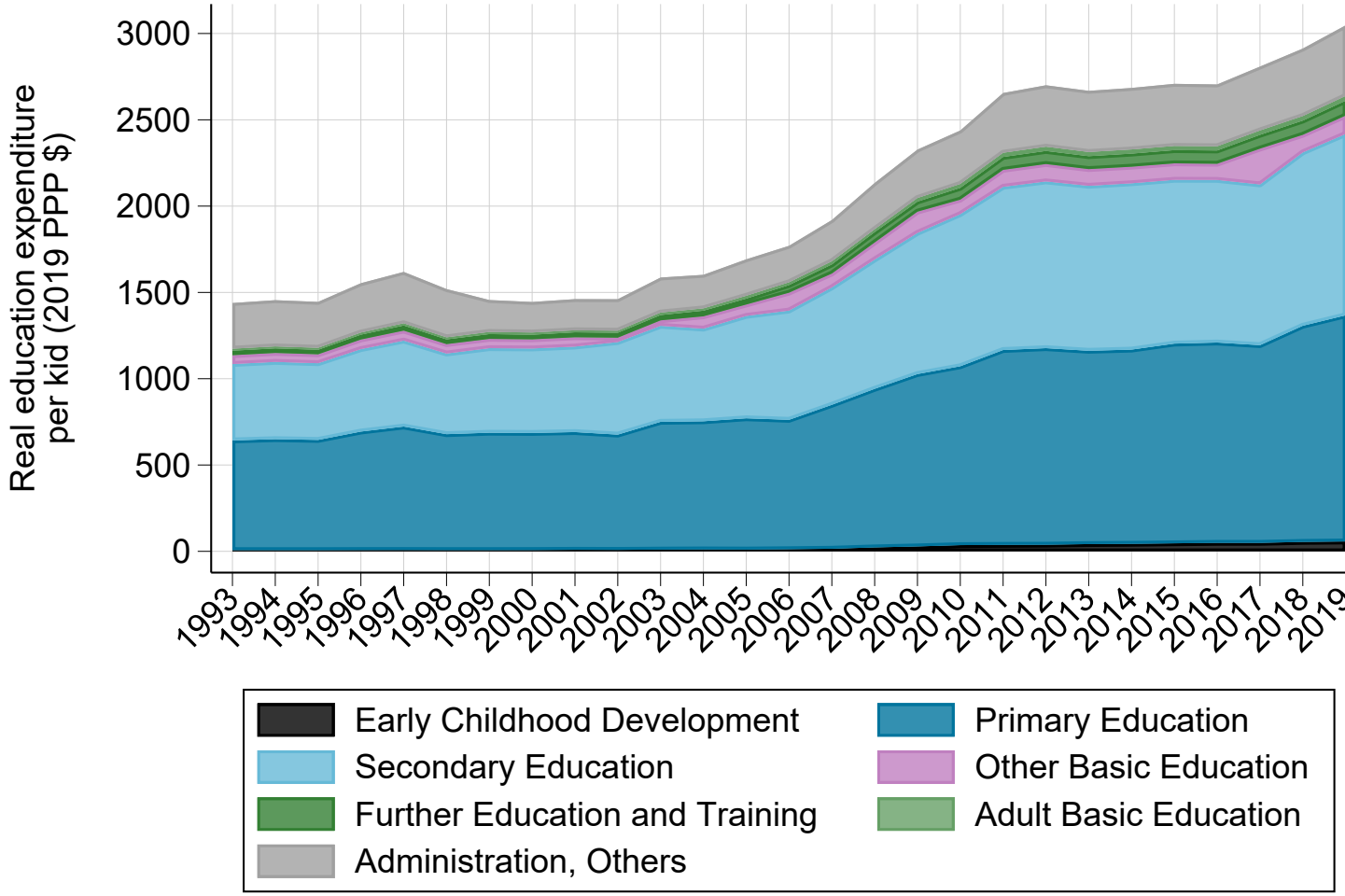
Figure C6 – Average Social Protection Transfer Received by Income Decile, 1993-2019



Notes. Author's computations combining surveys, tax, and national accounts data.

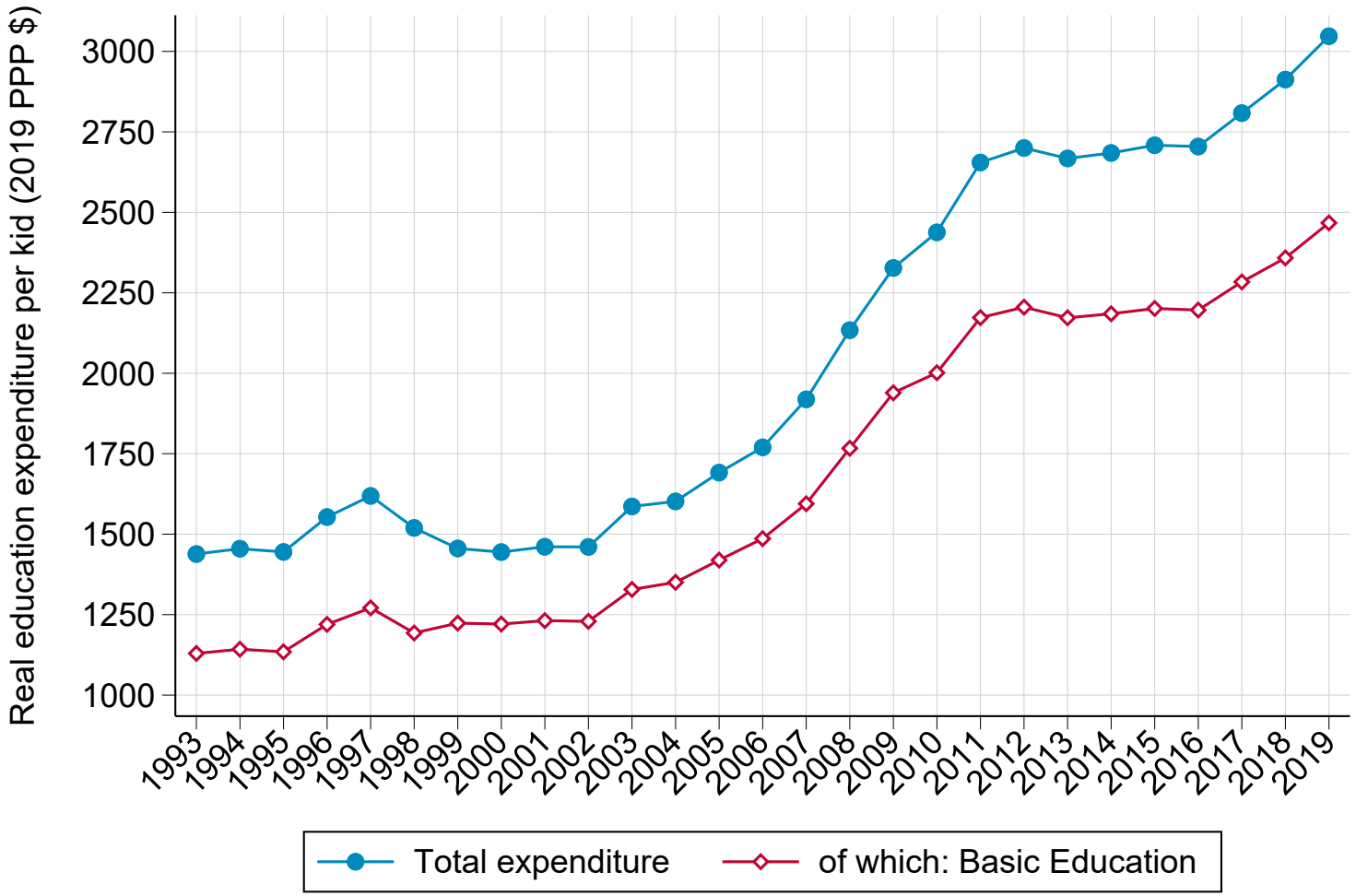
D. Education

Figure D1 – Level and Composition of Education Expenditure in South Africa, 1993-2019



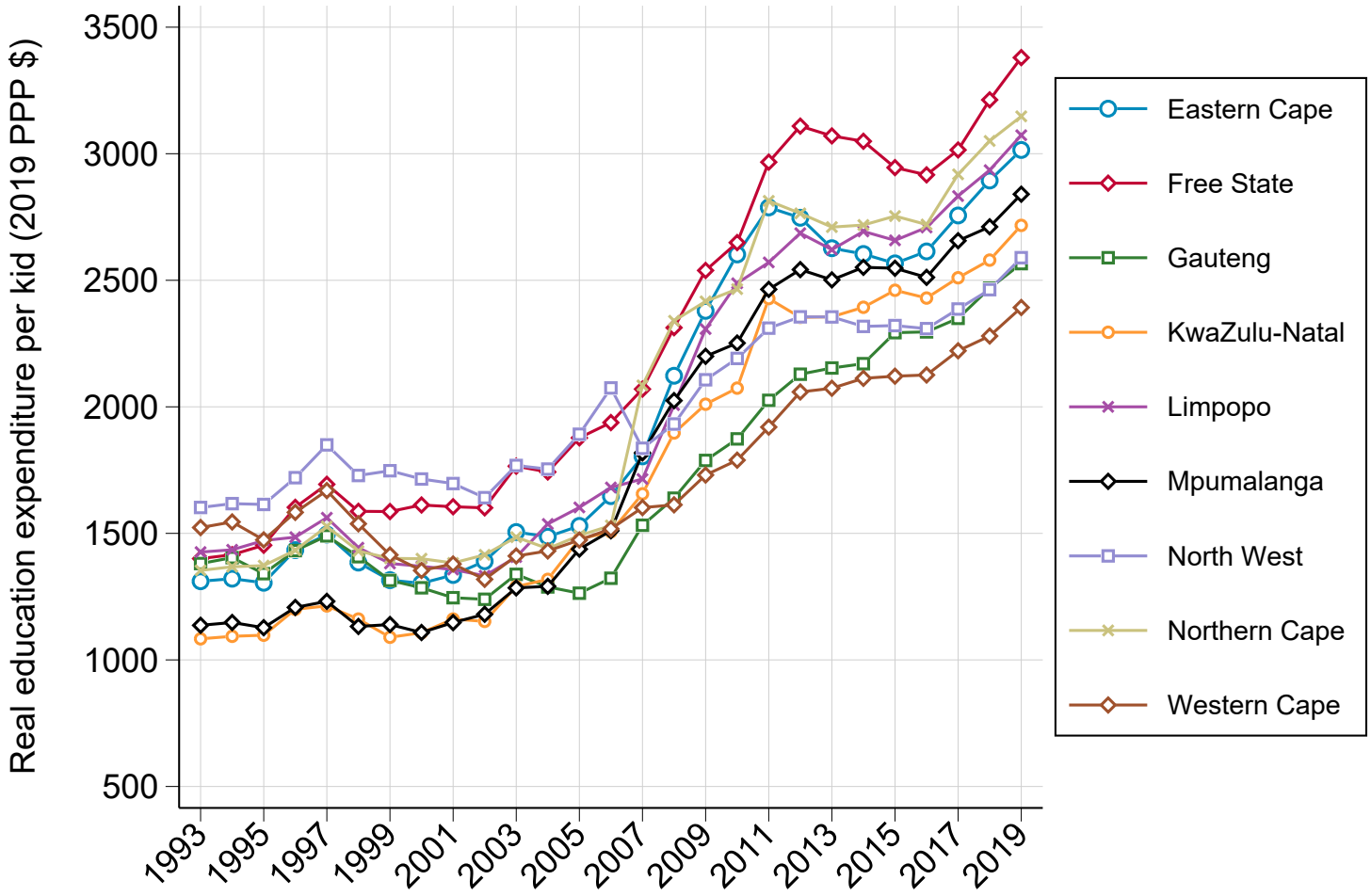
Notes. Author's computations combining data from South African National Treasury Budget Reports (1994-2020) and Provincial Budget Reports (2002-2020).

Figure D2 – The Rise of Education Expenditure in South Africa, 1993-2019:
The Role of Basic Education



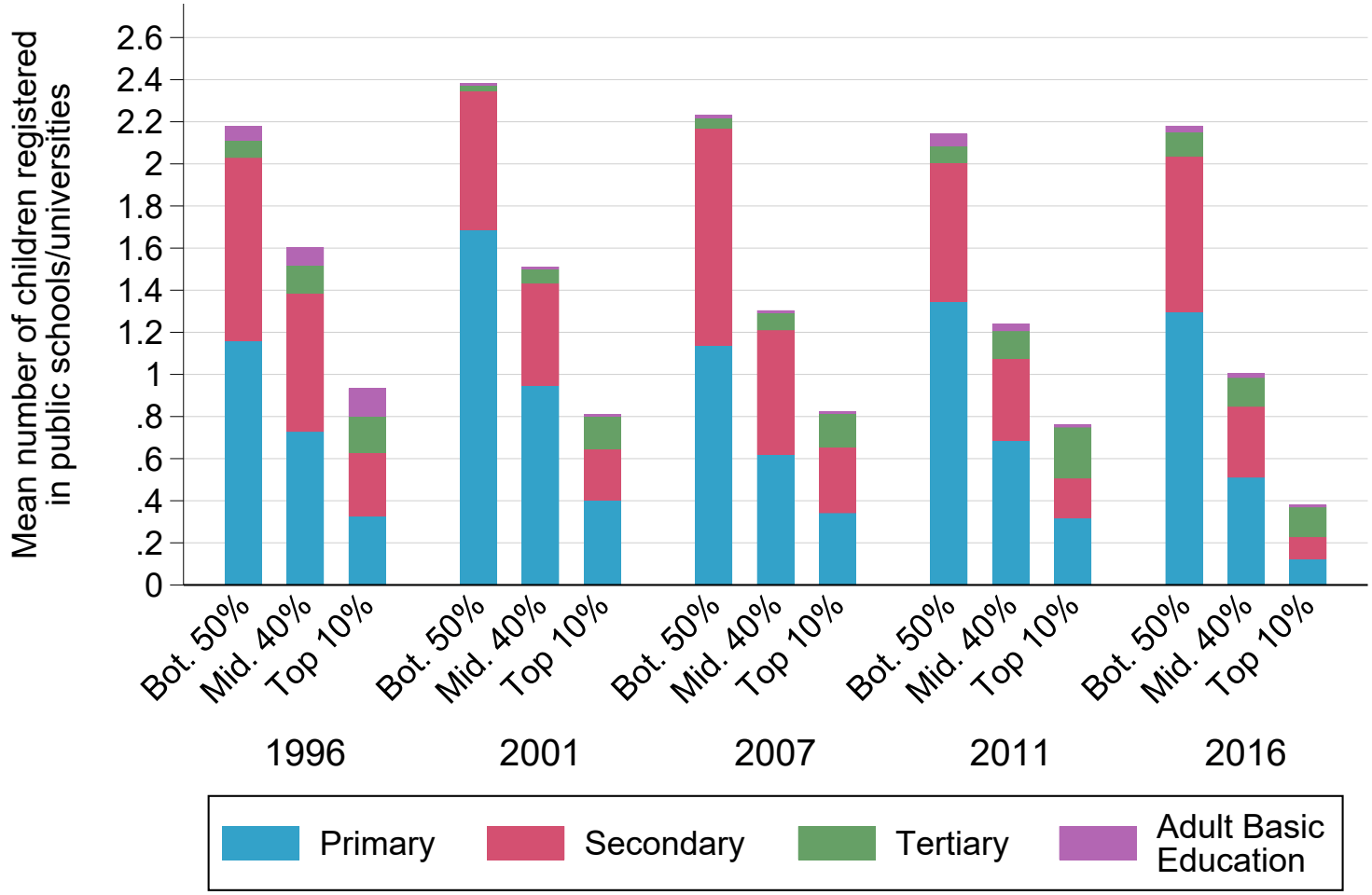
Notes. Author's computations combining data from South African National Treasury Budget Reports (1994-2020).

Figure D3 – Real Education Expenditure Per Kid by South African Province, 1993-2019



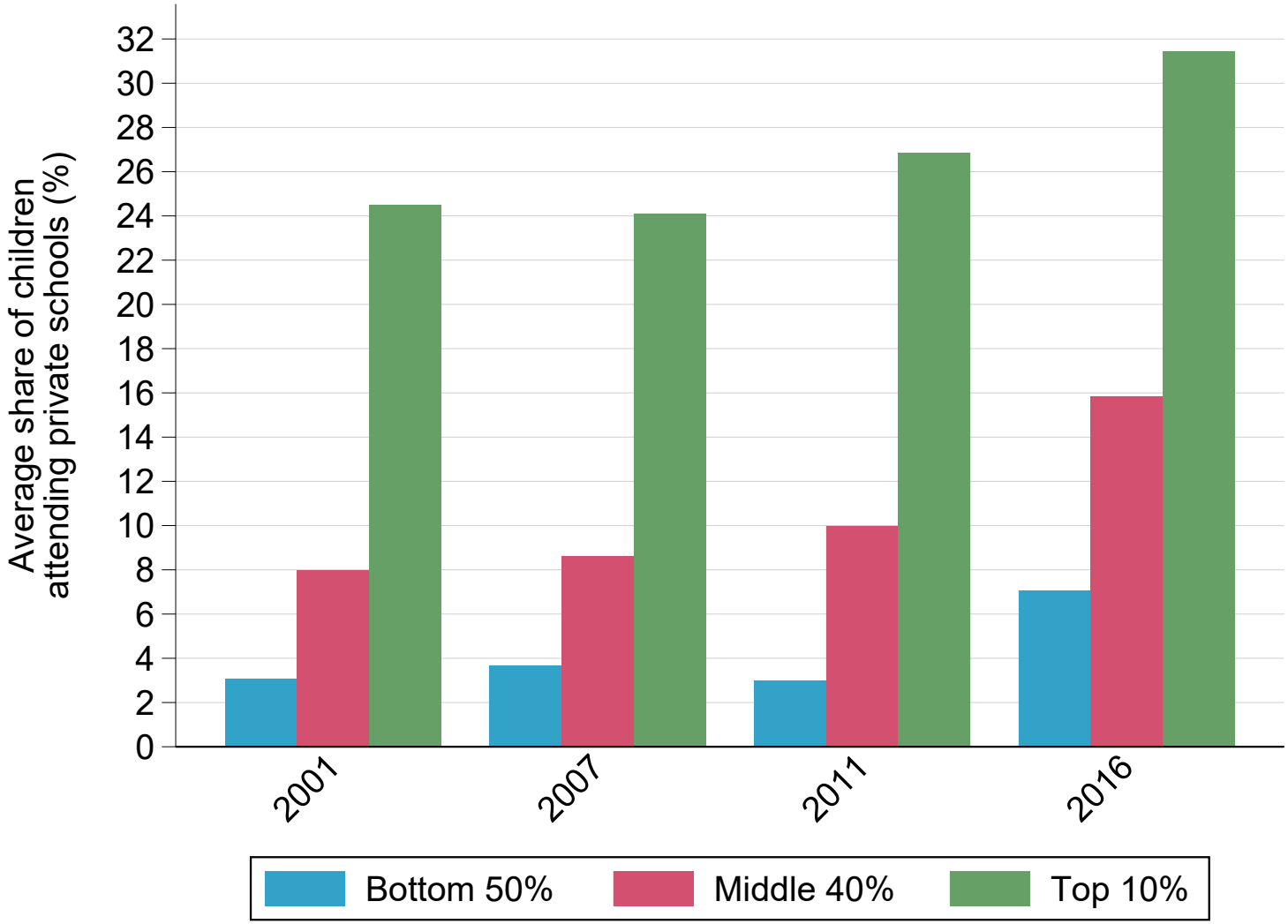
Notes. Author's computations combining data from South African National Treasury Budget Reports (1994-2020) and Provincial Budget Reports (2002-2020).

Figure D4 – Average Number of Children Attending Public Schools by Income Group, 1996-2016



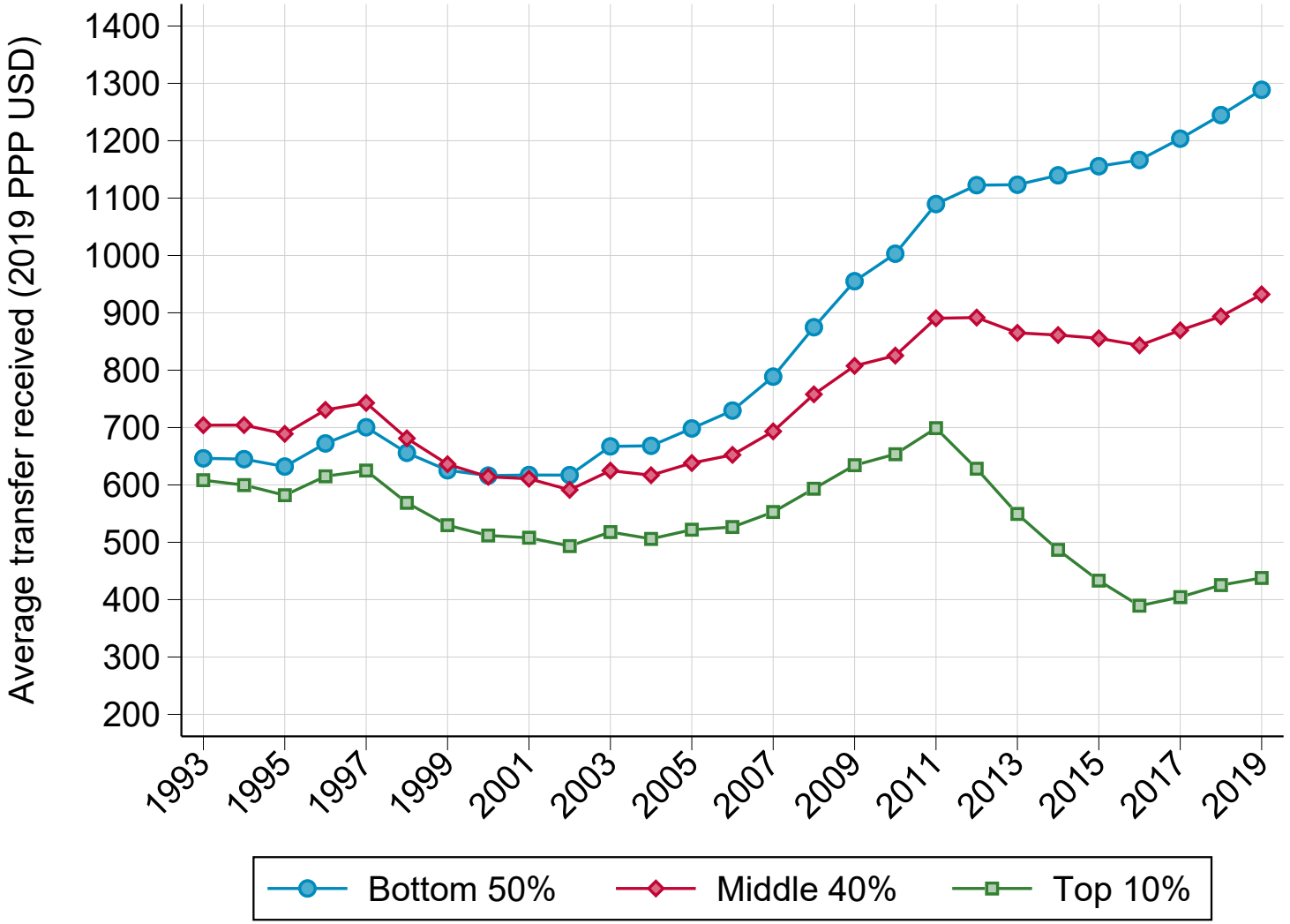
Notes. Author's computations using census sample microdata.

Figure D5 – Average Share of Children Attending Private Schools by Income Group, 2001-2016



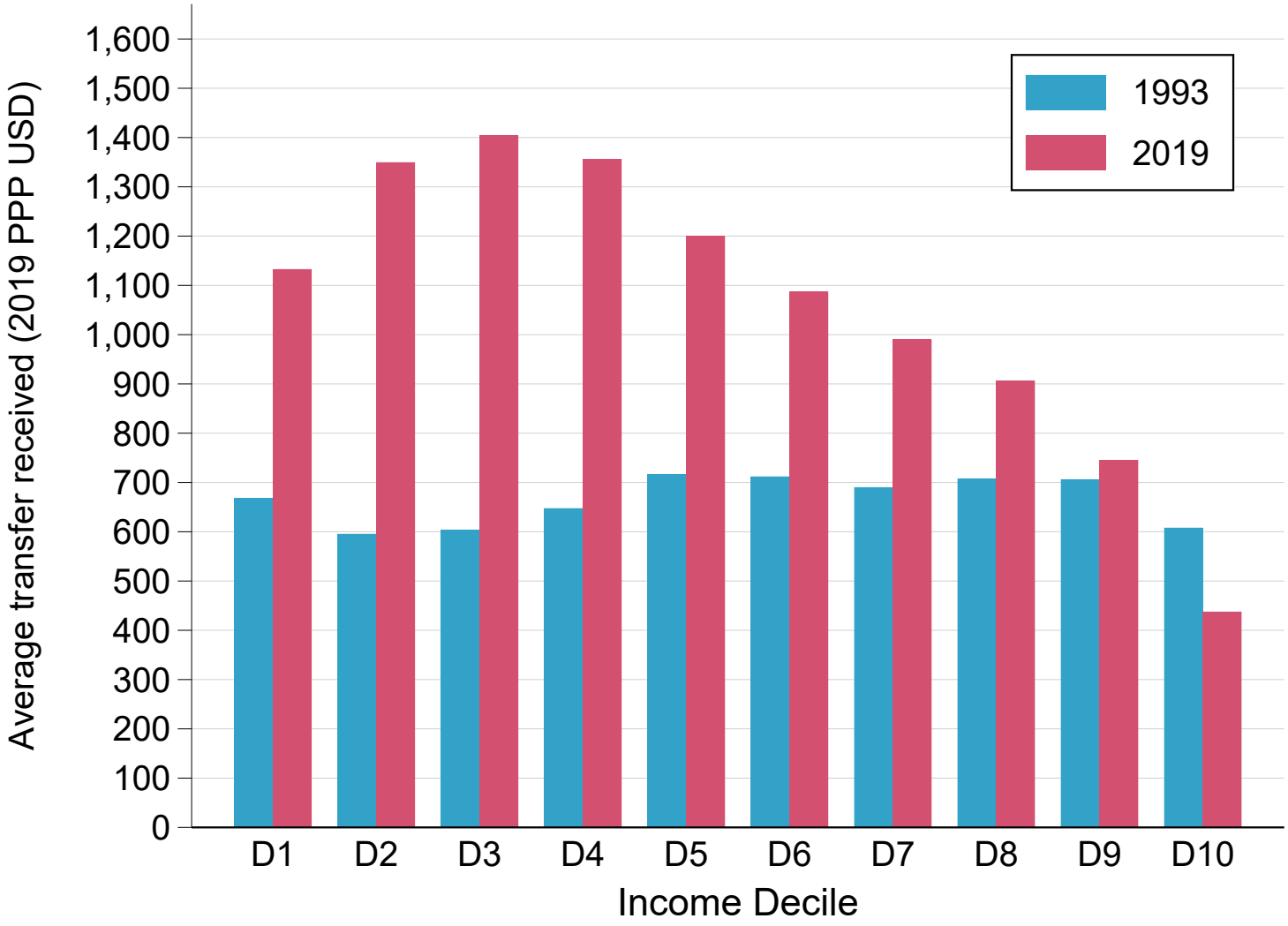
Notes. Author's computations using census sample microdata.

Figure D6 – Average Education Transfer Received by Income Group, 1993-2019



Notes. Author's computations combining surveys, tax, and national accounts data.

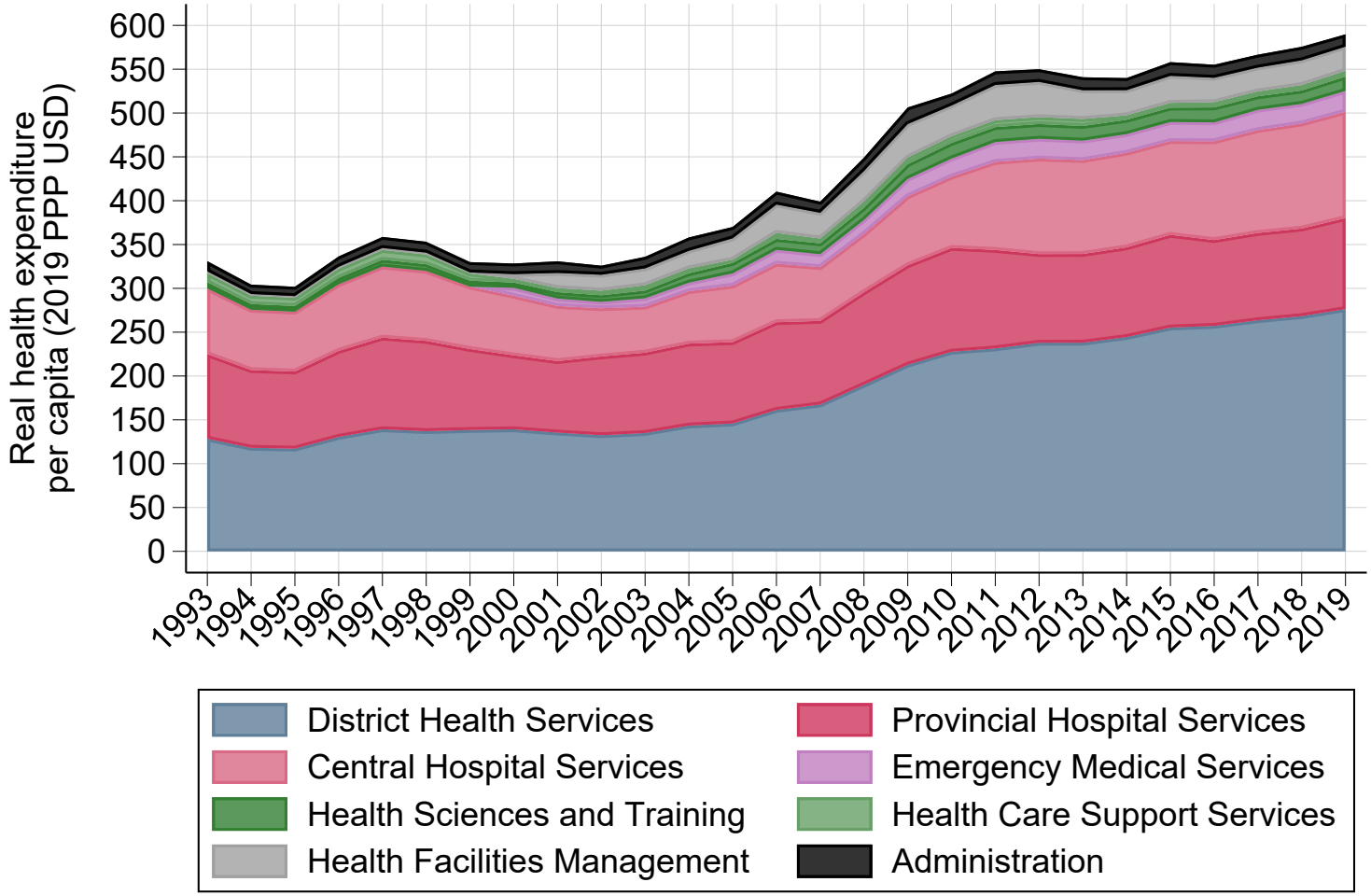
Figure D7 – Average Education Transfer Received by Income Decile, 1993-2019



Notes. Author's computations combining surveys, tax, and national accounts data.

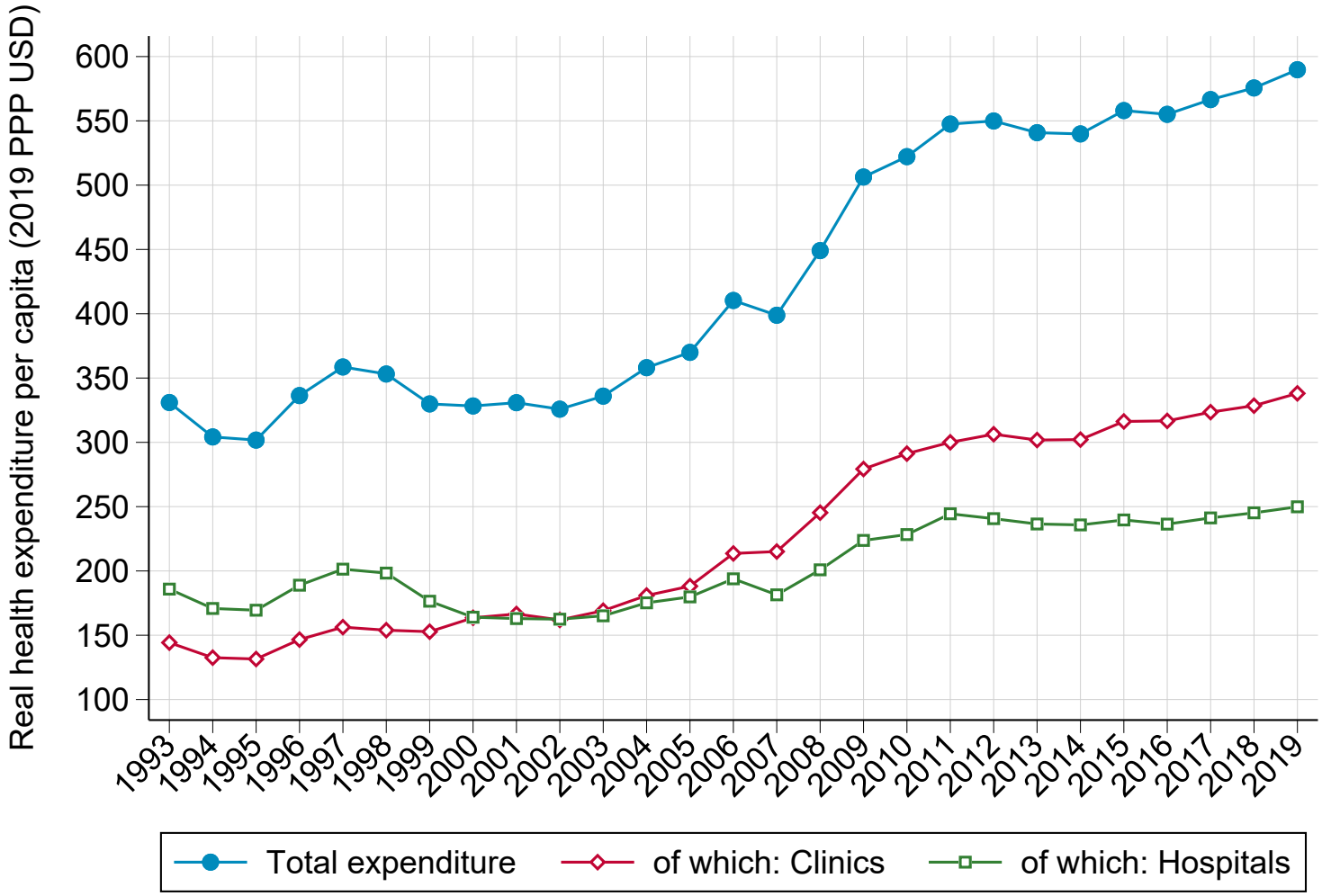
E. Health

Figure E1 – Level and Composition of Health Expenditure in South Africa, 1993-2019



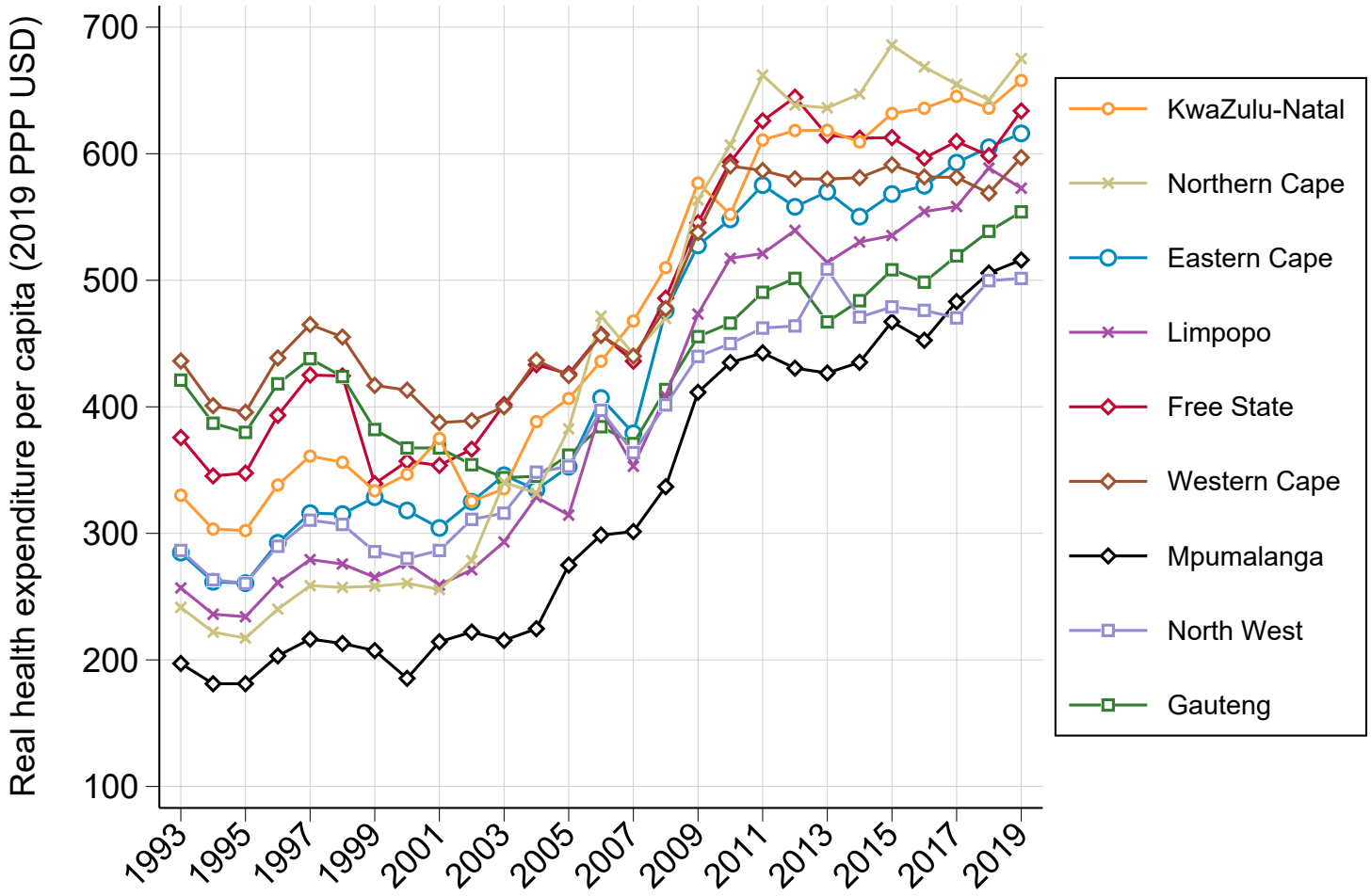
Notes. Author's computations combining data from South African National Treasury Budget Reports (1994-2020) and Provincial Budget Reports (2002-2020).

Figure E2 – Level and Composition of Health Expenditure in South Africa, 1993-2019: Clinics Versus Hospitals



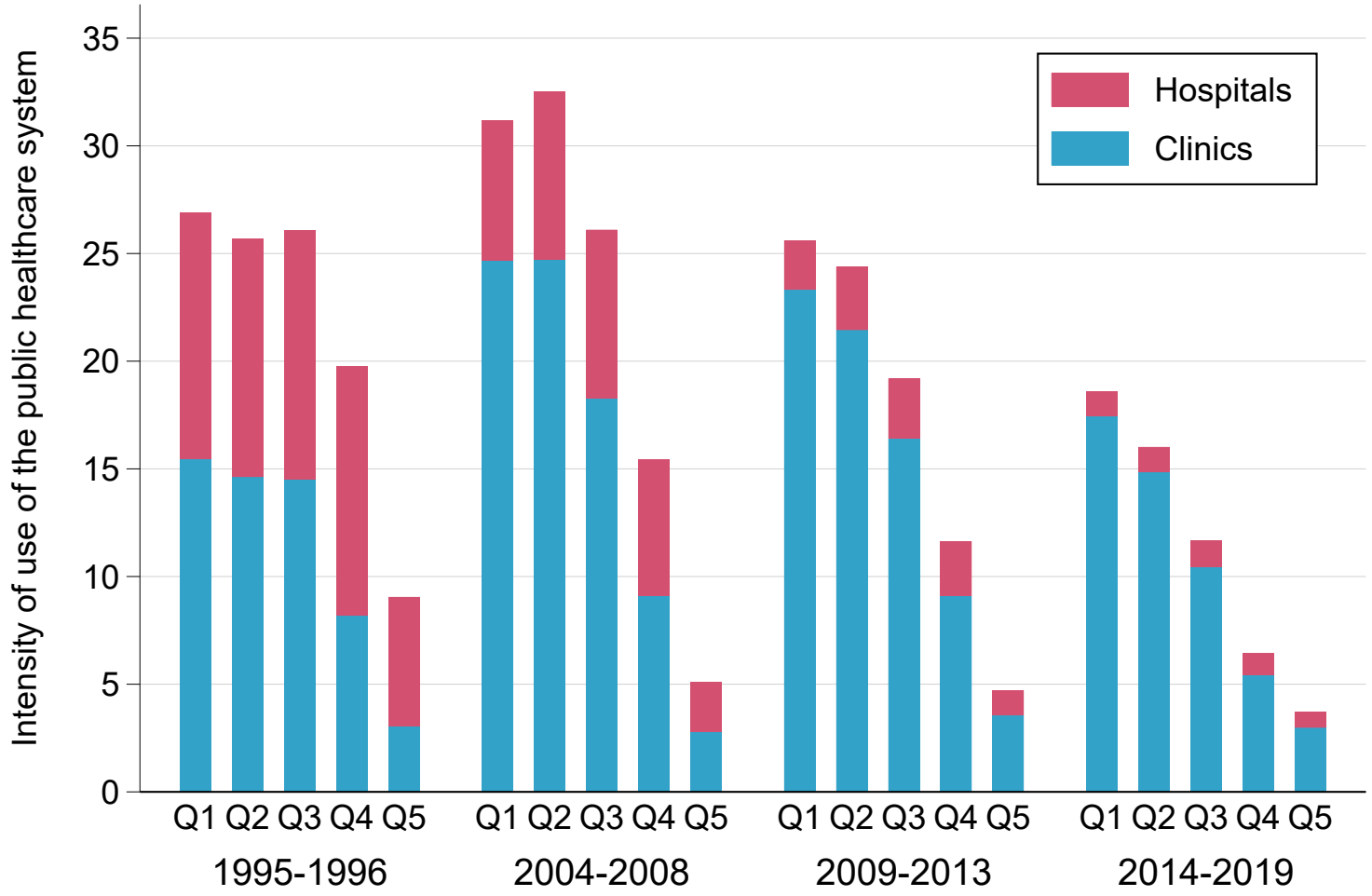
Notes. Author's computations combining data from South African National Treasury Budget Reports (1994-2020) and Provincial Budget Reports (2002-2020).

Figure E3 – Real Health Expenditure Per Capita by South African Province, 1993-2019



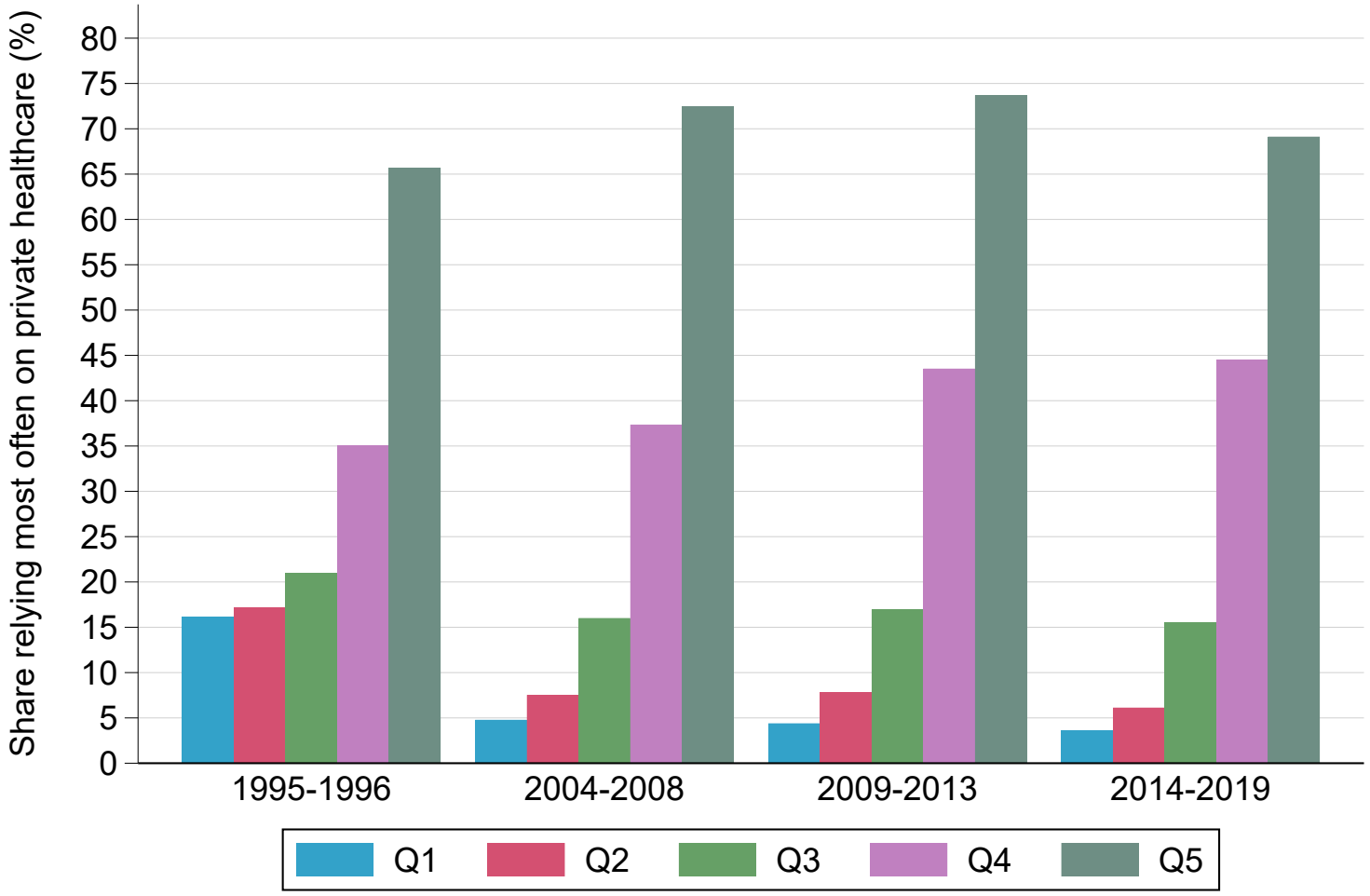
Notes. Author's computations combining data from South African National Treasury Budget Reports (1994-2020) and Provincial Budget Reports (2002-2020).

Figure E4 – Intensity of Use of the Public Healthcare System by Income Quintile, 1995-2019



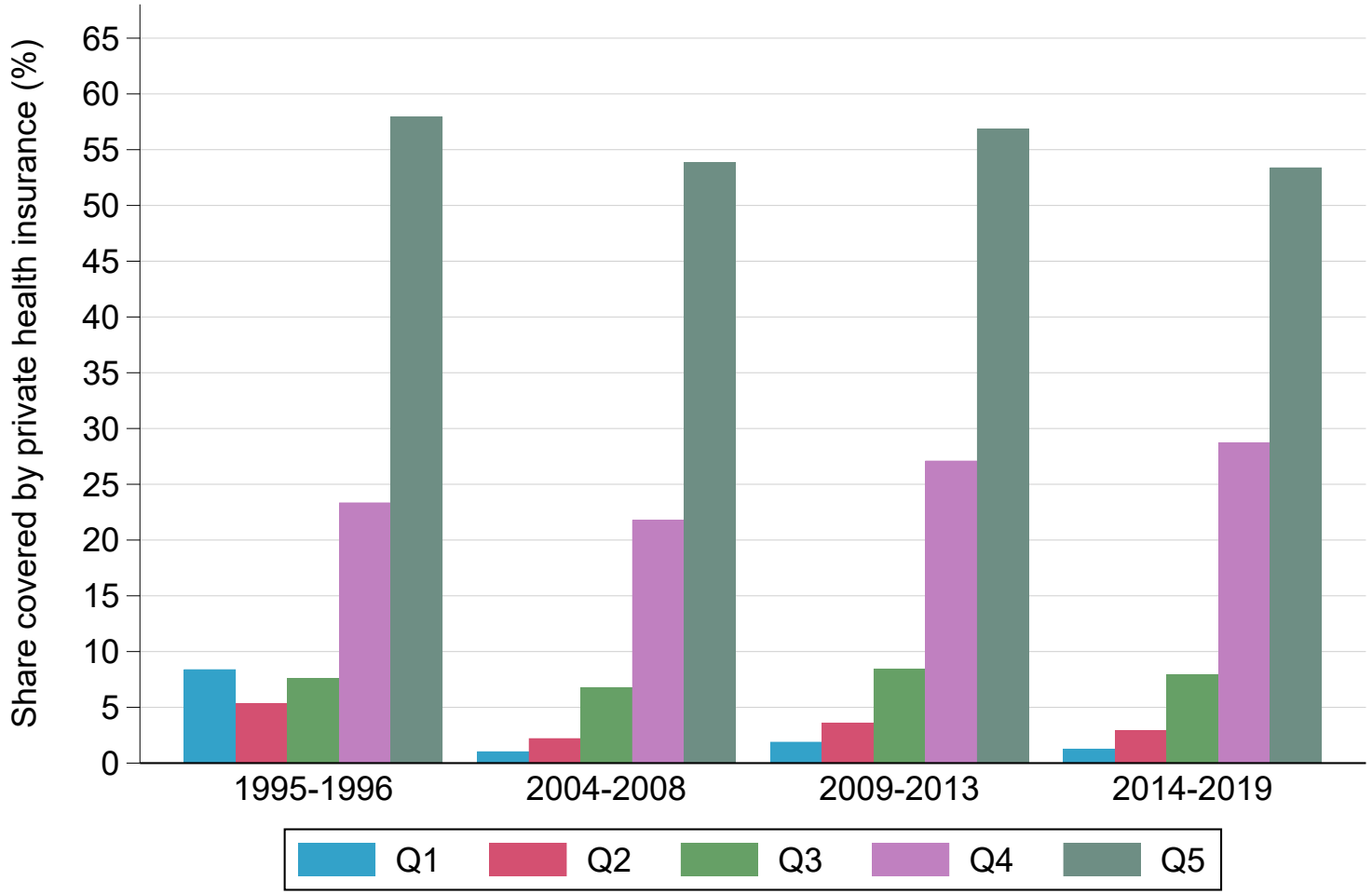
Notes. Author's computations using General Household Surveys (GHS, 2004-2019) and October Household Surveys (OHS, 1995-1996). GHS figures correspond to the share of individuals who consulted a health worker in the past three months and declare going most often to public institutions to do so. OHS figures correspond to the share of individuals who either went to the hospital, or consulted a health worker in the past month, and declare going most often to public institutions to do so.

Figure E5 – Private Healthcare Use by Income Quintile, 1995-2019



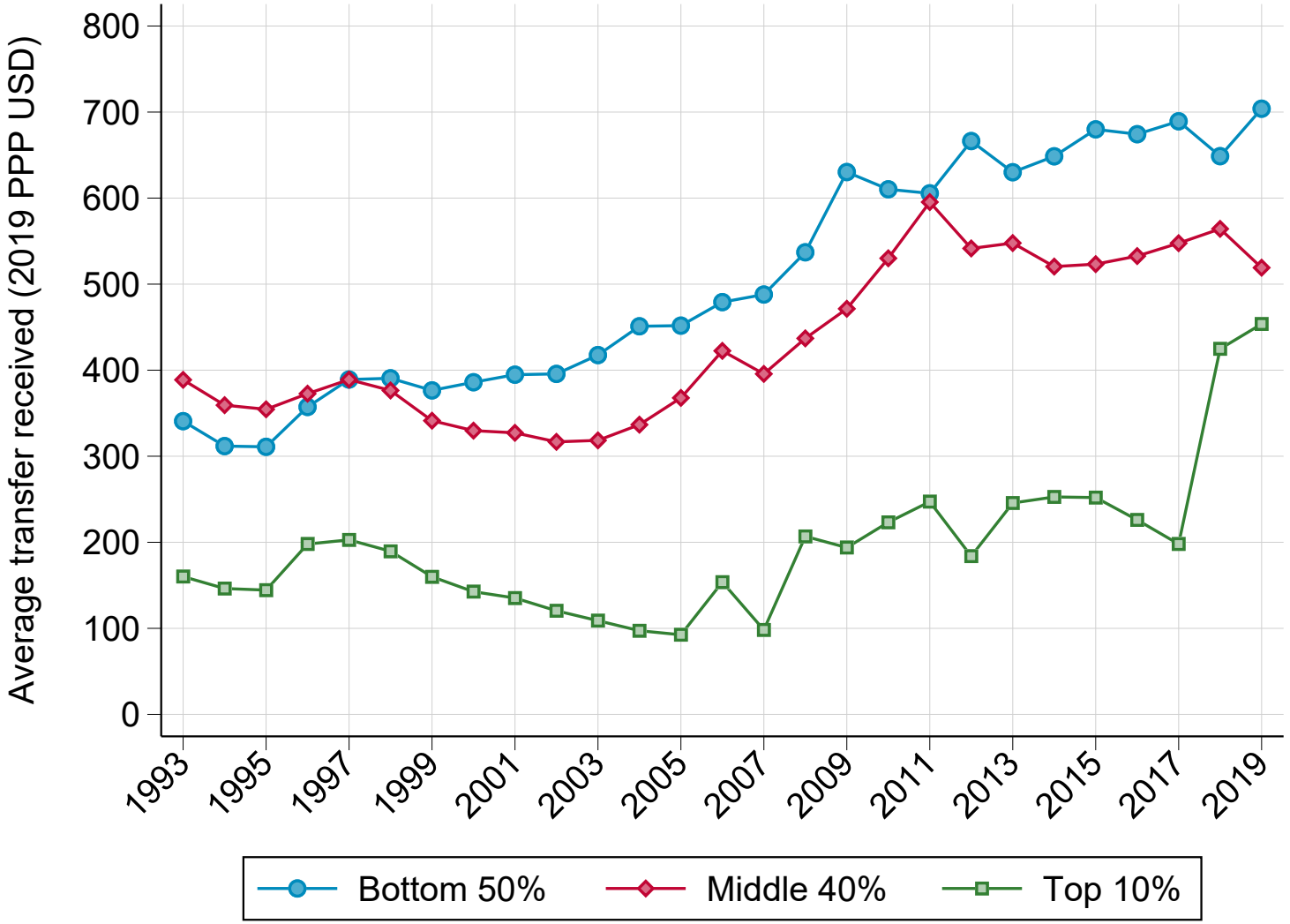
Notes. Author's computations using General Household Surveys (GHS, 2004-2019) and October Household Surveys (OHS, 1995-1996). The figure shows the share of individuals declaring going most often to private clinics or private hospitals for healthcare by income quintile.

Figure E6 – Private Health Insurance Coverage by Income Quintile, 1995-2019



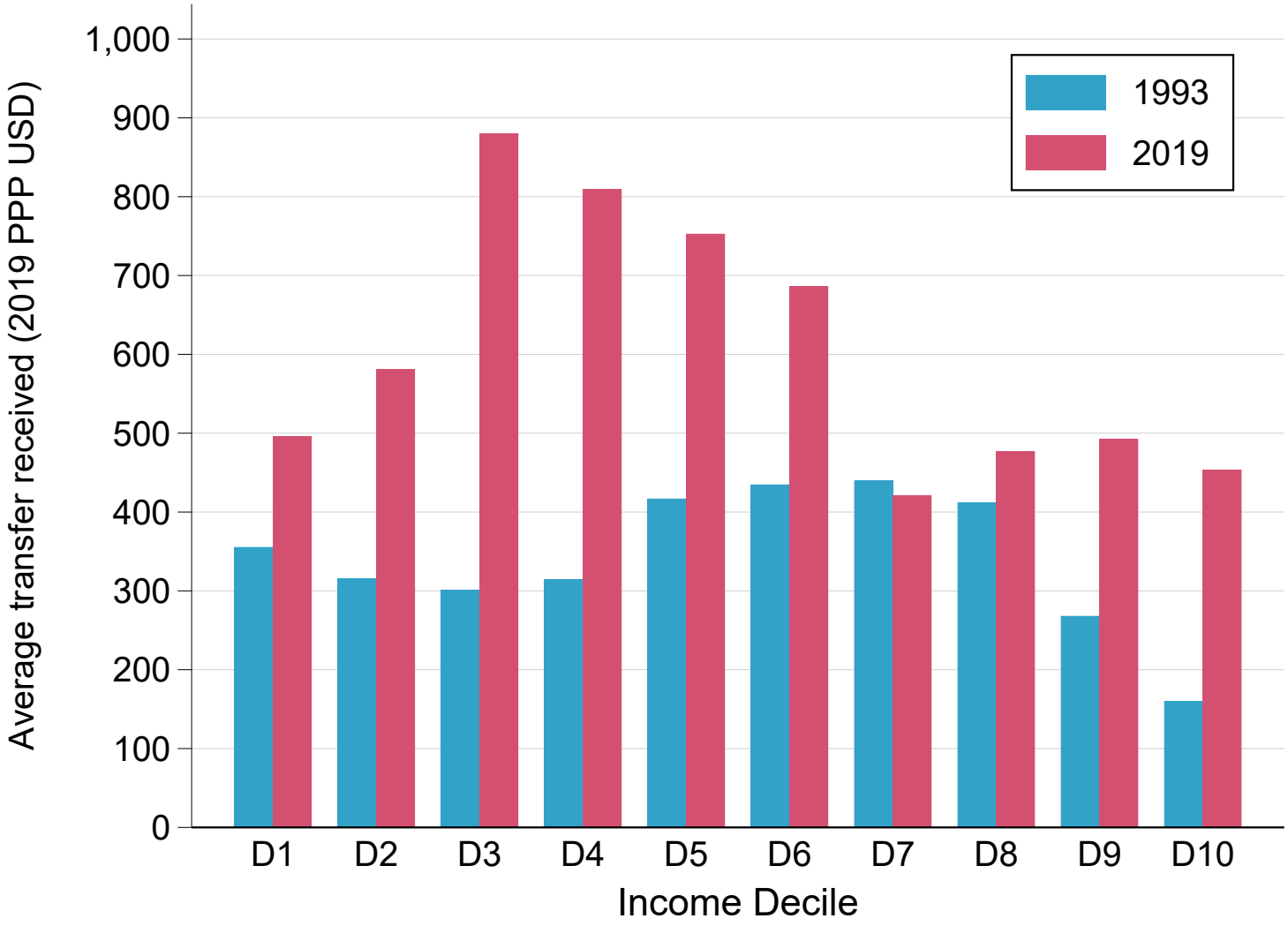
Notes. Author's computations using General Household Surveys (GHS, 2004-2019) and October Household Surveys (OHS, 1995-1996). The figure shows the share of individuals declaring being covered by a medical aid, a medical benefit scheme, or any other form of private insurance by income quintile.

Figure E7 – Average Health Transfer Received by Income Group, 1993-2019



Notes. Author's computations combining surveys, tax, and national accounts data.

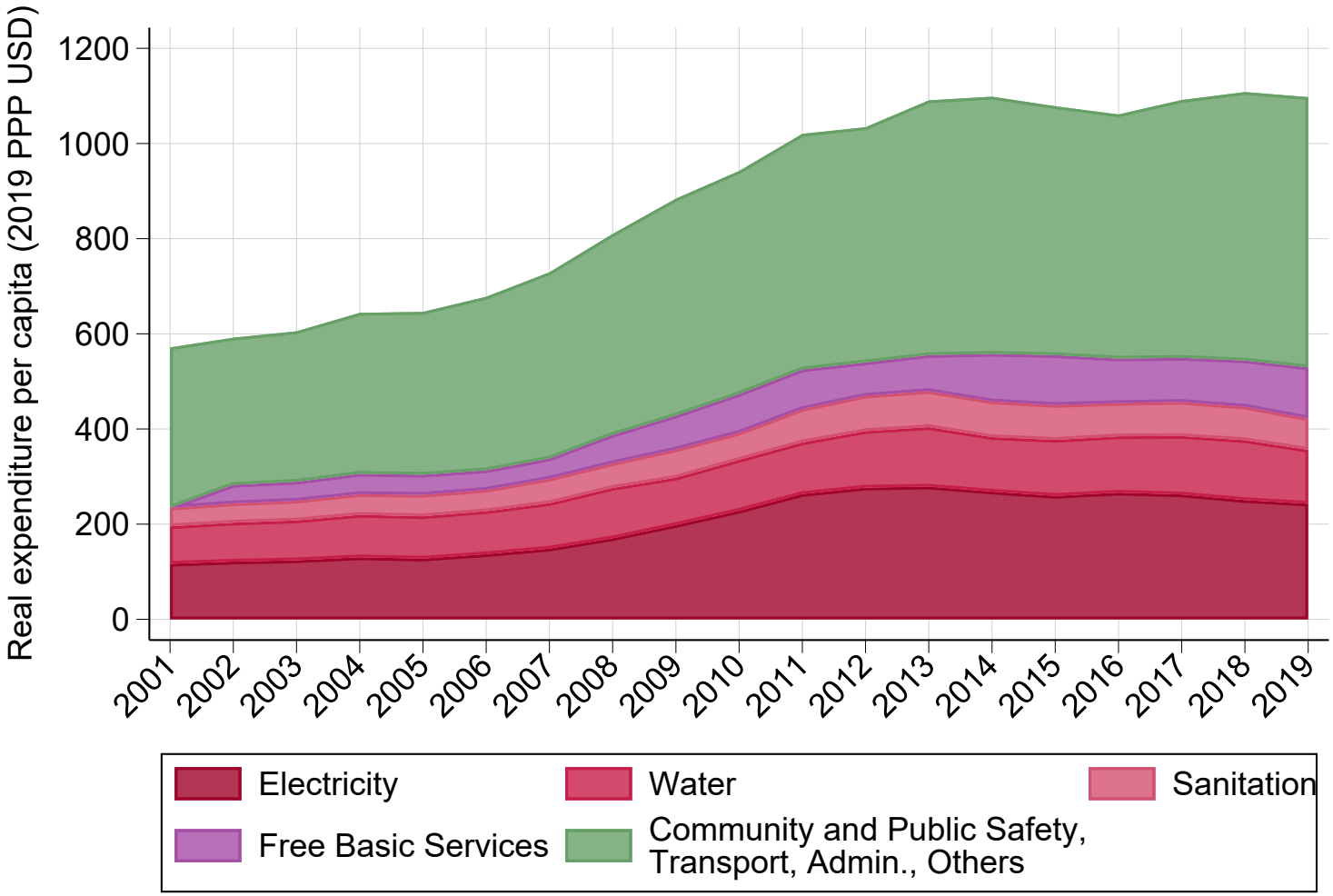
Figure E8 – Average Health Transfer Received by Income Decile, 1993-2019



Notes. Author's computations combining surveys, tax, and national accounts data.

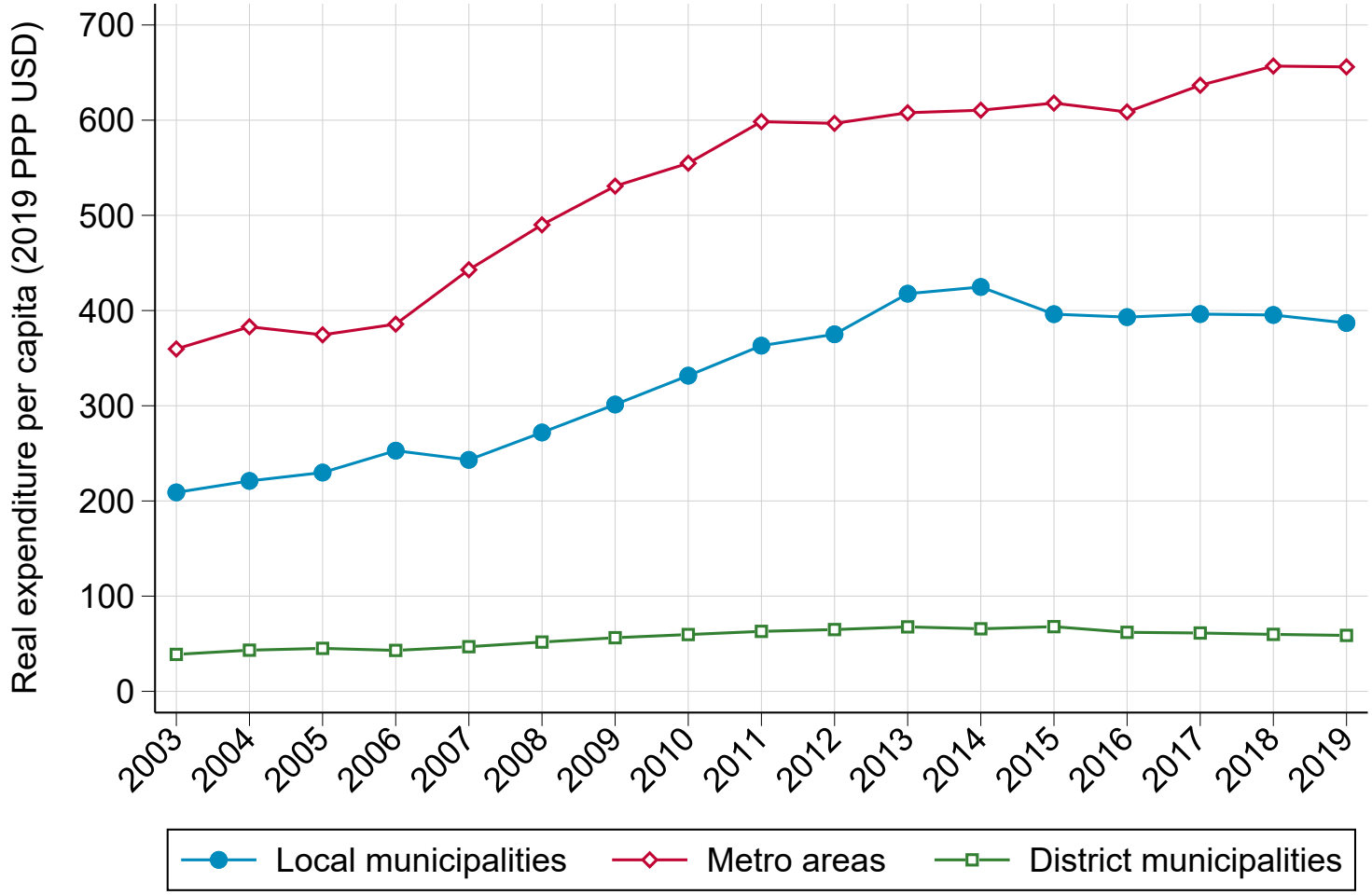
F. Local Government

Figure F1 – Level and Composition of Local Government Expenditure, 2001-2019



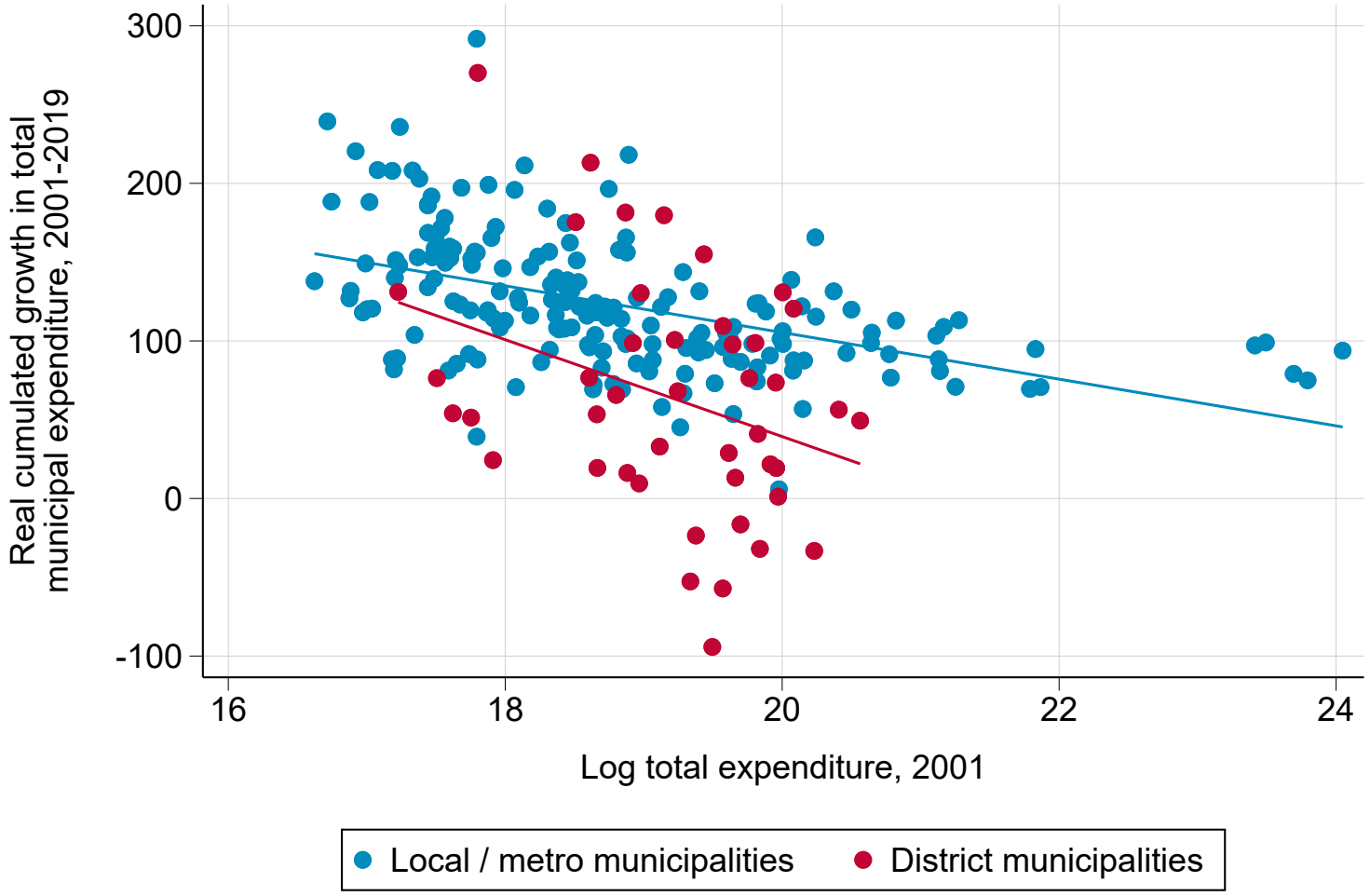
Notes. Author's computations combining data from Local Government Budget Reports.

Figure F2 – Local Government Expenditure in South Africa by Type of Municipality, 2003-2019



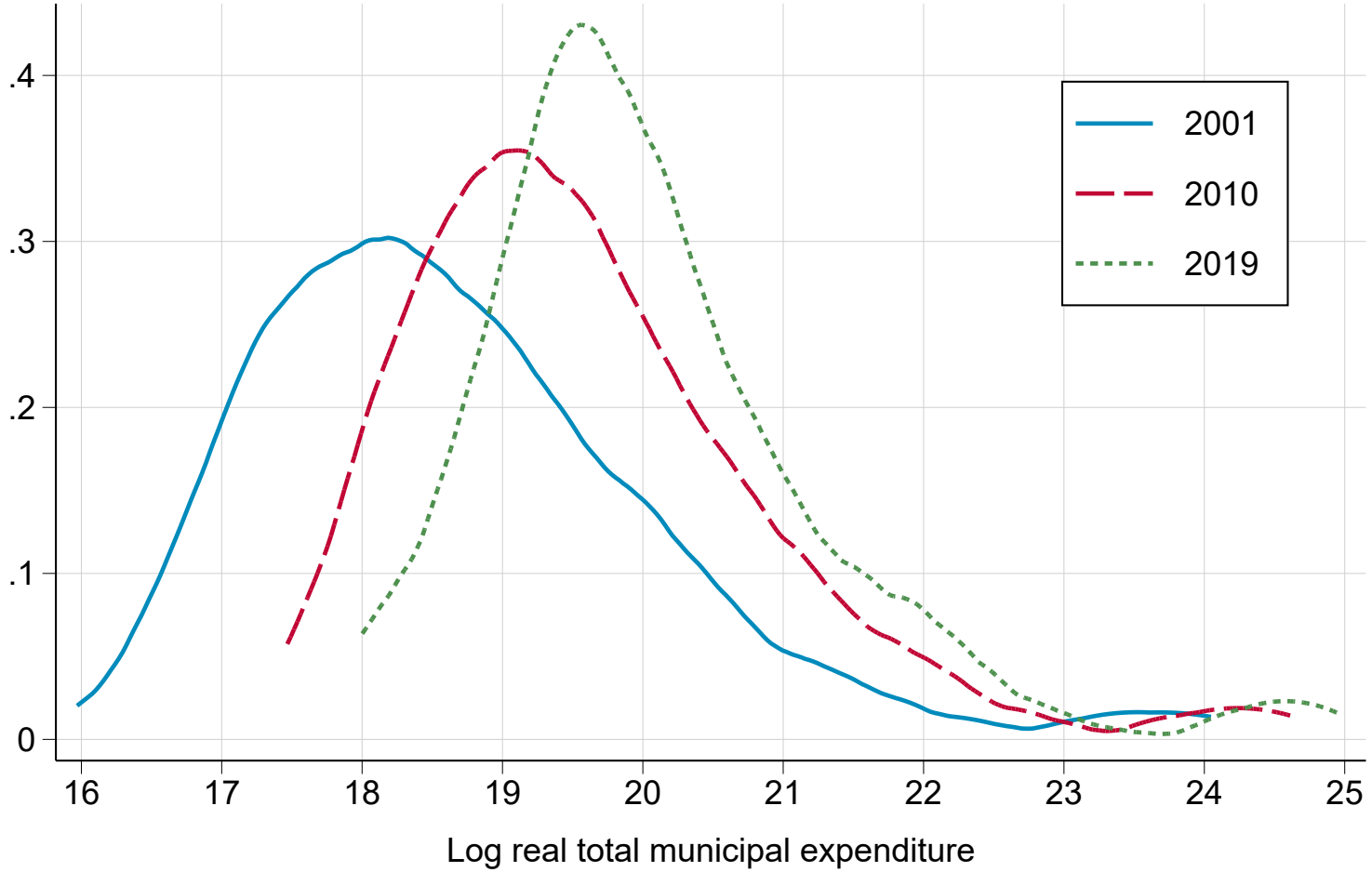
Notes. Author's computations combining data from Local Government Budget Reports.

Figure F3 – The Decline of Spatial Inequalities in Local Public Goods:
Total Expenditure in 2003 Versus 2003-2019 Growth Rate



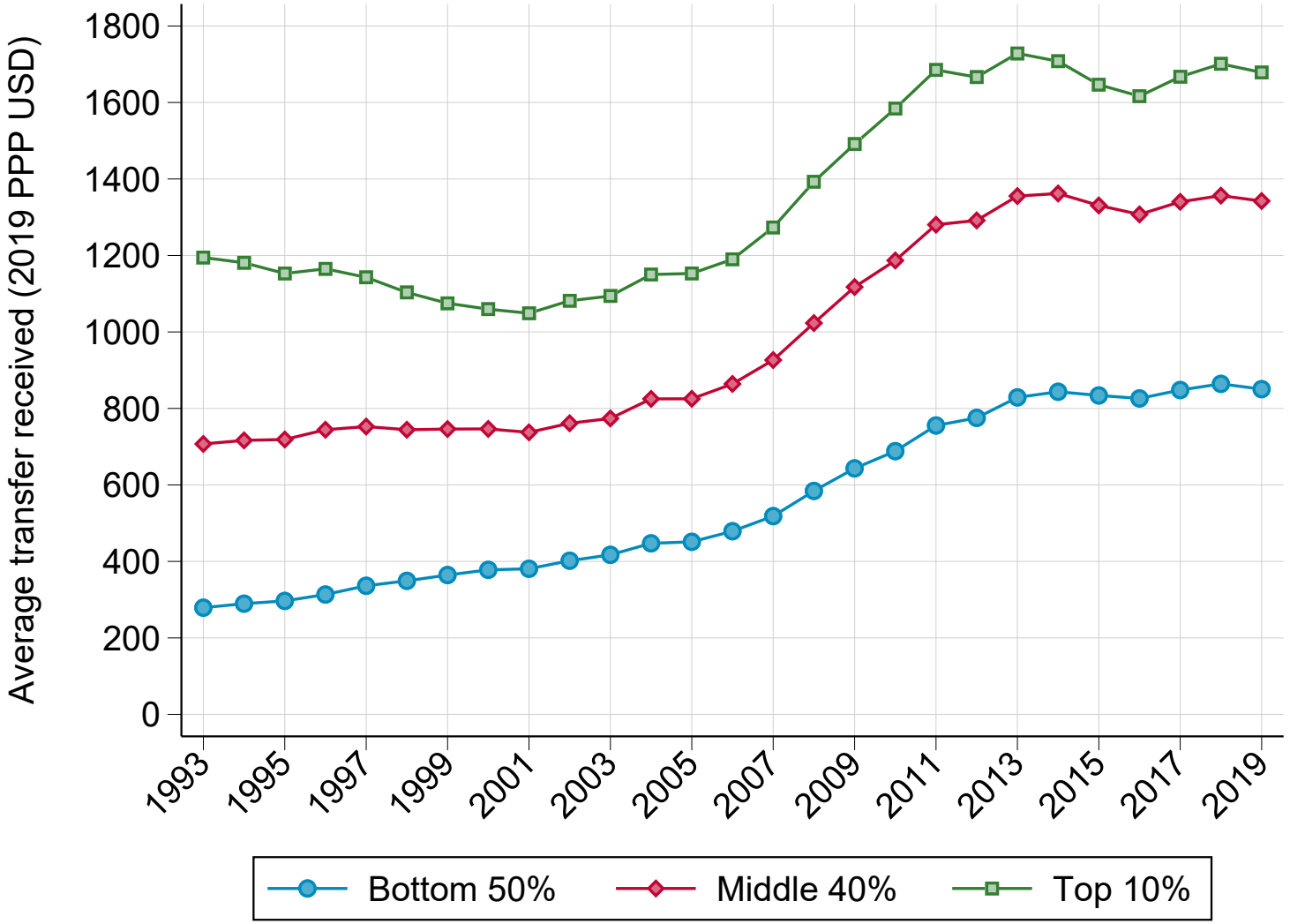
Notes. Author's computations combining data from Local Government Budget Reports.

Figure F4 – The Decline of Spatial Inequalities in Local Public Goods:
Kernel Density of Local Municipality Total Expenditure, 2001-2019



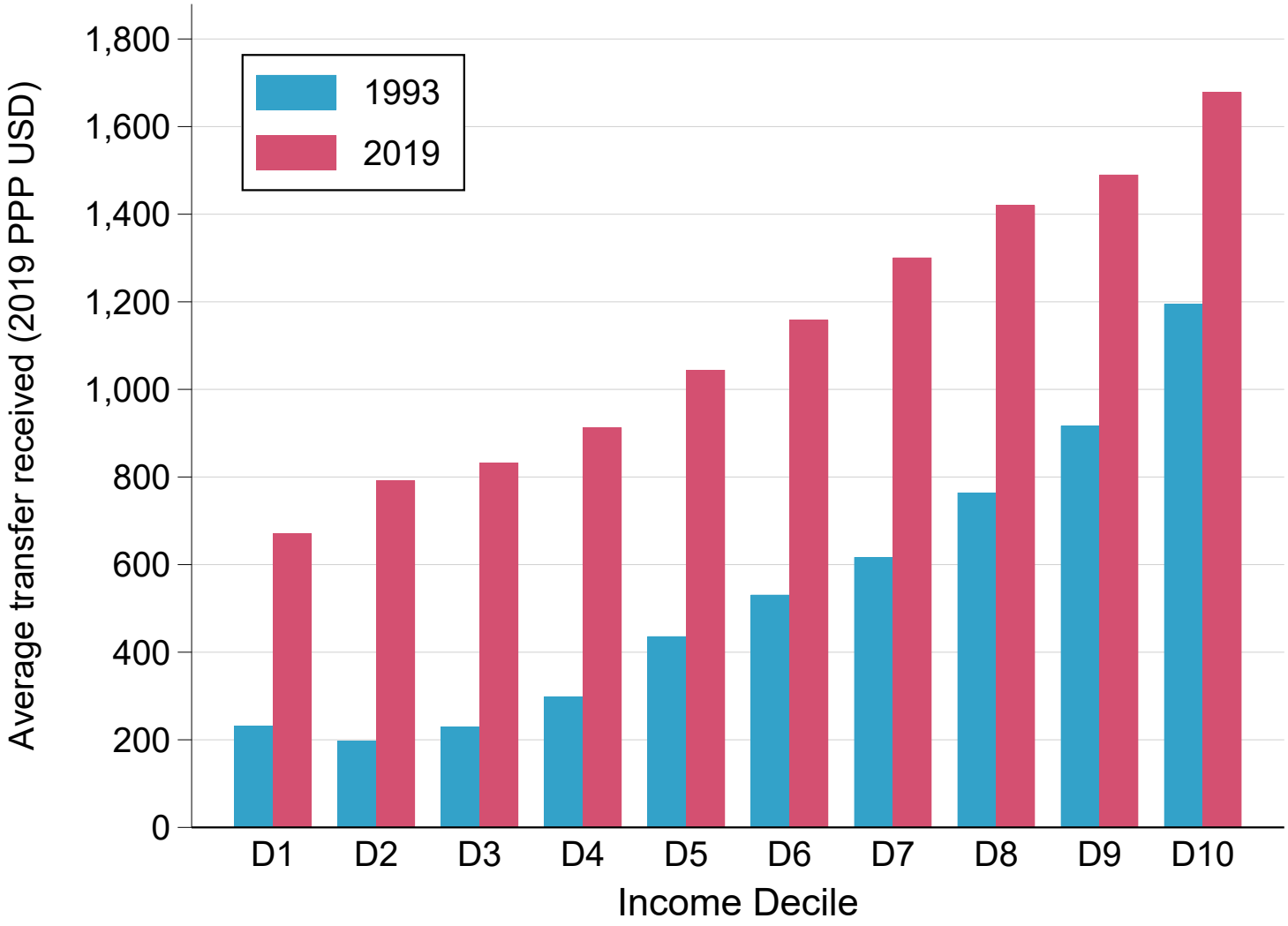
Notes. Author's computations combining data from Local Government Budget Reports.

Figure F5 – Average Local Government Transfer Received by Income Group, 1993-2019



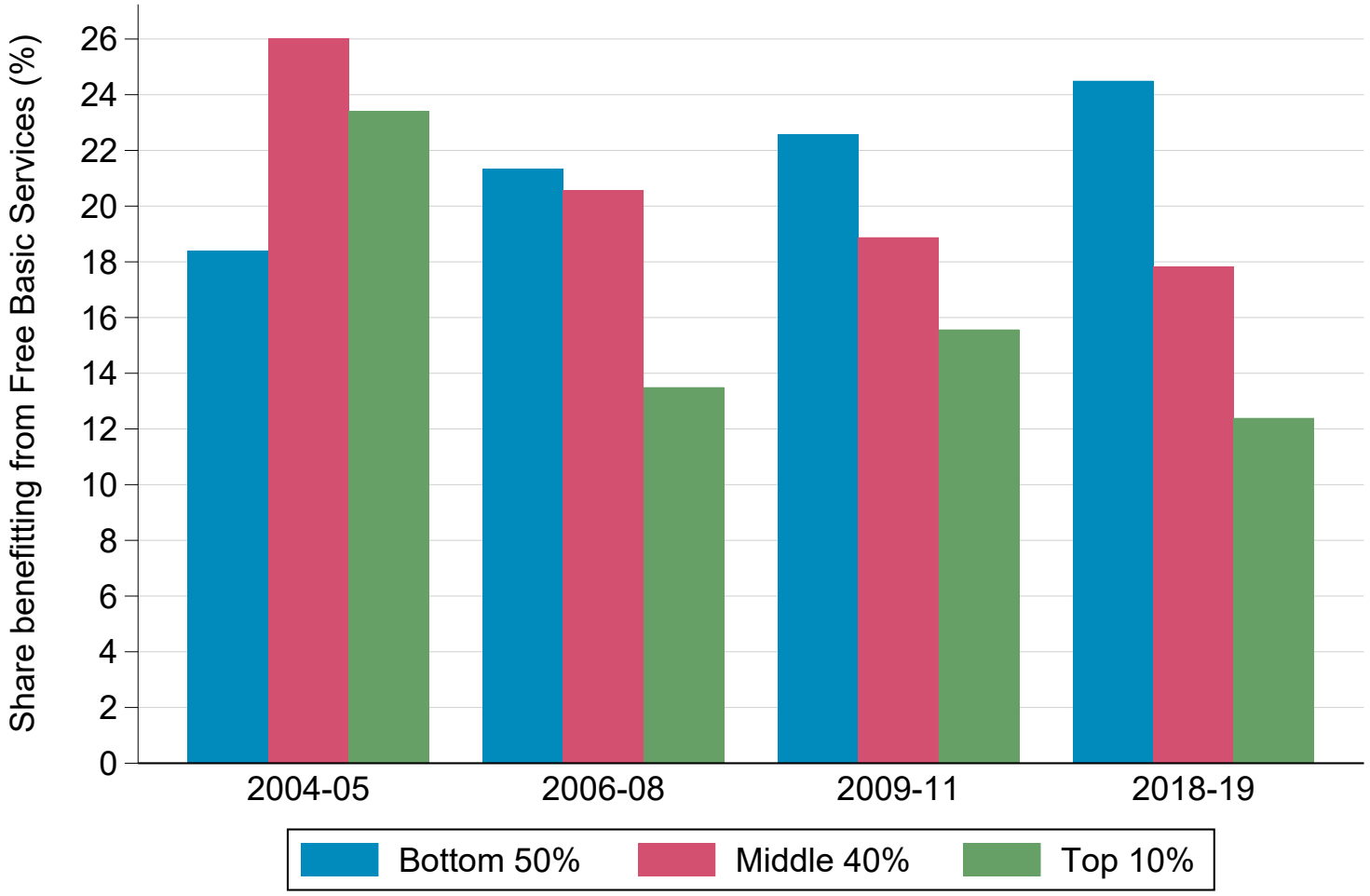
Notes. Author's computations combining surveys, tax, and national accounts data.

Figure F6 – Average Local Government Transfer Received by Income Decile, 1993-2019



Notes. Author's computations combining surveys, tax, and national accounts data.

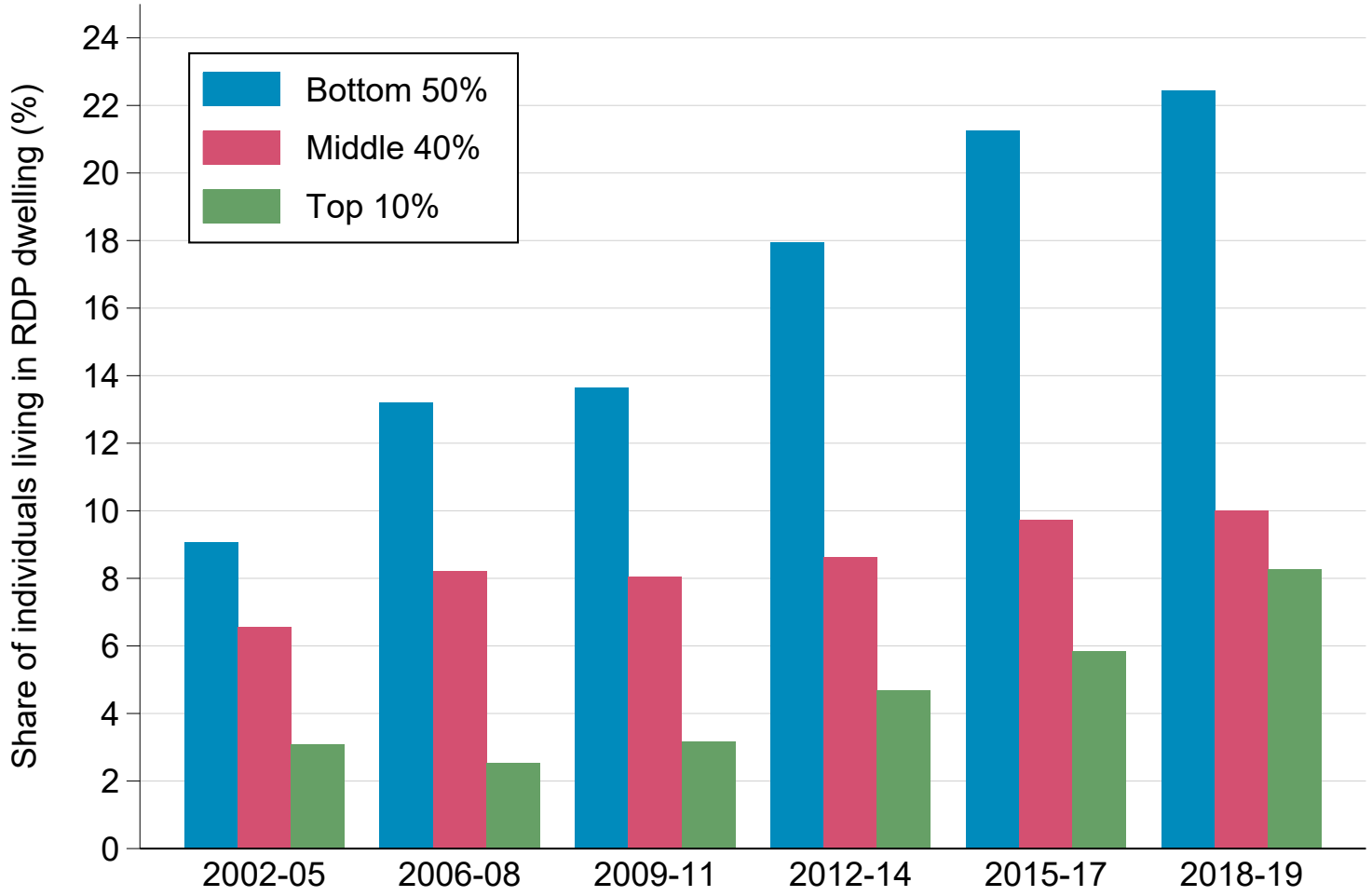
Figure F7 – Access to Free Basic Electricity by Income Group, 2004-2019



Notes. Author's computations combining data from General Household Surveys. The figure represents the share of individuals who declare benefiting from free basic electricity in their municipality of residence. Income groups are defined based on household expenditure per capita.

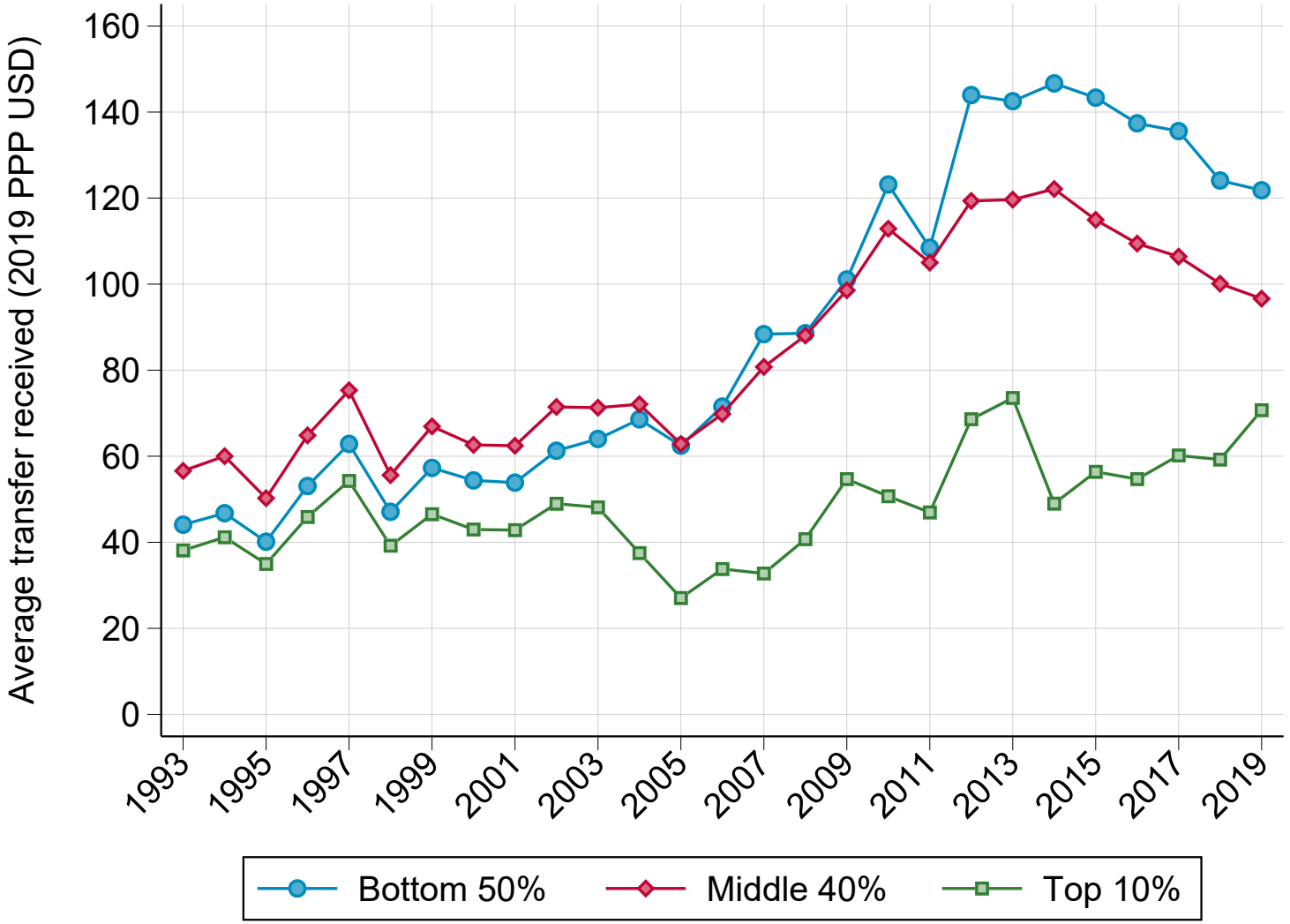
G. Housing

Figure G1 – Share of Individuals Living in Government-Subsidized Dwelling by Income Group, 2008-2019



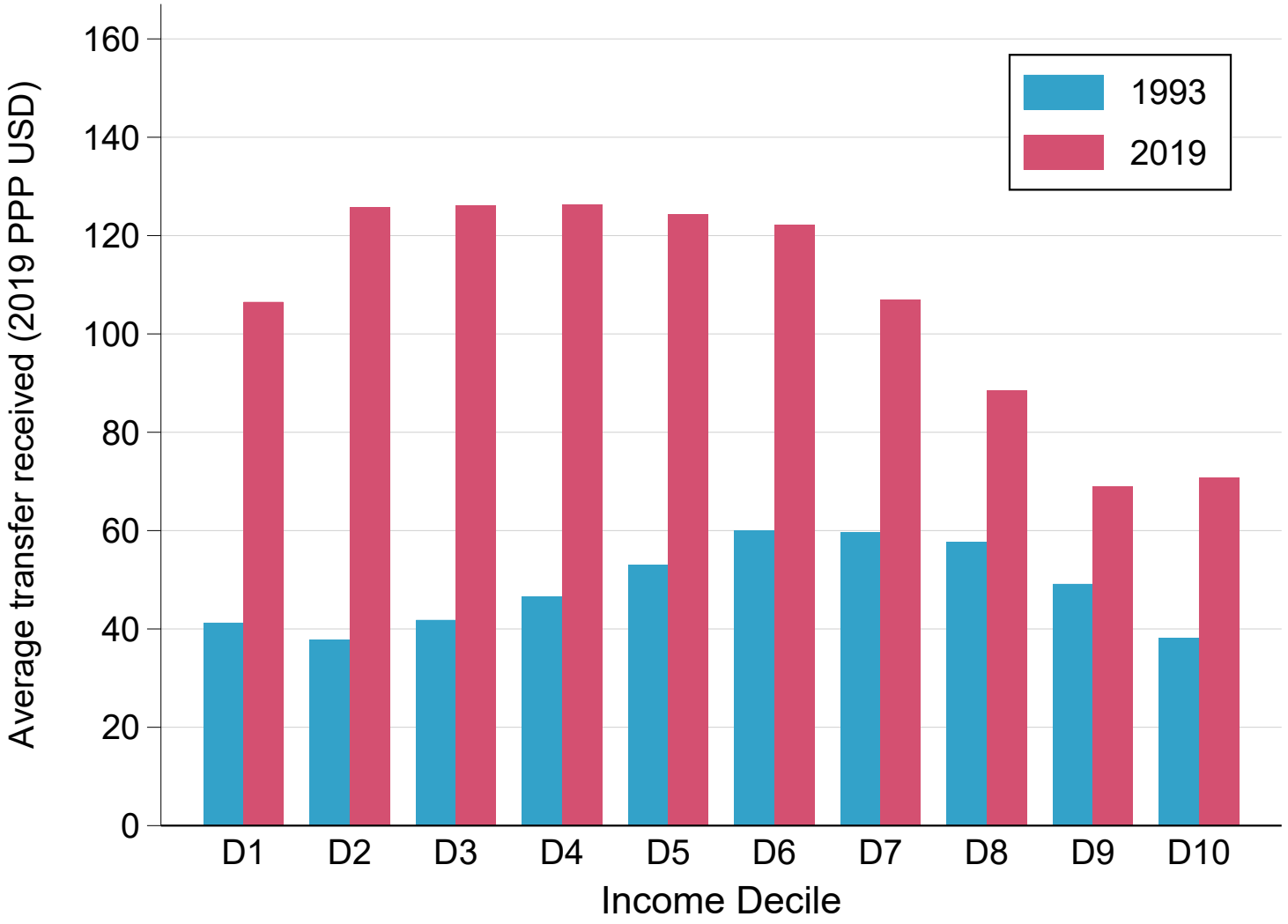
Notes. Author's computations combining General Household Surveys. The figure shows the share of individuals living in households with at least one person who declared receiving "assistance from government to obtain this, or any other dwelling."

Figure G2 – Average Housing Transfer Received by Income Group, 1993-2019



Notes. Author's computations combining surveys, tax, and national accounts data.

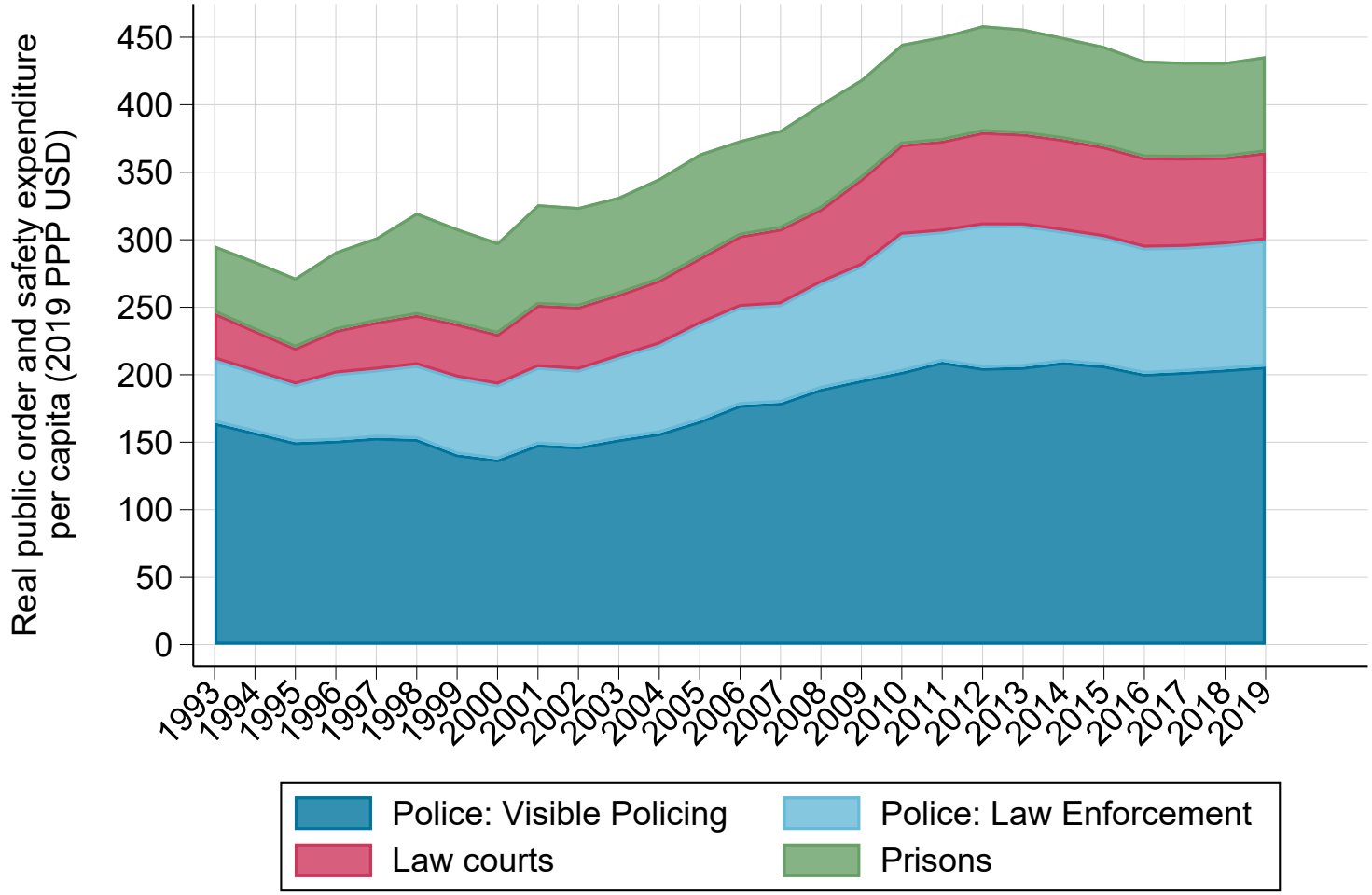
Figure G3 – Average Housing Transfer Received by Income Decile, 1993-2019



Notes. Author's computations combining surveys, tax, and national accounts data.

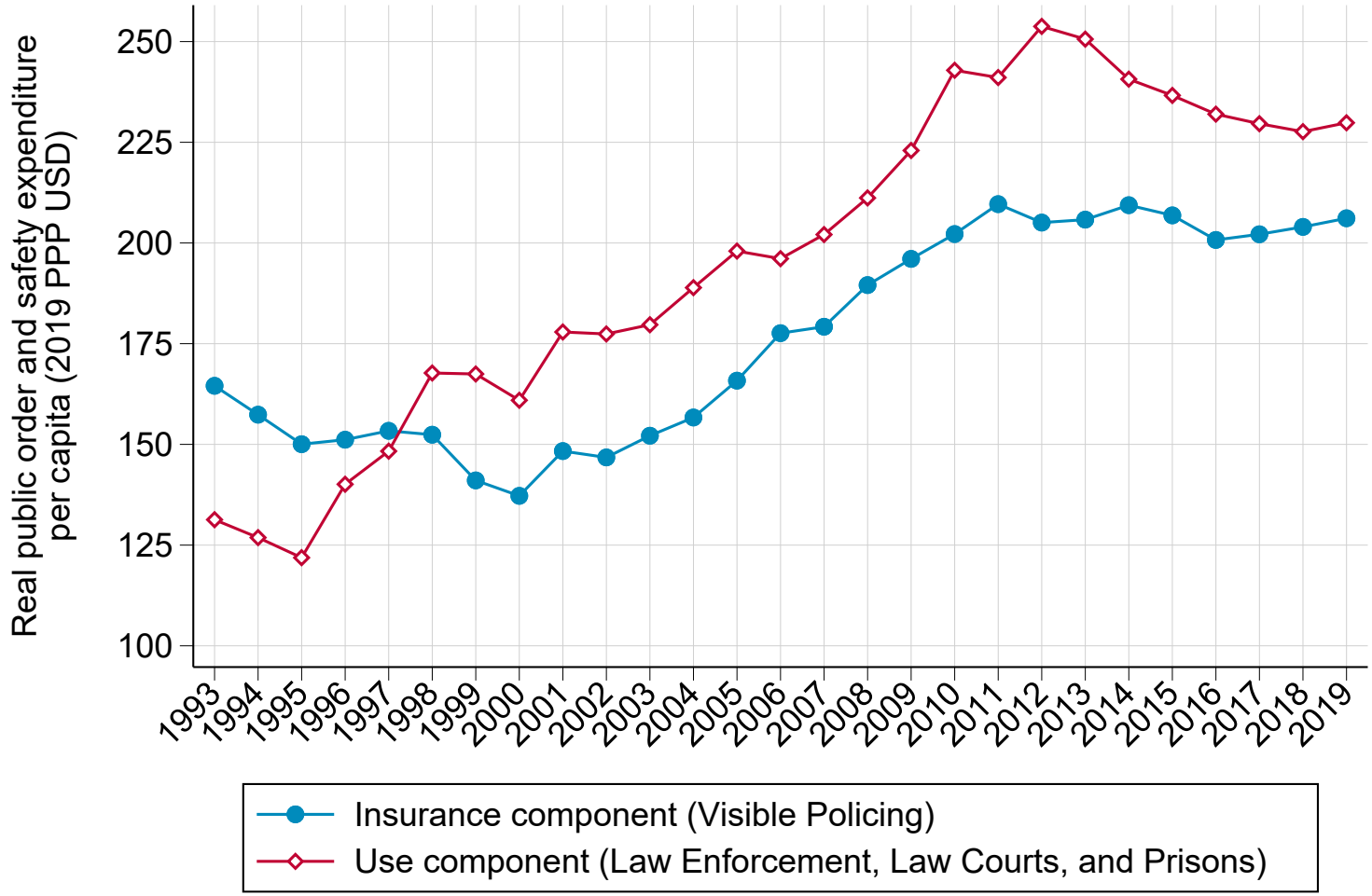
H. Public Order and Safety

Figure H1 – Level and Composition of Public Order and Safety Expenditure in South Africa, 1993-2019



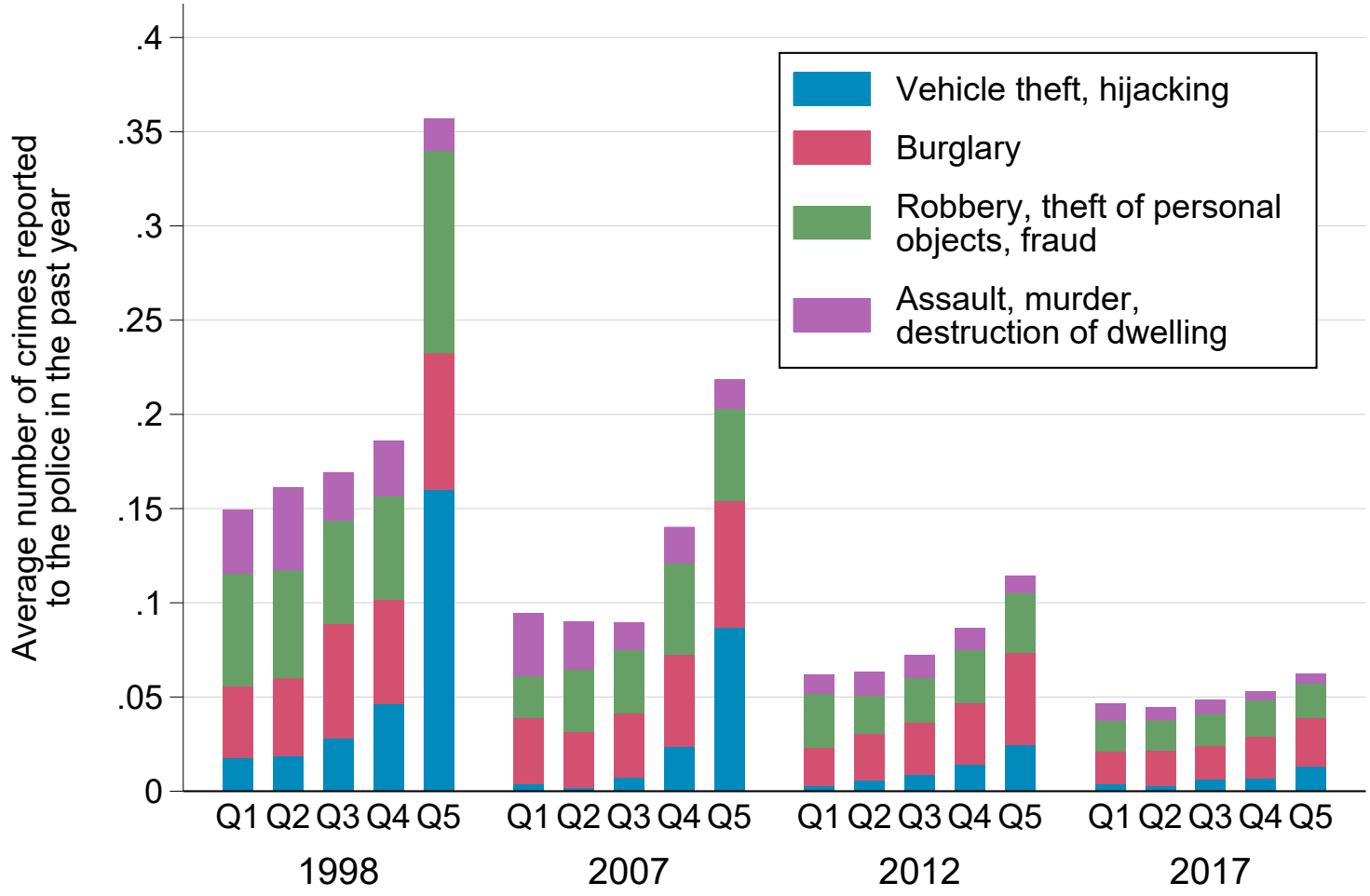
Notes. Author's computations combining data from South African National Treasury Budget Reports (1994-2020).

Figure H2 – Level and Composition of Public Order and Safety Expenditure in South Africa, 1993-2019: Insurance Versus Use



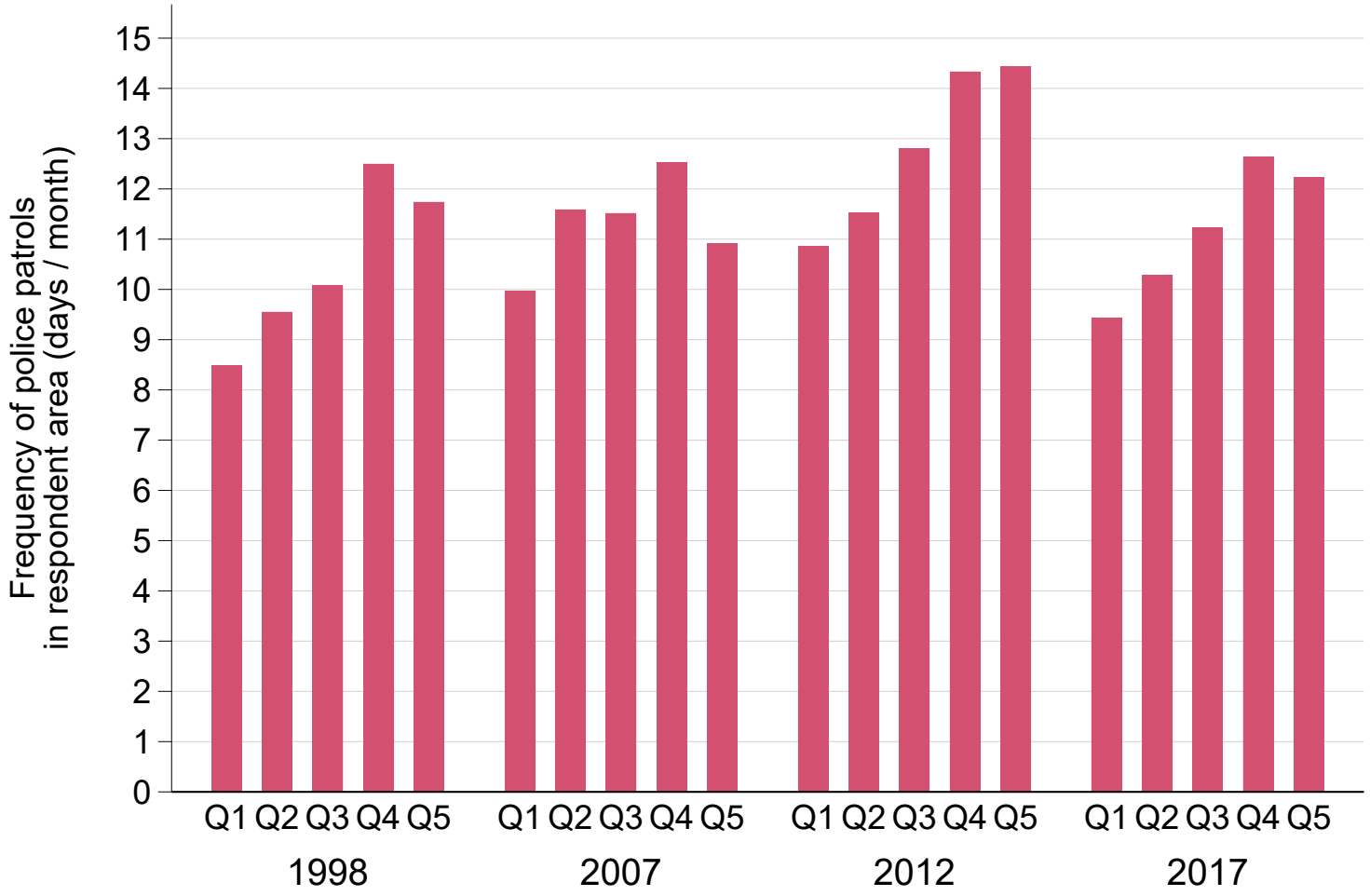
Notes. Author's computations combining data from South African National Treasury Budget Reports (1994-2020).

Figure H3 – Number of Crimes Reported to the Police by Income Quintile, 1998-2017



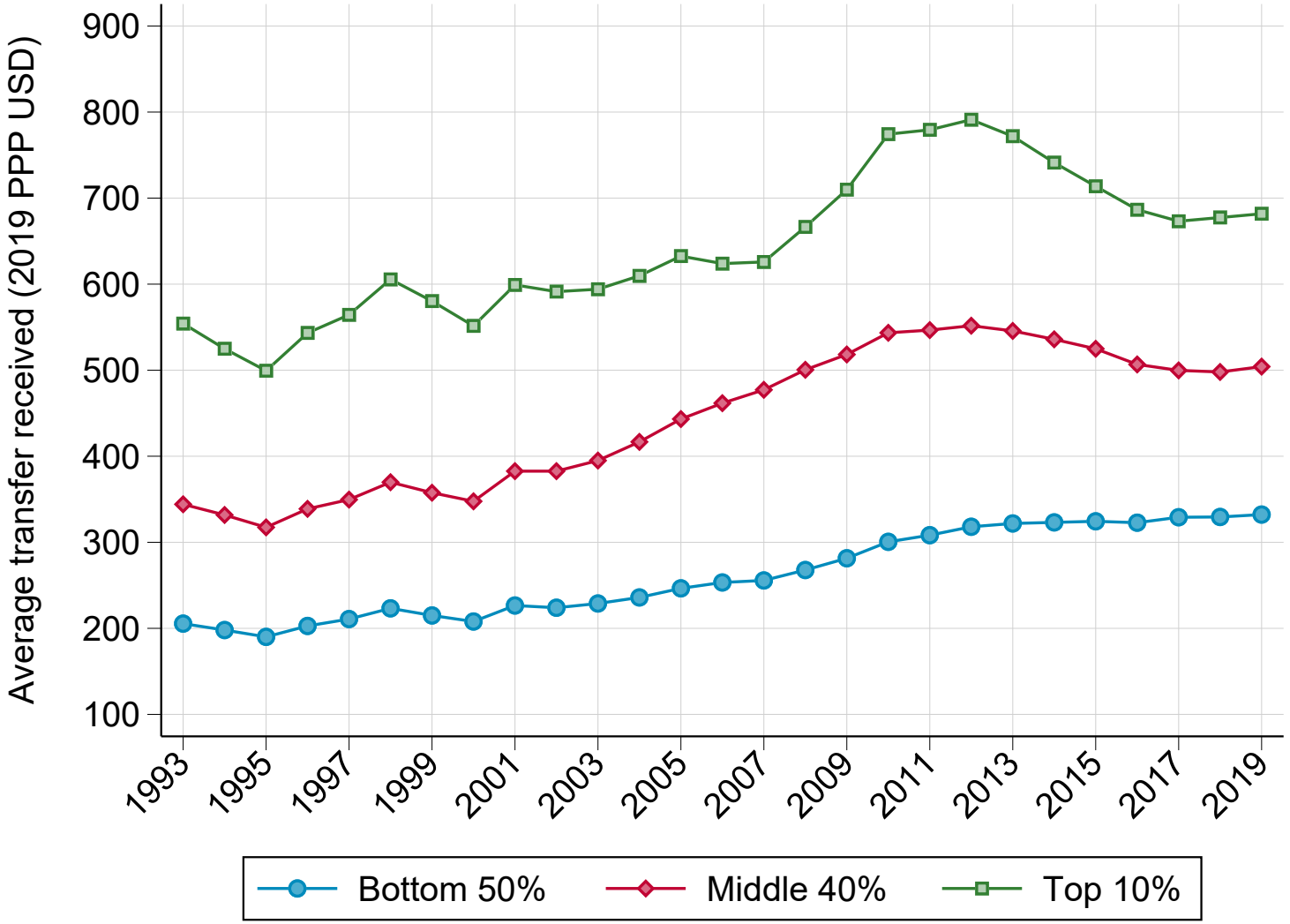
Notes. Author's computations combining data from Victims of Crime Surveys.

Figure H4 – Intensity of Local Police Presence by Income Quintile, 1998-2017



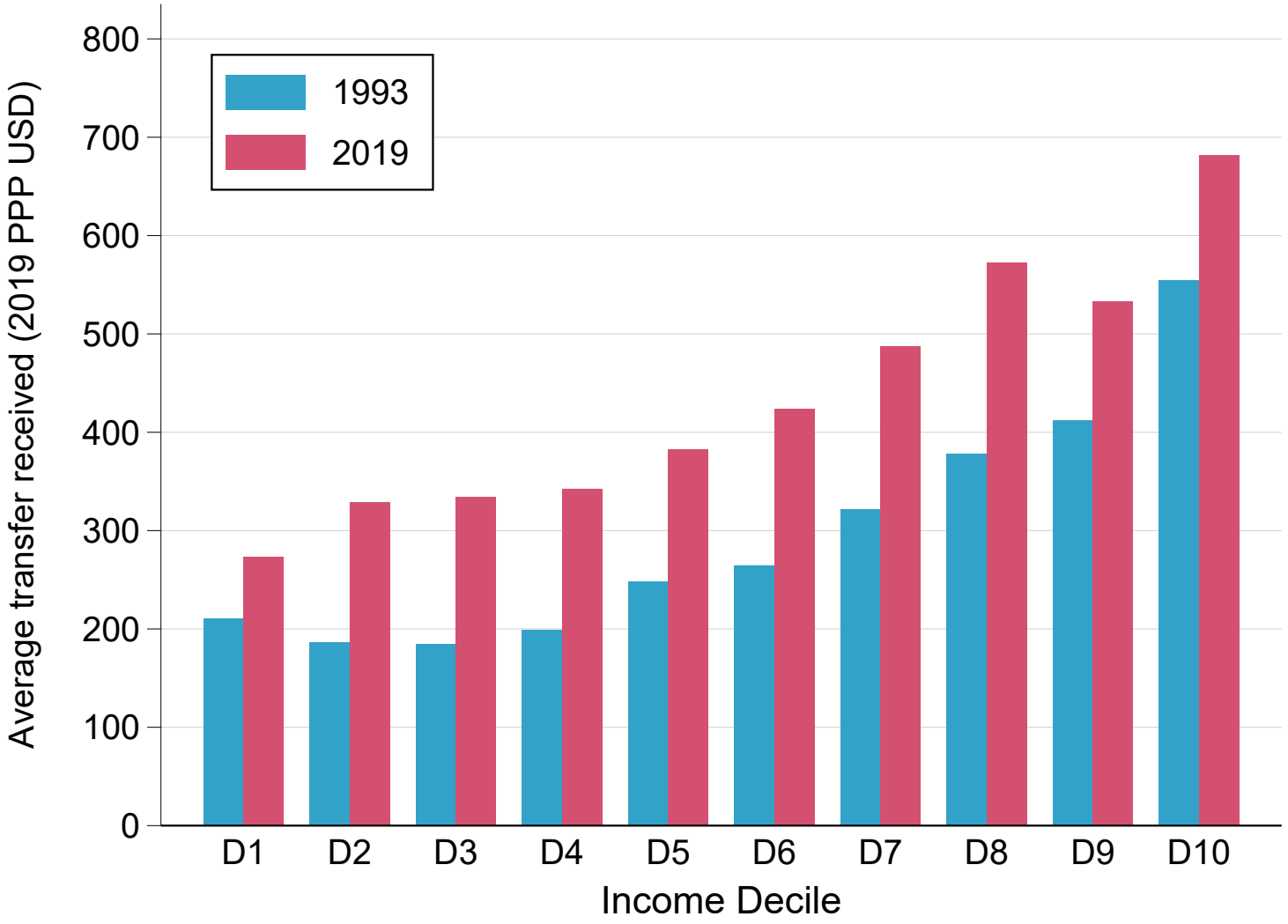
Notes. Author's computations combining data from Victims of Crime Surveys. Figures correspond to the average number of days per month that the respondent declares seeing a police officer in uniform or a police vehicle in her area.

Figure H5 – Average Public Order and Safety Transfer Received by Income Group, 1993-2019



Notes. Author's computations combining surveys, tax, and national accounts data.

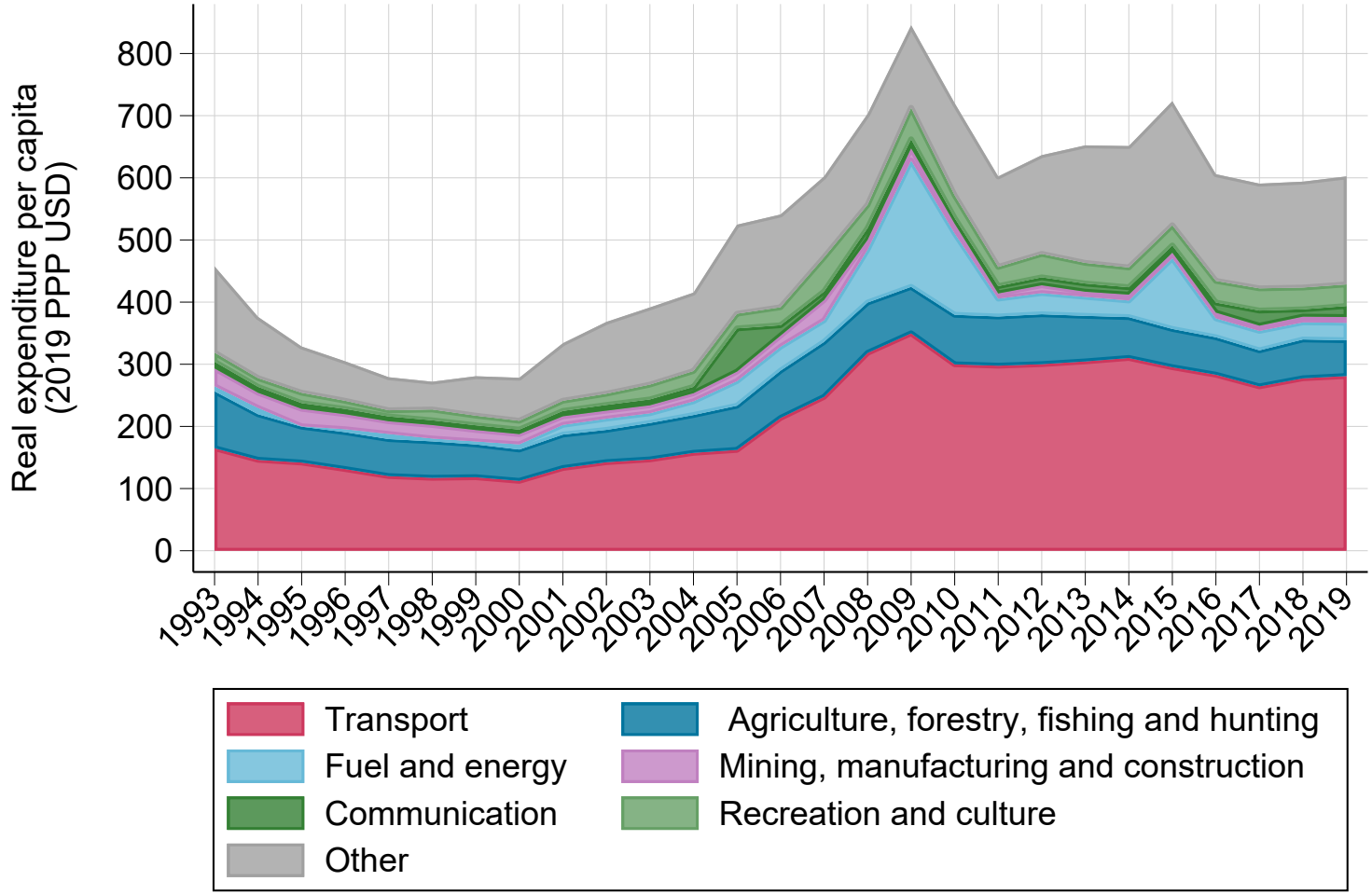
Figure H6 – Average Public Order and Safety Transfer Received by Income Decile, 1993-2019



Notes. Author's computations combining surveys, tax, and national accounts data.

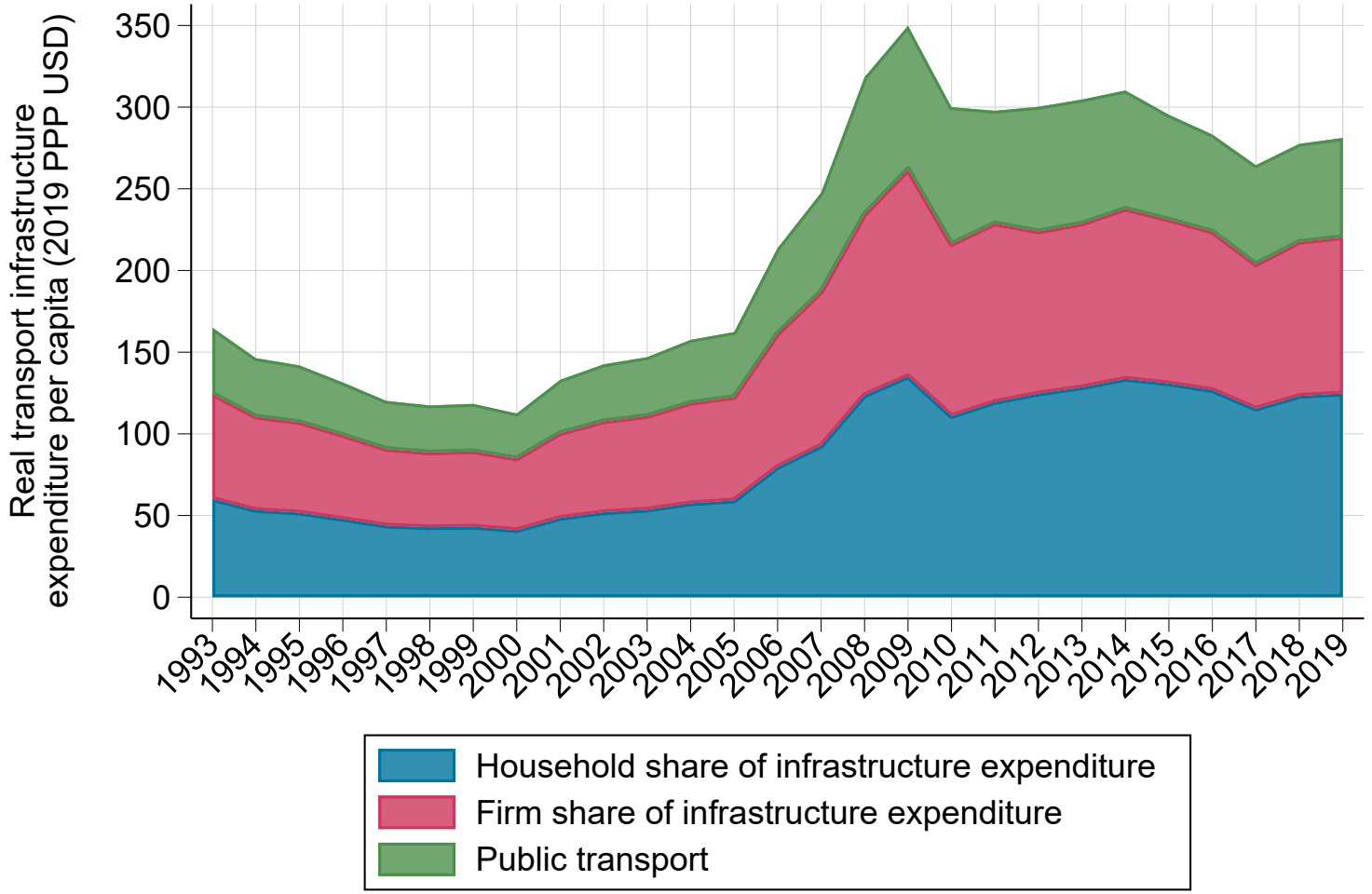
I. Transport and Other Economic Affairs

Figure I1 – Level and Composition of Expenditure on Economic Affairs in South Africa, 1993-2019



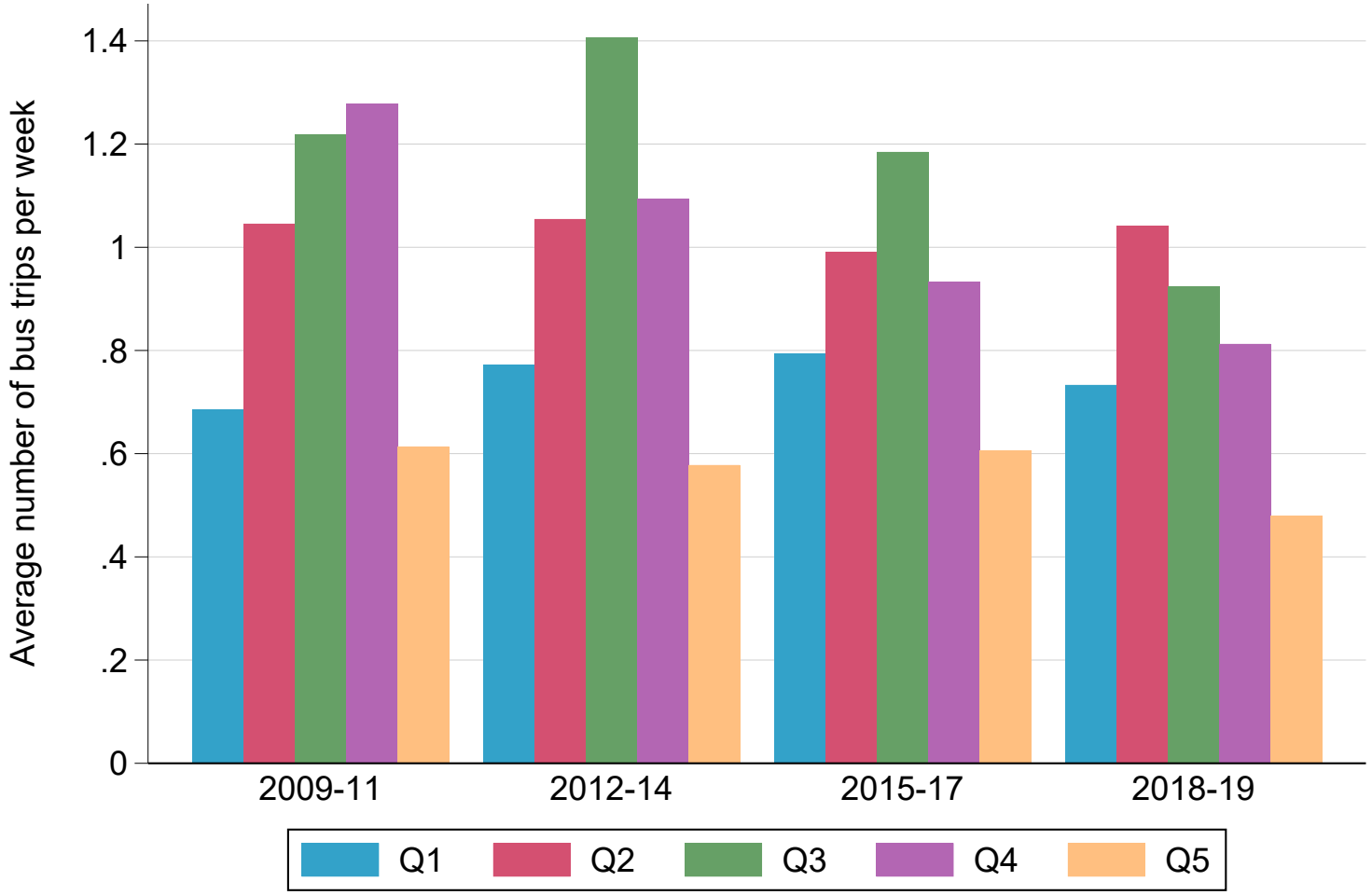
Notes. Author's computations combining data from South African National Treasury Budget Reports (1994-2020).

Figure I2 – Level and Composition of Transport Expenditure in South Africa, 1993-2019



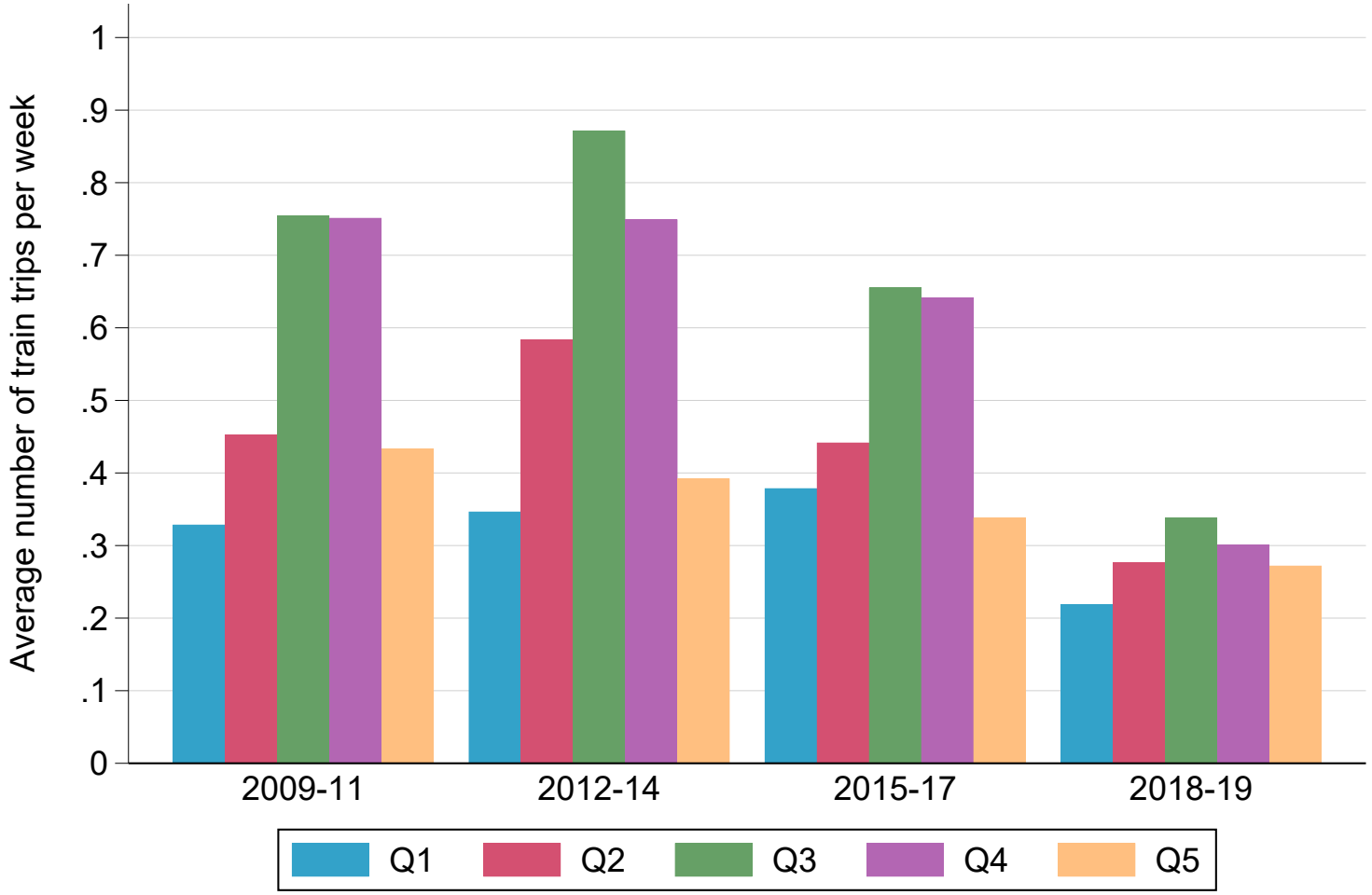
Notes. Author's computations combining data from South African National Treasury Budget Reports (1994-2020).

Figure I3 – Public Transport Use Intensity by Income Quintile: Buses



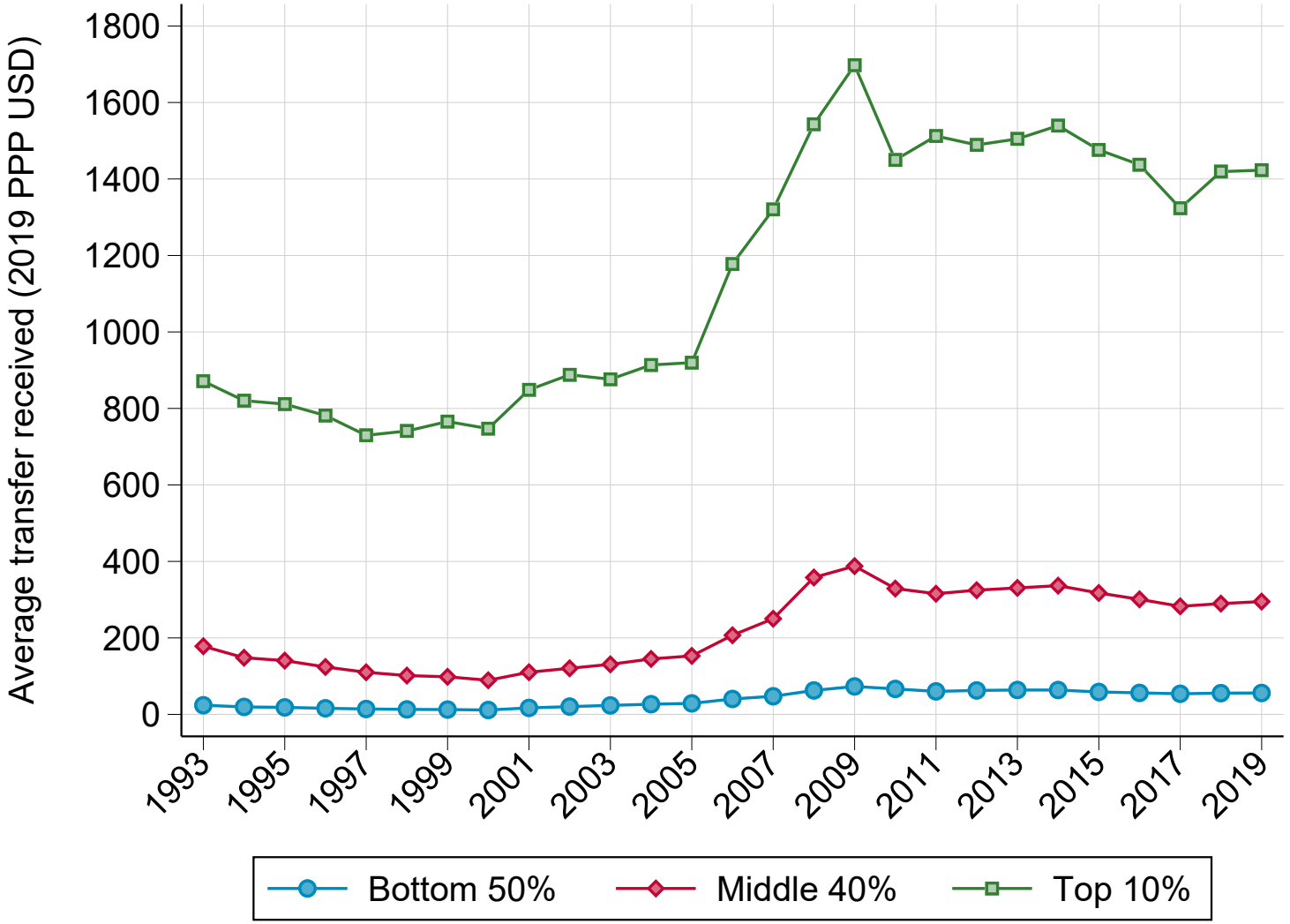
Notes. Author's computations combining General Household Surveys.

Figure I4 – Public Transport Use Intensity by Income Quintile: Trains



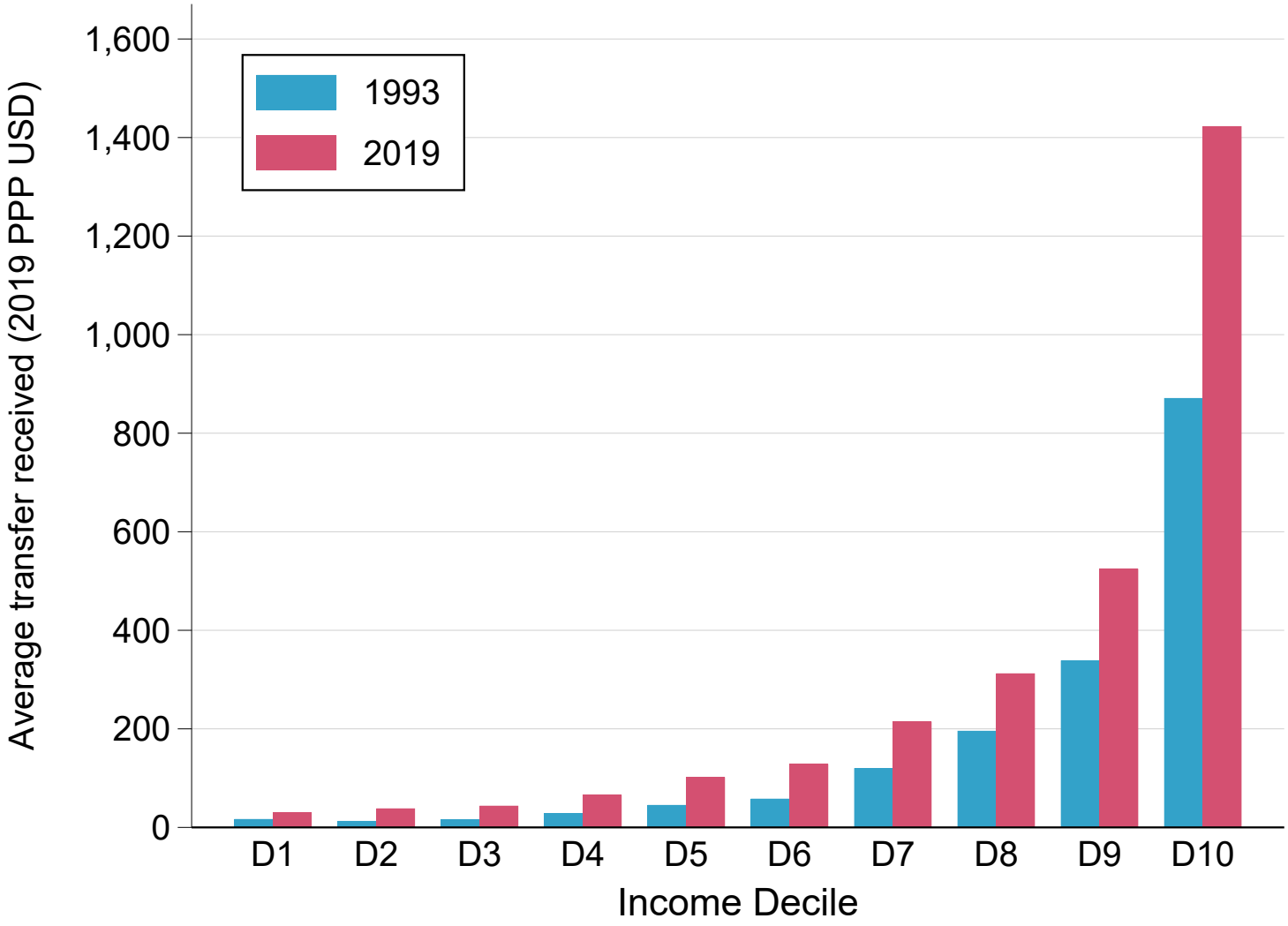
Notes. Author's computations combining General Household Surveys.

Figure I5 – Average Transport Transfer Received by Income Group, 1993-2019



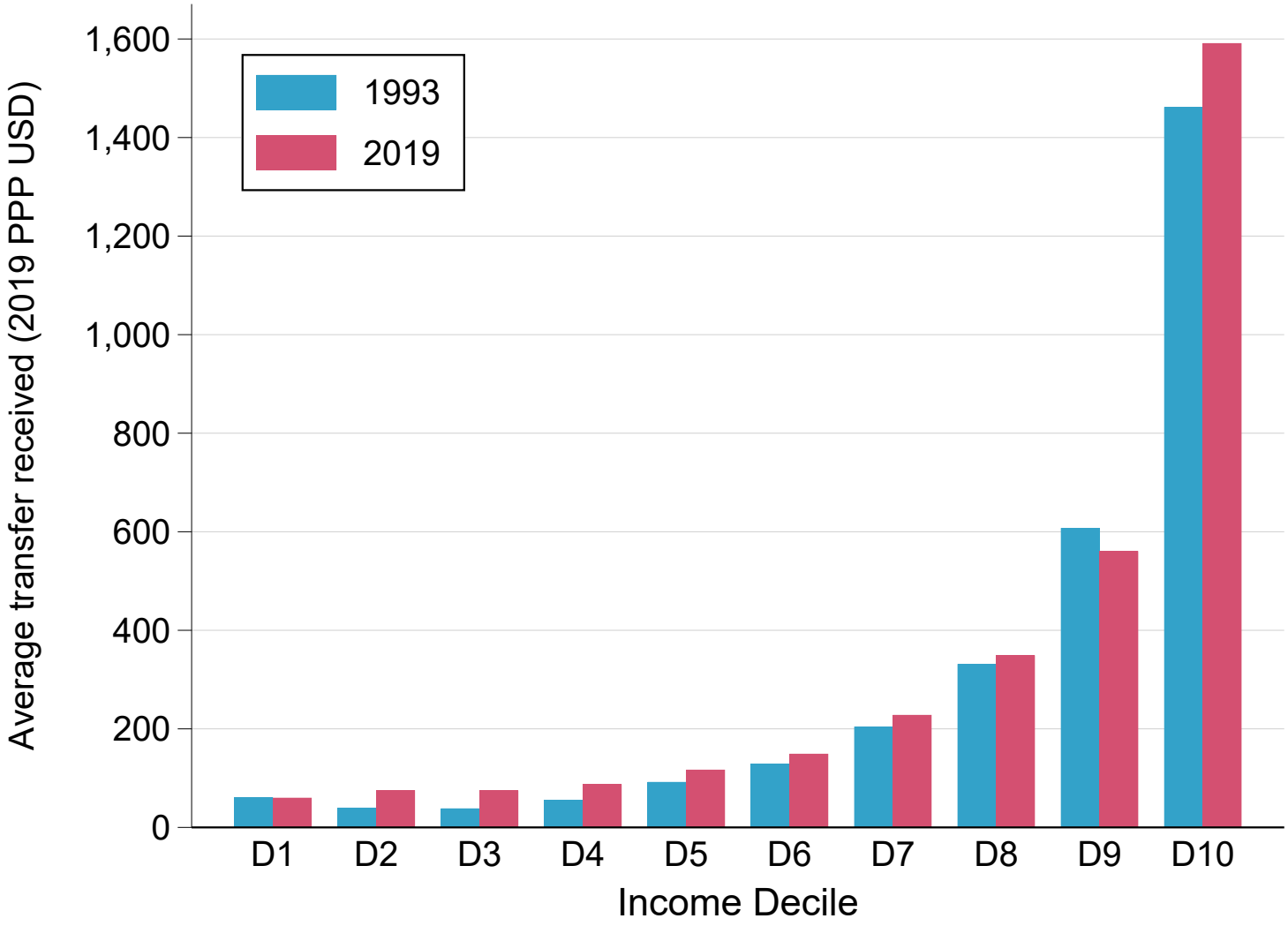
Notes. Author's computations combining surveys, tax, and national accounts data.

Figure I6 – Average Transport Transfer Received by Income Decile, 1993-2019



Notes. Author's computations combining surveys, tax, and national accounts data.

Figure I7 – Average Transfer on Economic Affairs Received by Income Decile, 1993-2019



Notes. Author's computations combining surveys, tax, and national accounts data.