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DISCUSSION PAPER

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Abstract

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This study explores the distributional effects of the out-of-pocket payment (OOP) legislation of public health care in Finland during 2010–2018. We use detailed register microdata on income and health care use from 2016 and static microsimulation to assess how the OOP reforms during the study period affected individuals across income deciles and age groups. In addition, we calculate how the poverty measures react when OOPs are deducted from the disposable income of the households. For that purpose, we use two kinds of poverty measures: the at-risk-of-poverty rates tied to the median household income and reference budget poverty rates tied to fixed minimum budgets.

The OOPs of public health concentrate naturally on the service users and the use of public health care services concentrate on the low-end of income distribution. However, the lowest income decile deviated from the rule by having the lowest rate of service users. This is partly explained by the decile's high share of students.

Deducting the OOPs from household income increased all poverty rates. The poverty rates of the general population increased by 0.2–0.5 percentage points, equalling to 14 700–28 100 individuals. The poverty rates of the elderly increased more significantly (+0.7–1.9 percentage points) and the poverty rates of children more modestly (+0–0.2 percentage points). Because of the concentration of the service users on the second-lowest decile, the poverty rates whose poverty lines were located in that decile reacted the most. The effects on average poverty gaps were ambiguous, varying from -0.4 to +0.9 percentage points.

During the study period, the levels of legislated OOPs were increased by 20–40 percent, but the payment ceiling was kept constant. The OOP reforms affected the elderly and the households at the low-end of income distribution the most but the payment ceiling dampened the effect on heavy users. On the whole, the OOP reforms during 2010–2018 increased the poverty rates by 0–0.1 percentage points, that is to say, by 2 200–4 800 individuals.

Keywords: out-of-pocket payments, policy analysis, microsimulation, poverty

Tiivistelmä

Jussi Tervola, Susanna Mukkila, Katja Ilmarinen, Satu Kapiainen. Terveydenhuollon asiakamaksulainsäädännön tulonjakovaikutukset Suomessa 2010–2018. Terveyden ja hyvinvoinnin laitos (THL). Työpaperi 35/2018. 24 sivua. Helsinki 2018.
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Tutkimuksessa tarkastellaan julkisen terveydenhuollon asiakasmaksujen lainsäädännön vaikutuksia eri tulo- ja ikäryhmissä vuosina 2010–2018. Vaikutuksia arvioidaan mikrosimulointimenetelmällä sekä kattavalla rekisteriotosaineistolla, joka sisältää tiedot väestön tuloista ja julkisten terveydenhuoltopalvelujen käytöstä vuodelta 2016. Aineistossa ei ole tietoja asiakasmaksuista, vaan ne on simuloitu palveluiden käytön ja voimassa olevan lainsäädännön mukaisesti. Keskitymme erityisesti asiakasmaksulainsäädännön köyhyysvaikutuksiin, joita arvioimme mediaanituloihin sidotuilla pienituloisuusasteilla sekä kiinteään kulutuskoriin sidottua minimibudjettiköyhyysasteita.

Julkisten terveydenhuoltopalvelujen käyttö ja niistä maksetut asiakasmaksut ovat yleisempiä kotitalouksilla, jotka sijoittuvat alimpiin tulokymmenyksiin. Eniten palveluita käytetään toiseksi alimmassa tulokymmenyksessä. Alimmassa tulokymmenyksessä julkisia terveyspalveluita käyttäneiden osuus oli alhaisin, johtuen suurelta osin opiskelijatalouksien suuresta määrästä.

Asiakasmaksujen vähentäminen kotitalouksien tuloista kasvattaa kaikkia tarkaslteltuja köyhyysasteita. Koko väestön köyhyysasteet kasvavat 0,2–0,5 prosenttiyksikköä vastaten 14 700–28 100 henkilöä. Yli 65-vuotiaiden köyhyysasteet kasvavat merkittävästi (+0,7–1,9 prosenttiyksikköä) kun taas lasten köyhyysasteet vähemmän (+0–0,2 prosenttiyksikköä). Ne köyhyysasteet, joiden köyhyysraja sijoittuu ensimmäiseen tulokymmenykseen, eivät reagoi niin paljon kuin muut. Asiakasmaksujen huomioimisen vaikutus keskimääräisiin köyhyysvajeisiin vaihteli -0,4:stä +0,9 prosenttiyksikköön.

Tutkimusjakson aikana asiakasmaksujen lakisääteisiä enimmäismääriä nostettiin maksusta riippuen 20–40 prosenttia, mutta vuotuinen maksukatto pysyi käytännössä samantasoisena. Muutosten vaikutukset kohdistuivat ennen kaikkia ikääntyneisiin ja pienituloisiin kotitalouksiin. Maksukatto kuitenkin pehmensi korotusten vaikutuksia palveluita paljon käyttävien keskuudessa. Kaiken kaikkiaan asiakasmaksujen köyhyysvaikutus kasvoi lainsäädäntömuutosten johdosta 0–0,1 prosenttiyksikköä vastaten 2 200–4 800 henkilöä.

Avainsanat: asiakasmaksut, mikrosimulointi, vaikutusarvio, köyhyys, eriarvoisuus

Contents

1 Introduction

Distributional analysis of policies and their changes is becoming more and more common as powerful and sophisticated tools are developed. For that purpose, microsimulation methods have gained popularity, both in academia and government organisations (Li & O'Donoghue 2013, Bourguignon & Spadaro 2006). Among the advantages of the method is that it enables the separation of the policy effect from structural changes, such as population ageing (Bargain & Callan 2010). Also, it can be used to assess the effects of complex policy systems that are full of interactions between policies (Figari & al. 2015).

Typically the analyses of distributional policy effects have concentrated on changes in income-related legislation, that is to say, social benefits and income taxation. However, recently there are more and more studies analysing consumption-related legislation, such as indirect taxation (see e.g. Decoster & al. 2010). The policy analyses of legislated service fees, such as those paid for the use of health care, are still rare. If they exist, they are analysed separately from other policy schemes (e.g. Gross & al. 1999, Hatfield & al. 2018). Therefore, it seems that the legislation related to out-of-pocket payments (OOPs) has remained a major blind spot of general policy simulations. This is despite the fact that the changes in OOPs are likely to have very uneven effects across income distribution because health is known to correlate negatively with income in contemporary welfare states (Mackenbach 2012).

In this study, we analyse the distributional effects of policy changes in the OOPs for public health care, juxtaposing them with the changes in social benefits and taxation. We concentrate on the effect of legislative changes in Finland during 2010–2018 using base data from one year: 2016. The calculations are made with the static tax-benefit microsimulation model SISU (Statistics Finland 2018b), complemented with a module of OOP legislation and detailed microdata on the use of public health care and social services. The data contain detailed information for 15 percent of the Finnish population, that is to say, for 800 000 individuals.

Although our data are unique in their size and quality, it is pertinent to note that they do not cover all health-related OOPs, such as those for medicines and private health care. However, the majority of health care services in Finland are provided through public health care (Kajantie 2014, Nguyen & Seppälä 2014). Moreover, the importance of public health care is accentuated in low-income households whose members may not be eligible for occupational health care or cannot afford private health care (Peltola & Vaalavuo 2018).

We analyse the distributional effects of OOPs and their changes with multiple measures. First of all, we examine the effects by household income decile and individual age. In addition, we examine how the poverty measures react when OOPs are deducted from household income. We estimate the effects on the standard at-risk-of-poverty (AROP) rates tied to median income, but also on the fixed reference budget poverty (RBP) rate, which is set as the estimated level of income needed for “adequate social participation” (Penne & al. 2016, Goedemé & al. 2015). Last, we simulate the OOP’s effects on the eligibility rate of last-resort means-tested social assistance.

Our analysis is static and it does not take into account the possible behavioural effects of the reforms. Previous studies have observed that the use of some health services (such as consultations with general practitioners) is elastic, meaning that the level of OOPs affects their use (see Kiil & Houlberg 2014 for a review). However, the fees for those visits constitute a minor part of total OOPs, and ignoring the behavioural effects is likely to create little bias in the distributional outcomes.

The article runs as follows. First, we introduce the context, the Finnish health care system and the studied OOPs. Thereafter we discuss the role of health care costs in the poverty measurement. The next chapter presents the data and methods used. Then we show the results. The last chapter concludes.

2 The studied health care services and out-of-pocket payments

This study concentrates on the distributional effects of the OOPs paid for the use of public health care services. In Finland, health care is mainly provided through three sectors: the public, occupational and private health care sectors (see Vuorenkoski 2008 for details). More than half of all doctor's appointments are made in public health care, including both visits to health centres and hospitals. Approximately a quarter of visits are made to employer-provided occupational health care and a fifth to private health care. (Nguyen & Seppälä 2014.)

Our analysis captures a major share of the OOPs paid for health care services because occupational health care is free of charge for the users. However, it lacks the OOPs for private health care, which complement the services of public health care, especially in certain specialties. The use of private health care is concentrated on the services of eye specialists, dentists and gynaecologists, as well as on the health care of small children who are insured privately more often than others (Miettinen & al. 2013). The OOPs are typically much higher in private health care than in public health care (see THL 2018a for the shares of households in the funding). Moreover, the use of private health care is skewed towards the high-earning population (Blomgren & al. 2015).

In addition to the OOPs for private health care, the OOPs for medicines and health-related travel expenses are excluded from the analysis. Especially the OOPs for medicines constitute a major expense for households (THL 2018a). The OOPs for both medicines and health-related travel expenses are skewed towards the low-earning population (Blomgren & al. 2015).

Our analysis covers fees for public outpatient care, dental care, domiciliary care and short-term inpatient care. The domiciliary care in this study includes both health and social care, as they are integrated on many occasions and thus impossible to deconstruct. The OOPs for long-term inpatient care are excluded from the analysis for comparability reasons. In addition to health care, they cover general maintenance costs, such as housing costs, which is not deducted from income for the large majority of the population.

We simulate the OOPs according to the legislation during 2010–2018 (the act and decree on social and health care client fees 734/1992; 912/1992). Finnish legislation sets the maximum levels of each OOP for public health care. However, municipalities and hospital districts can decide to charge lower payments in their areas. In 2016, a half of the population lived in municipalities where the maximum amount (€20.90) was charged for a doctor's appointment at a health centre (Parhiala & al. 2016). The most significant deviation from the maximum payment is found in the capital of Finland, Helsinki, which has provided free-of-charge doctor's appointments at health centres since 2013. For other services, variation between municipalities is smaller. For example, for physiotherapy, 75 percent of the population live in an area where maximum amount (€11.50) was charged (Parhiala et al. 2016). Also, for domiciliary care, many municipalities charge lower OOPs than the maximum (Ilmarinen 2017).

Municipalities are known to react widely to changes in legislation. When the legislated maximum levels were increased by 27.5% in 2016, all municipalities raised (or were about to raise) the level of some of the OOPs, at least to some extent (The Association of Finnish Local and Regional Authorities 2016). Despite these facts, our analysis likely overestimates the actual OOPs. On the other hand, our analysis excludes those OOPs that are not defined in the legislation, for example, OOPs for a nurse's appointment and auxiliary services in domiciliary care. For these OOPs, the municipality can, in principle, set any amount as long as it does not exceed the production costs.

In addition to the municipalities' freedom to depart from the legislated maximum, service providers are allowed, but not compelled, to use individual discretion regarding the OOPs.[1] If the OOP jeopardises the subsistence of the patient, it can be means tested or abolished. However, no standard definition exists for the subsistence criteria. Rather, based on the large OOP sums that are covered by social assistance, it seems that municipalities prefer to cover the OOPs of low-income households from last-resort social assistance (Verronen 2017).

Most OOPs in public health care are flat-rate amounts that are paid after a visit. As an exception, the fee for continuous domiciliary care is earnings related (35 percent of gross income for single households). Flat-rate OOPs have a payment ceiling per calendar year (683 euros in 2018). After reaching the ceiling, the individual is exempted from the OOPs (except for a lower fee for short-term inpatient care). The OOPs of a minor are taken into account in the ceiling of a parent. The OOPs from dental or domiciliary care, or the payments reimbursed from social assistance do not accumulate under the ceiling.

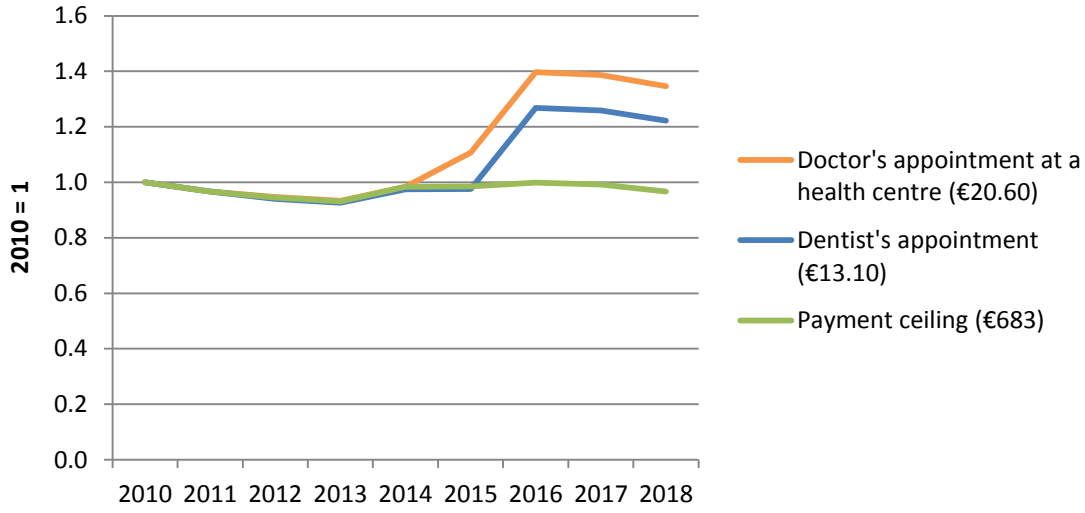

Figure 1. The development of the maximum OOPs for doctor's and dentist's appointments, and the payment ceiling in real value (2010 = 1, 2018 amounts in brackets). Note: The OOP for a dentist's appointment has separate top-up payments for treatments.

Figure 1 shows the development of the real value of two example OOPs, the ones for doctor's and dentist's appointments, as well as the payment ceiling. The legislated maximum fees are aligned every other year according to consumer prices and therefore they are bound to approximately keep their real value. In addition to the index alignments there have been separate reforms in 2015 and 2016. However, the reforms did not concern the ceiling, and therefore it dampens the effect of the reforms for heavy users of public health care (but not for the users of dental care).

[1] The discretion is compulsory for earnings-related payments, such as OOPs for continuous domiciliary care. Unlike flat-rate payments, they cannot be reimbursed from social assistance.

3 Poverty and out-of-pocket payments

The extent of poverty has always had a central place in policy analysis. However, defining and measuring poverty has proven to be a difficult task. The adequacy of resources can be regarded as a subjective and cultural issue which hampers the forming of standardised aggregate measures. However, standards are needed in order to enable policy analysis and international comparisons.

In wealthy societies, poverty is usually defined in relation to surrounding society. For example, the European Council has defined families at poverty risk as those "whose resources are so small as to exclude them from the minimum acceptable way of life of the member state in which they live" (European Council 75/458/EEC). Nevertheless, most poverty measures are income based rather than resource or wealth based. This is most likely because data on income are more easily available.

The income-based poverty measures have faced a lot of criticism. Many scholars have argued that consumption would offer a more accurate poverty measure than income (see e.g. Meyer & Sullivan 2012). Also, one-size-fits-all type of poverty thresholds have been argued to ignore the heterogeneity of consumption needs (Alkire & Foster 2011, Atkinson 2003). For example, families with no access to social housing are bound to have higher housing costs. Similarly, individuals with poor health have a greater need for health care.

Another disputed issue is the poverty unit. As reflected in the above definition by the European Council, poverty is regarded typically as a family issue. Family members are expected to share their incomes and expenses with other members of the family. This is also reflected in the fact that many means-tested benefits are means tested with household income. When calculating the poverty rates, different-sized families are made comparable with so-called consumption scales.

So far, the most popular method for evaluating the magnitude of OOPs has been to scrutinise them as a share of income or solvency. In these studies, the concept of "catastrophic health expenditure", defined as more than 40 percent of individual solvency, is widely used (e.g. Xu & al. 2003). Including health care costs in measures of income poverty has been rarer, even though such calculations have existed, prominently in the US (Short & Garner 2002).

The effect of health care costs on poverty has been most studied in developing countries (Van Doorslaer & al. 2006, Wagstaff & Doorslaer 2003, Garg & Karan 2008, Falkingham 2004) and the US (Christopher & al. 2018, Short & Garner 2002). Van Doorslaer et al. (2006) studied 11 developing Asian countries and they observed that the payments increased the extreme absolute poverty by 4–30 percent, depending on the country. In the US, Christopher et al. (2018) estimated that accounting for medical expenses had put four million individuals into extreme poverty.

All the above studies have applied health care costs to fixed poverty lines. However, in the case of international comparisons of relative poverty, a fixed line may be hard to justify (see Foster 1998 for discussion). Therefore, poverty measures tied to median income, so called at-risk-of-poverty (AROP) rates, have become a standard in European statistical offices.

4 Data and methods

In this study, we estimate the distributional effects of changes in OOPs using the microsimulation method (see e.g. Bargain & Callan 2010). Microsimulation allows separating the effect of legislation from other changes in the context, such as the aging of the population or rising unemployment. In practice, this can be done, for example, by using a base population from one year and simulating the legislation of multiple years.

Our analysis is based on a single year of population data (2016) and the legislation for OOPs, social benefits and taxation is simulated with the legislation of nine different years (2010–2018). Therefore, the population characteristics remain fixed as they were in 2016. A fixed population may create some bias if the population in the year of simulated legislation differs significantly from the population of the data year (see Bargain & al. 2013 for discussion). For example, the elderly population in 2010 was smaller than in the data year 2016, and therefore the demand for health services may also have been smaller in 2010. Therefore, the distributional effect of OOPs in 2010 may be overestimated with 2016 data. However, the study period of 2010–2018 is not so long that the population would differ notably from the base year of 2016.

The data are a representative sample of the Finnish population in 2016. They contain 800 000 individuals, which equals roughly 15 percent of the population. The data were formed by merging existing data sets, SISU register (Statistics Finland 2018b) and HILMO registers (e.g. Sund 2012). The data include detailed information on the characteristics of individuals and households, as well as on salaries, capital income, received social benefits, paid taxes and public health services used. The data are compiled from administrative registers and hence are free from the recalling bias typical of surveys.

OOPs are not explicitly observed but they are calculated according to the legislation, on the basis of detailed visit data.[2] Therefore, we simulate the maximum amounts rather than actual OOPs. In addition, we do not simulate the service providers' individual discretion of OOPs because no standard criteria exist and service providers apply varying sets of rules. Therefore, we assume that the flat-rate OOPs are fully reimbursed from social assistance. However, the choice has practically no effect on household income, but rather to the level of simulated social assistance.

We use microsimulation to calculate household incomes according to the tax, benefit and OOP legislation on an annual basis for the years 2010–2018. For that purpose, we use the Finnish tax-benefit microsimulation model SISU (Statistics Finland 2018), which is complemented with a module that computes the OOPs according to the legislation.

The simulation of net income runs as follows. First, we simulate the taxable social benefits (unemployment benefits, sickness benefits, minimum pensions and parental benefits) individually, according to the given legislation. Thereafter, we apply the tax legislation both to taxable benefits and to salary and capital income. Then we calculate child and housing benefits and OOPs, and lastly, we estimate the eligibility for last-resort social assistance. The means-tested benefits, such as housing benefits and social assistance, are simulated for all those who are eligible, and non-take-up is not taken into account.[3]

[2] The data for domiciliary care visits are missing for some service producers, especially for those of private sector. Therefore, auxiliary survey data from November (THL 2018b) were merged individually to the research data and the missing visits were imputed using regression imputation method. Overall, 48% of all domiciliary care visits were imputed.

[3] A recent study estimated 15 percent non-take-up level for social assistance (Paukkeri 2018).

We simulate the legislative changes in relation to customer prices. This is done by calibrating the monetary parameters in the legislation of different years into the level of 2016 with a customer price index. Consequently, even in the absence of any legislative changes, the deterioration of the real value of OOPs or social benefits is simulated as a change.

It is known that a higher level of OOPs reduces the demand for health care (see Kiil & Houlberg 2014 for a review). The demand for consultations with general practitioners and preventive care seems elastic, whereas the demand for hospital care is not so. In this study, the OOPs for doctor's appointments at health centres constitute a minor part in total (see Table 1) and thus, behavioural effects are expectedly small. Consequently, we choose to refrain from estimating the behavioural effects. However, if substantial behavioural changes due to OOPs existed against our assumptions, we will have underestimated the legislative effects with the 2016 data when the OOPs were the highest during the study period.

The distributional effects of OOPs and their changes are analysed with multiple measures. First of all, we examine the effects by income decile and age. We use fixed income deciles based on incomes during the data year 2016. Furthermore, we examine how the poverty measures react when OOPs are deducted from household income. To delve into the relationship between health care fees and poverty, we apply multiple poverty measures: those tied to the median income (AROP rates) and those fixed to a certain consiumption budgets. The AROP poverty lines are usually set to 60 or 50 percent of median equivalised disposable income.

The fixed reference budget poverty (RBP) rates have been increasingly used as an alternative to the AROP rates (see Penne & al. 2016, Mäkinen 2017, Mukkila & al. 2017). The RBP rates represent the share of individuals whose income is below the reference budget. The reference budget corresponds to the income level that is needed in order to be able to buy certain goods and services that are required for the "minimum adequate social participation" in society. The content of the consumption basket is based on multiple information sources, the main ones being interviews with consumers and experts, as well as earlier research (see Goedemé & al. 2015, Lehtinen & al. 2011). Last, we estimate the OOP's effects on the eligibility for last-resort means-tested social assistance.

The reference budgets used in this study were formed in 2013 (Lehtinen & Aalto 2014). Similarly to the index alignment of the monetary legislation parameters, the budgets are calibrated to the data year 2016 according to price index. Reference budgets are complemented with average social housing costs (so-called ARAVA housing) in the level of 2016, defined separately for different family types and four areas. Moreover, reference budgets are based on the assumption of a healthy individual. For a working-age individual the budget entails one annual dentist's and one doctor's appointment. The prices of the appointments are indexed according to the OOP legislation.

All poverty analyses are based on household-level income. It is pertinent to note that different-sized households are made comparable with consumption scales and AROP and RBP rates use different scales. The reference budget has higher weights for secondary family members than the modified OECD scale used by AROP rates (see Tervola 2017 for comparison). Therefore, the poverty of single households is accentuated in the RBP rate compared to the AROP rate. Moreover, the AROP rates use the same poverty line for every household, but the reference budget varies by dwelling area due to different housing costs. All the above differences between AROP and RBP rates produce potential differences in how they react to OOPs. The reactions are presented in the next chapter.

5 Results

Table 1 presents the amounts of different OOPs, their prevalence and simulated total sums in 2016. The most prevalent OOPs are those for doctor's appointments at health centres and at outpatient clinics. Approximately a third of the population paid OOPs for these appointments. The largest OOP sum, however, is collected from short-term inpatient care. All in all, approximately 60 percent of the Finnish population paid OOPs for public health care. When simulated with the legislated maximum amounts, the OOPs for public health care sum up to 844 million euros. Not surprisingly, the simulated sums are slightly larger than the actual OOP sums in the official statistics (THL 2018a, Statistics Finland 2018a). However, fully comparable statistics do not exist.

Table 1. The prevalence of different OOPs and simulated sums with the 2016 population and legislation.

	Max. OOP 2016 in € per visit	% of pop.	Number of people	OOPs sum 2016 in €M
Short-term inpatient care	49.5[a]	9	520 000	200
Domiciliary care[b]	Multiple	4	210 000	178
Outpatient clinic visits	41.7	32	1 750 000	172
Dental care	Multiple	22	1 210 000	156
Doctor's appointments at health centres	20.9	32	1 750 000	71
Treatment series	11.5	6	310 000	33
Day surgery	136.8	3	170 000	26
Physiotherapy	11.5	4	240 000	8
Total		60	3 280 000	844
Payment ceiling reached	691[c]	3	160 000	

[a] Amount per day

[b] Includes both the earnings-related monthly fee for continuous care and flat-rate fees for temporary care.

[c] Amount per calendar year

Figure 2 shows that the OOP sums are highest among households in the second- and third-lowest income decile. After the third decile, the OOP sums slowly decrease linearly until the highest-earning decile. Surprisingly, the OOP sum in the first decile is relatively low, on the same level as the seventh income decile. However, this is in line with previous results for OOPs for public health care (Peltola & Vaalavuo 2018).[4]

OOPs for some care types are more common in some income deciles than other. The low-end deciles have a relatively large concentration of fees for short-term inpatient care, domiciliary care and health centre

[4] A closer look reveals that in the first decile there are many student households who have access to separate health care services for students and are thus exempted from most of the OOPs. The gap is also partly explained by many individuals, with very little or no income, most of them with an immigrant background, who may have migrated to Finland during the data year and thus have not had the time to use the local health services. Alternatively, they may have emigrated onwards but remain registered in the population (see Monti & al. 2018 for emigration-related over-coverage issues in official registers).

appointments. On the contrary, fees for outpatient clinic visits and dental care are quite evenly distributed across the income distribution. What is also visible in Figure 2 is that a large majority – four out of five households – paid OOPs in 2016. The share is the highest (85 percent) among the households in the second, third and fourth income deciles and the lowest share (70 percent) is in the first decile.

Among the households who paid OOPs, the fees constitute on average 1.1 percent of household net income. The average share is highest among the households in the lowest income decile (2.0 percent in 2016), and lowest among those in the highest-earning decile (0.3 percent). Looking behind the averages, 2.5 percent of the paying households consumed more than ten percent of their annual income on OOPs for public health care. Most of them pay the earnings-related fee for continuous domiciliary care.

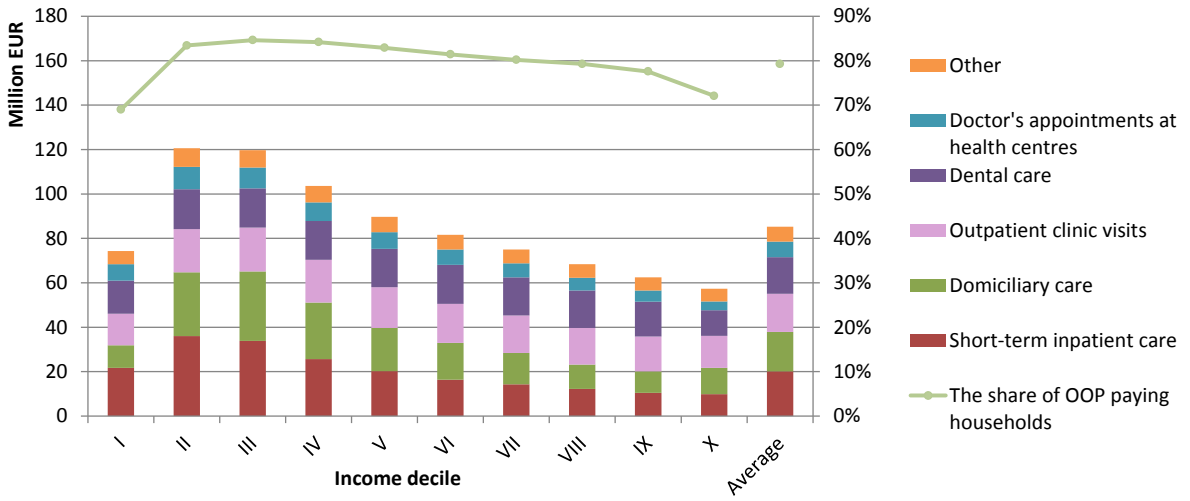

Figure 2. The simulated OOP sums by care type and income decile (left axis), and the share of OOP paying households (right axis) with 2016 legislation and population. Note: *Other* includes OOPs for treatment series, day surgery and physiotherapy.

The legislated maximum levels of OOPs were significantly raised during the study period 2010–2018. Naturally, the reforms only concerned the service users, who in turn are concentrated in deciles II–IV (Figure 2). The effects of the reforms in relation to household income by decile are shown in Figure 3. The changes of OOPs are juxtaposed with those of social benefit and taxation. The largest relative effects of the OOP changes are among the households in the four lowest deciles. Tax reforms, in turn, increased the incomes in all but the highest decile. The changes of social benefit legislation have had a positive effect on income among deciles II–IV. In others, the changes in benefits decreased the household income.

It should be noted that OOPs form a minor entity (total: 0.8 billion euros) compared to the simulated personal taxation (35 billion euros) and social benefits (14 billion euros). Therefore, it is not surprising that the effects of OOP changes are also smaller compared to the changes in social benefits and taxation. Rather, the effects of OOP reforms shown in Figure 3 are large in relation to the total amount of OOPs. Moreover, OOPs form the only item whose changes have decreased household income on average across all deciles.

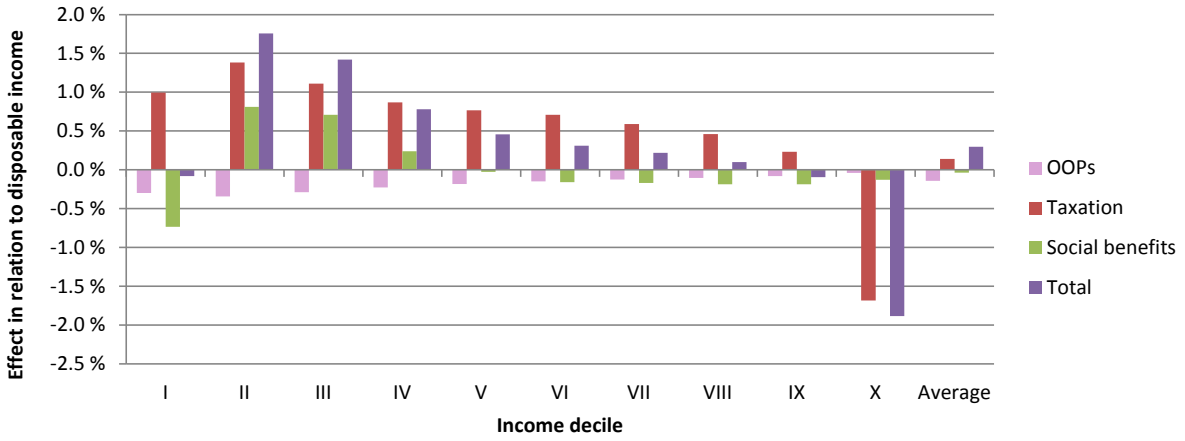

Figure 3. The simulated income effects of legislative changes from 2010 to 2018 by item and income decile (with 2016 population).

Figure 4 shows that the elderly pay OOPs more often and that they pay larger amounts on average. This is due to the fact that the working-age population mostly uses free-of-charge occupational health care provided by their employers. The elderly also presumably have higher morbidity than others and therefore, higher demand for care services. Also, minors are exempted from most of the payments.

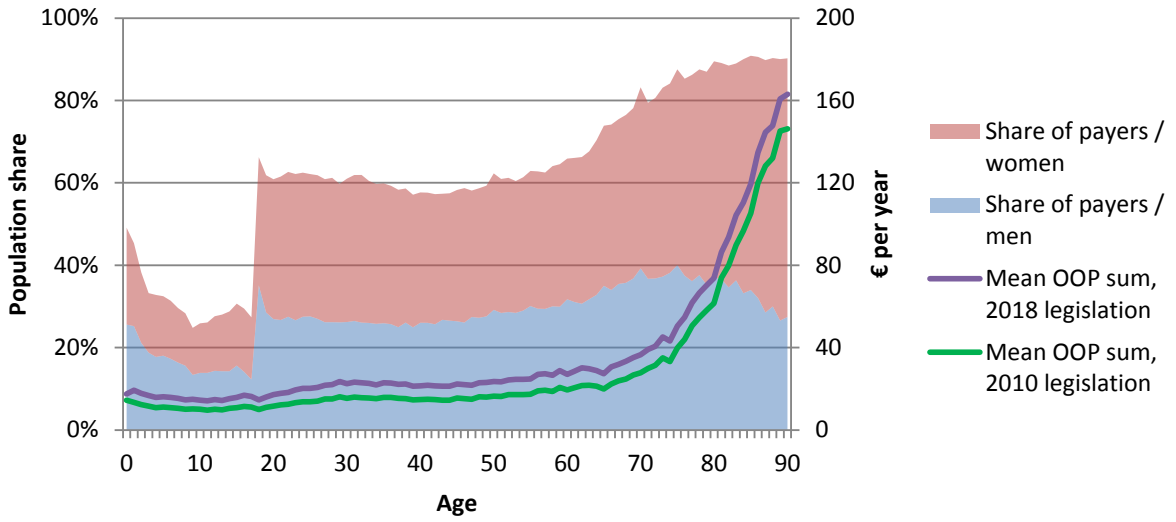

Figure 4. The population share of OOP payers of by age and sex (block colours, left axis), and average OOP sums among the payers by age (lines, right axis), calculated with 2010 and 2018 legislations and 2016 population.

The mean OOP sum for minors and the working-age population varies between 10–30 euros per year. The sum starts to increase rapidly after the age of 70, and for the 90-years-olds the mean is already 140–160 euros per year. Among the working-age population, the reforms during 2010–2018 have raised the average OOP sum by almost 50 percent. Among the elderly, many have reached the payment ceiling, which dampens the effect of the reforms. For example, among the 90-years-olds the reforms have increased the OOP sum only by 10 percent. However in absolute terms, the mean OOP sum has increased more among the elderly than among the working-age individuals.

Before moving to the effects of OOP changes on poverty measures, it is useful to acknowledge the positioning of the poverty lines and their reactions when OOPs are deducted from household income. Table 2 demonstrates the issue by presenting the poverty lines for single person households in 2018. The lines vary from €900 to €1 200 per month. All lines decrease when OOPs are considered. The AROP lines react to the changes in median equivalised income. The RBP lines drop because the reference budget contains a small amount of OOPs (Lehtinen & al. 2011), which are subtracted from the budget when the OOPs are deducted from income. The RBP line for the elderly is slightly smaller than for the general. This is due to the assumptions of the reference budget (lower spending for food, for example) as well as their accentuated concentration to rural areas (lower housing costs, see Lehtinen & al. 2011).

Table 2. The simulated poverty lines for single households with 2016 legislation and population, €/month.

	Standard	OOPs deducted	Difference
AROP (60)	1 197	1 189	-8
AROP (50)	997	991	-6
RBP[a]	997	990	-7
RBP, elderly[a]	919	909	-10

[a] Mean values. The line varies according to age and dwelling area.

We can see from Figure 5 that deducting the simulated OOPs increases all poverty rates to some extent. The largest effect is found on the poverty rates of the elderly. With the legislation of 2018, the AROP rate (60) increases by 1.9 percentage points among the elderly and RBP rate by 0.7 percentage points. The poverty rates for the whole population's increase more modestly, by 0.3–0.5 percentage points, with the most affected being the AROP rate (60). It is worthwhile to acknowledge that deducting OOPs also lifts some households out of poverty, which is not seen from Figure 5. This is due to the fact that the poverty lines decrease when OOPs are deducted, as shown in Table 2.

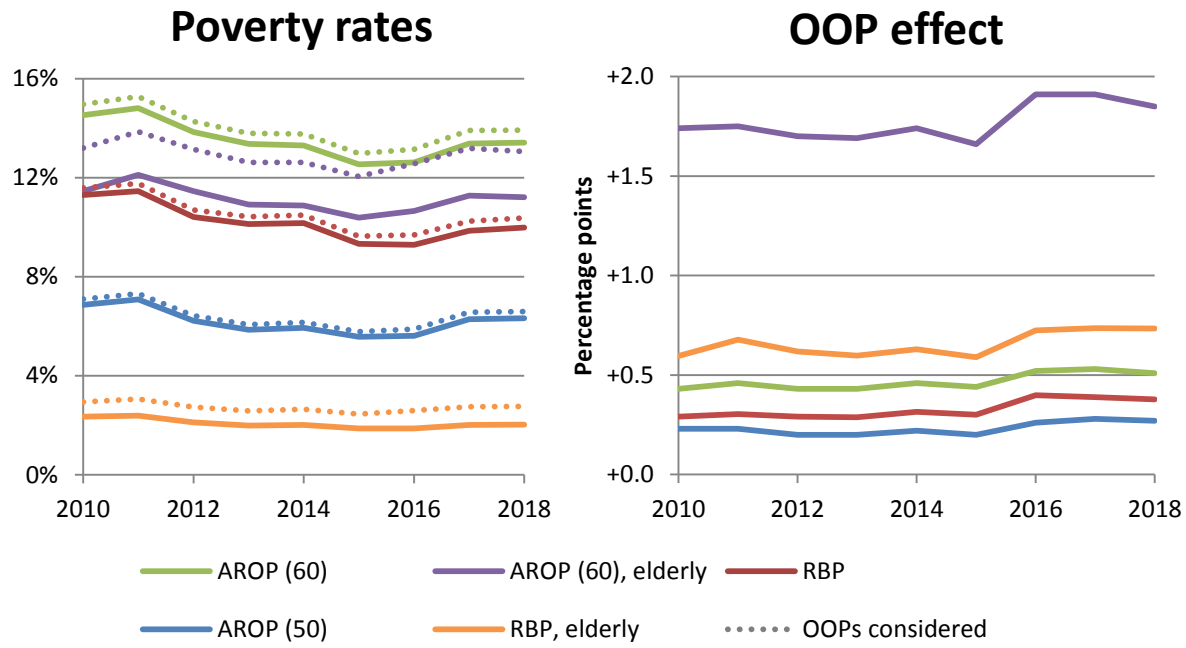

Figure 5. The simulated policy effects on poverty rates and the effect of OOPs on those measures during 2010–2018 (with 2016 population).

The varying effects of OOPs on the poverty rates are mostly driven by the locations of poverty lines. The users of public health services concentrate on the second- and third-lowest deciles (Figure 2), but the only poverty line that is located above the first decile (income of more than 1100 €/month), is that of the AROP rate (60). Therefore, it reacts the most. Also, although RBP and AROP (50) lines are equal, RBP rate reacts more because the poverty of single households is emphasized in RBP rate and the OOPs are slightly concentrated on single households (not shown).

Moreover, as seen from Figure 5, the policy changes slightly decrease the poverty rates during 2010–2015, but increase them during 2016–2018. This also corresponds to previous results (e.g. The second expert group for evaluation of the adequacy of basic social security 2015). The overall policy effect during 2010–2018 is slight poverty alleviation. However, the OOPs' poverty-increasing effect has been rising up. In particular, the reform in 2016 has a visible poverty-increasing effect on all poverty rates.

Table 3 summarizes the findings in numbers. In addition to Figure 5, it presents poverty rates for children. The AROP rate (60) among children is practically unaffected when OOPs are deducted from household income. This can largely be explained by the fact that the use of services concentrates on the elderly population and minors are exempted from some of the OOPs. However, RBP among children is more reactive. Moreover, what is seen from Table 3 is that most of those moving into poverty risk when OOPs are deducted (28 100 individuals in 2018) are elderly (21 300 individuals).

Table 3. The effect of deducting OOPs on the poverty rates with 2010 and 2018 legislations and 2016 population.

	2010			2018			Change in the OOP effect 2010–2018	
	Base, %	OOP effect		Base, %	OOP effect			
		pp	Individuals		pp	Individuals	pp	Individuals
AROP (60)	14.5	+0.4	+23 700	13.4	+0.5	+28 100	+0.1	+4 400
RBP	11.3	+0.3	+16 000	10.0	+0.4	+20 800	+0.1	+4 800
AROP (50)	6.9	+0.2	+12 700	6.3	+0.3	+14 900	+0.0	+2 200
AROP (60), elderly	11.5	+1.7	+20 000	11.2	+1.9	+21 300	+0.1	+1 300
RBP, elderly	2.3	+0.6	+6 900	2.0	+0.7	+8 400	+0.1	+1 500
AROP (60), children	14.4	+0.0	+400	12.6	+0.1	+600	+0.0	+200
RBP, children	13.1	+0.2	+1 700	11.0	+0.2	+2 600	+0.1	+900

The OOP effect on poverty increases during 2010–2018 for all poverty rates, which reflects the effects of OOP reforms. Although the changes can be considered small in percentage points, the relative changes are more significant (for example, a 20 percent increase in the AROP 60).

The above poverty analysis concentrates on the poverty rates. However, the dichotomous rates ignore the changes in the depth of poverty. To delve deeper into the poverty effect, we calculate the changes in average poverty gaps. It is not trivial whether deducting OOPs widens or narrows the poverty gap. The poverty lines drop when the OOPs are deducted, which has a narrowing effect on the poverty gap. In addition, the individuals who move into poverty when OOPs are deducted have higher income than those who were considered already poor, and thus average poverty gap may narrow down. On the other hand, deducting OOPs may widen the poverty gap because the OOPs are concentrated on the low-end of income distribution.

The average poverty gaps (median) are presented in Figure 6. Again, AROP rate (60) for the elderly is most reactive to the OOPs. Its poverty gap widens by one percentage point when the OOPs are deducted from household income. An effect in opposite direction is seen for the poverty gap of AROP rate (50) which narrows by 0.4 percentage point. The poverty gaps for other measures do not react significantly.

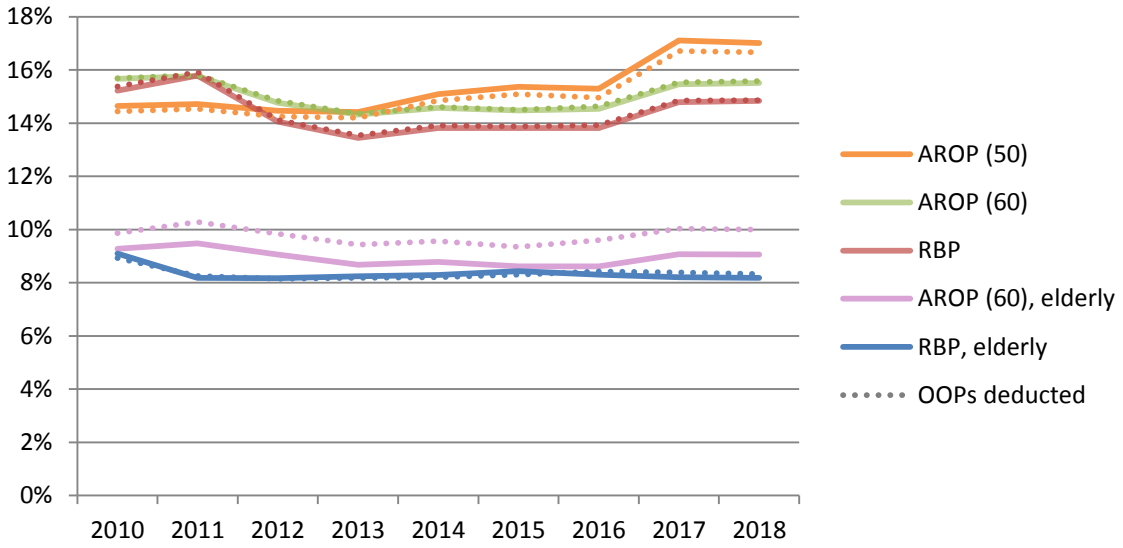

Figure 6. The simulated policy effects 2010–2018 on average poverty gaps (median) before and after deducting OOPs (with 2016 population).

The flat-rate OOPs of public health care are taken fully into account when calculating the eligibility for last-resort social assistance. The OOPs are likely to increase the amount of social assistance among those that already receive social assistance and also the number of households eligible for social assistance. Figure 7 shows that considering OOPs increases the eligibility for social assistance by 20–50 million euros and by 4 000–10 000 households. Relatively, the eligibility for social assistance increases by 2–4 percentages, both in terms of euros and households.

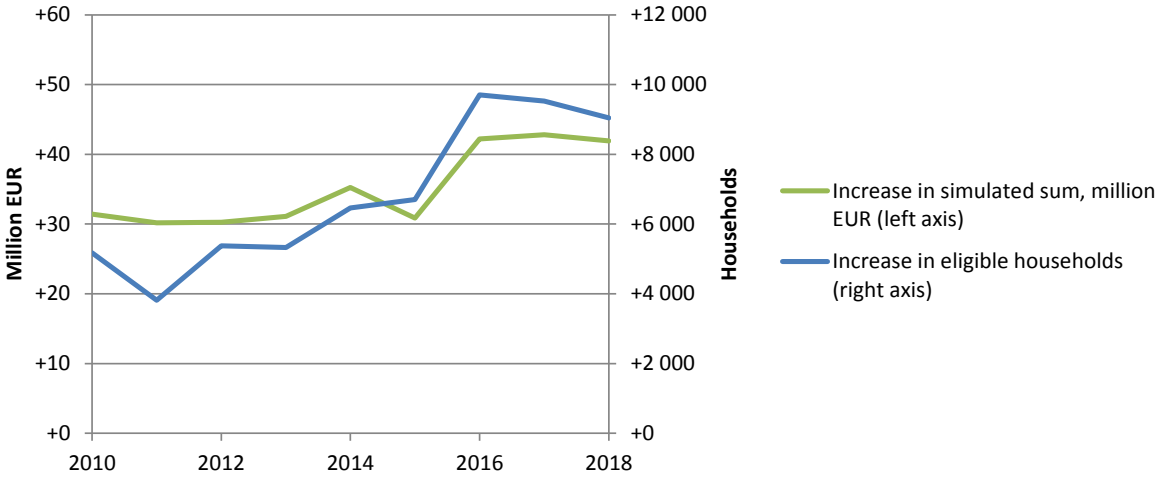

Figure 7. The simulated effects of OOPs on the eligibility for means-tested social assistance 2010-2018 (with 2016 population). Euros are in the real value of 2016.

6 Discussion

This study explored the distributional effects of OOP legislation for public health care in Finland during 2010–2018. We analysed how the reforms during 2010–2018 affected households and individuals across income deciles and age groups. In addition, we calculated how the picture of poverty changes when the OOPs are deducted from the disposable income of the households. We analysed the AROP rates tied to median income, as well as RBP rates tied to fixed reference budgets (Goedemé & al. 2015).

Taking into account the OOPs increased all poverty measures. The largest effect was on the poverty of the elderly, who also consume health care services the most. Similar findings have been reported in the US (Short and Garner 2002). Relatedly, the largest effect was on the AROP rate (60% of median income) because the service users were most concentrated around that poverty line. The first decile had the lowest rate of service-using households which is explained partly by the high share of students. The poverty lines of the AROP rate (50) and RBP rates were located in the lowest income decile.

The study used unique register data sets on the use of public health services. The data of health care use were merged with the base data of the tax-benefit microsimulation model SISU. The extensive data enabled uniquely accurate analysis. However, it should be noted that the analysis is still constrained with some limitations. Most notably, the study did not explore the effects of all health care fees. We missed some significant parts, such as the OOPs for medicine costs and private health care. The OOPs analysed in this study constitute approximately 30 percent of all OOPs. The remaining 70 percent is divided equally between the OOPs for private health care and medicines (THL 2018a). Also the OOPs of social care were excluded, except of those paid for domiciliary care. The analysis should be complemented with these items in future studies.

It is pertinent to note that we analysed the distributional effects of OOPs and their changes, but not the redistributional effects of health care funding. The redistributional effects of health care can be regarded as the other side of the coin to the OOPs. For example, the elderly, whose income is most affected by the OOPs, also receive the highest subventions of the services (e.g. Vaalavuo 2018). In Finland, households account for approximately 12 percent of total production costs of public health care which accounts roughly to OECD average (THL 2018a). Therefore, similar to many western countries, health care provision is a major redistribution channel, funded through, for example, progressive income taxation. Among OECD countries, Gini coefficients drop more than 10 percent on average when the subvention of health care services is taken into account (e.g. Verbist & al. 2012).

We simulated the effect of OOP legislation 2010–2018 with the population and service-use data of 2016, assuming that there are no behavioural effects on the take-up of health care services. It is known that the level of OOPs can affect the use of services. Previous studies have noted that the use of some health services (such as consultations with general practitioners) is elastic, meaning that the level of OOP affects the use (see Kiil & Houlberg 2014 for a review). However, the fees for those visits constitute a minor part of total OOPs, and ignoring the behavioural effects is likely to have little bias on the distributional outcomes.

Accounting for price elasticity does not only concern the policy changes but also the static use of health care services across income distribution. Greater wealth and income may increase the use of health care services in relation to one's needs (e.g. Peters & al. 2008). Therefore, a lack of OOPs may also be a sign of limited access to health care and vice versa. In the future, it may be worthwhile to adjust for income-induced service use (see e.g. Wynand & al. 2000 for potential methods).

Despite these limitations, the study in hand offers a novel example of how the health care costs affect the prevalence of poverty via extensive administrative registers. Previous examples have often relied on surveys and concentrated on non-European countries where OOPs may create a more significant barrier to accessing the services. Perhaps most importantly, the above analysis comes also with a significant improvement of microsimulation tools which can be used and developed more in future when analysing the distributional effects of OOP reforms.

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