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Policy dissonance when wearing the "employer hat": The practice of governmental vehicle reimbursement among public sector employees

Yaara Tsairi [a,*], Alon Tal [b], David Katz [c]

[a] Faculty of Architecture and Town Planning, Technion - Israel Institute of Technology, Israel
[b] Department of Public Policy, Tel Aviv University, Israel
[c] Department of Geography and Environmental Studies, Haifa University, Israel

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ABSTRACT

Transport-related benefits can have a significant impact on employees' vehicle ownership and use. Policy implemented by governments, which are often both large-scale employers and models for the private sector, are especially important in determining travel behavior. The research focuses on the Israeli practice of providing substantial subsidies for public sector employees to own cars, through the salary benefit of "vehicle reimbursement". The benefit, originally created to circumvent salary caps, today provides a substantial income supplement for more than half of the country's public sector workers, translating to 10% of all Israeli employees (in addition to 10% of employees who receive a company car). The article explores the extent to which vehicle reimbursement encourages car ownership and car usage among public workers. It also seeks to assess the willingness of workers, the labor union and the government to replace the vehicle reimbursement salary component for a substitute that does not require car ownership. Analysis of both a survey of employees (n = 276) and interviews with government and labor union officials, suggests that Israel's "vehicle reimbursement" constitutes a classic perverse incentive, driving and perpetuating private car ownership and usage, thereby affecting workers' transport preferences in both the short and long terms. While the majority of public employees are willing to consider accepting salary compensation in lieu of car ownership, institutional and legal obstacles currently stand in the way of policy reform. This case study offers a first exploration of the role of historical employment arrangements in shaping employee and employer transportation decisions.

1. Introduction

Employers can shape employees' travel preferences through a range of policies, facilities and regulations, such as provision of parking, providing car-related benefits or other travel allowances, supplying bicycle facilities, etc. The literature confirms that these transportation-related benefits provided by employers do indeed affect workers' transportation preferences and habits, i.e., mode of transportation, the number of trips, distance travelled, etc. (Nijland & Dijst, 2015; van Ommeren et al., 2006; Vanoutrive et al., 2010). These "mobility policies", some of which impose high externalities on society, are often shaped by national laws and tax regulations. In an attempt to minimize the negative damages from work-related travel, some governments seek to influence the behaviors of firms by encouraging the development of mobility management programs among workers (Cairns et al., 2010; DeHart-Davis & Guensler, 2005; Enoch & Potter, 2003; Van Malderen et al., 2012; Vanoutrive et al., 2010).

In most countries, however, governments themselves are a substantial employer – if not the largest one. In OECD countries, for instance, public employees represent 17.7% of the total workforce, while in some countries such as Norway and Denmark, this figure is as high as 28% – 30% (OECD, 2019). Therefore, transportation-related policies are no less important than those of firms. Besides being a substantial employer, sometimes with different characteristics from that of the private sector, the public employer controls the behavior of many employees directly. Where a policy creates unintended externalities, this direct control implies that public policies ought to be an early and high-priority target for reform. Moreover, the public sector can be expected to set an example for other employment sectors.

This study seeks to deepen the present understanding of the potential of employers in general, and the government as employer in particular, in shaping workers' transportation preferences in both the short and

* Corresponding author.
E-mail address: yaarat@campus.technion.ac.il (Y. Tsairi).

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long terms. In the present case, we examine Israel's governmental policies that reimburse public sector workers for private vehicle ownership, and their social and environmental implications. The policy, originally created to circumvent salary caps, today provides a substantial income supplement for more than half of the country's public sector workers, translating to 10% of all Israeli employees.

We hypothesized that encouraging private ownership of automobiles through salary reimbursement serves to increase private vehicle usage. We report the results of a survey conducted among government employees regarding their perceptions of Israel's vehicle reimbursement policy and their willingness to forego such a benefit, in exchange for monetary or other compensation. Other research objectives involve characterizing the dynamic that exists between employees, the labor union and the employer, when setting such a transportation-related benefit or when trying to change it. Our analysis is based on results from interviews with the chairperson of the central government labor union, and other senior government officials.

This article offers a first exploration of the potential role of labor union involvement alongside employment regulation in shaping employee and employer transportation decisions. To date, the academic literature devoted considerable attention to transportation-related benefits that can be instituted by employers, usually as a set of mobility management interventions to reduce car usage. This case enables a focus on transportation-related benefits embedded in workers' salary arrangements, which is difficult to influence, a topic that has hardly been studied.

The article is organized as follows: In section 2, a theoretical framing of transportation-related subsidization by employers through transportation-related benefits is presented. Section 3 presents the Israeli governmental employment practices of supplying vehicle reimbursement to public sector employees. Section 4 details the research questions and methodology. Section 5 presents the study's results, with the final section offering a discussion and conclusions.

2. Literature review

A considerable amount of literature addresses the causes and implications of vehicle ownership in which owners do not bear the full costs of owning or using their vehicle (e.g., Delucchi, 2007; Delucchi & Murphy, 2008; Holtsmark & Skonhoft, 2014). Assistance provided to defray some or all of the full costs of vehicle purchase, maintenance and use produces an increased incentive for vehicle use as it creates a mismatch between the low marginal private costs of using the road for the individual and the high marginal social costs imposed on society (Chin & Smith, 1997; van Dender, 2019; Verhoef, 1994; VTPI, 2009; Weinberger & Lucas, 2011).

In many countries employers play substantives role in vehicle subsidization. The provision of a "company car" is perhaps the most pronounced form of employers' involvement. This salary benefit involves a car provided by the employer that is available for an employee's commuting trips and, often, personal use. Most costs related to its use are borne by the employer, turning cars into an economically beneficial means of travelling for employees (Frenkel et al., 2014; Macharis & De Witte, 2012; Metzler et al., 2019; Shiftan et al., 2012). But even without supplying a company car, employers frequently bear some of the costs of workers' private vehicle ownership. One of the most prevalent forms of automotive subsidies involves covering parking costs. Parking in general is subsidized in innumerable cities through street-pricing below-market levels, on-street parking permits free of charge or nearly so, or through minimum requirements for parking spaces as part of urban planning (Groote et al., 2016; Shoup, 1999; van Ommeren et al., 2014). Parking at the workplace is often subsidized directly by the employer through provision of free parking facilities or passes.

Employer transport related policies are very much shaped and incentivized by local and national laws, and tax regulations (Potter et al., 2006). For example, tax authorities generally do not tax the workplace free-parking benefits, notwithstanding their clear monetary value. Indeed, only a few examples of policies that do so can be found around the world (Burchell et al., 2015, 2019; Santos et al., 2020). Another example is the taxation of company cars. This is usually calculated according to one or the following elements, or a combination thereof: a percentage of the vehicle price, distance travelled, direct costs of personal use (fuel and maintenance costs) or a fixed sum (Harding, 2014). The existence and degree of taxation affects car company the attractiveness and prevalence (Shiftan et al., 2012). Also, national policies regarding commuting expenses vary in terms of treatment of personal versus work-related expenses. When car usage is considered to be a private expense, commuting payments tend to be non-deductible when paid by the employee, or alternatively are taxed like other forms of income when paid by the employer. When it is considered to be a necessary, work-related expense, commuting costs are generally a deductible expenditure when paid by the employee, or can be offered as a tax exemption when paid by the employer. Different forms of deductions exist, reflecting differing elements such as transport mode, distance traveled, and the existence of alternatives (Harding, 2014; Potter et al., 2006).

Consequences of transport related benefits in the context of specific tax laws and regulation can be manifested in unintended increased burdens on transportation infrastructure, or alternatively, in encouraging the reduction of car use (Nijland & Dijst, 2015; van Ommeren et al., 2006; Vanoutrive et al., 2010). A broad and well-established literature has confirmed that employer-based provision of travel benefit programs can affect travel behavior, including both choice of mode of transportation as well as the intensity of use. Benefit programs that pay for auto expenses (e.g. mileage reimbursement, parking, etc.) tend to encourage private vehicle use and discourage the use of non-auto transport modes, like public transit, biking and walking(Bueno et al., 2017; Ghimire & Lancelin, 2019; Hess, 2001; Shoup, 1997).

In the theoretical model offered by Nijland & Dijst (2015) shown in Fig. 1, transportation-related fringe benefits including telework and work hour flexibility, are determined in a joint process by the employer and employees: corporate characteristics and location affect the type of benefit that a company offers employees, while the employees' personal and household characteristics, place of residence and travel options affect the type of benefits the employee chooses.

In this article, we suggest two additional layers to the above model. One is that transportation-related salary benefits are not merely the result of employer and employee preferences; rather, they can also be subject to additional factors such as labor union negotiations and employment laws and tax regulation. The second addition is the effect of transportation-related fringe benefits on workers' personal choices and preferences, as well as workplace decision-making. In particular, we suggest that the direction of causality between fringe benefits and employee characteristics and travel decisions can go both ways. For instance, travel benefits can influence both home and firm location, as well as household characteristics.

2.1. Employee transportation in the context of employment relations

At present, modern labor dynamics rely on two historical trends: The emergence of organized labor, which peaked in the mid-20th century, raised the standard employment relationship. Full-time, continuous employment, access to social security arrangements and various ancillary entitlements became common among a larger segment of the working population (Vosko, 2006). On the other hand, soon thereafter, from the 1970 s onwards, there was a gradual decline in organized labor. "Non-standard" employment arrangements began to flourish in comparison with the standard, normative structure created only a short time earlier (Edgell & Granter, 2019; Muntaner, 2018; Vosko, 2006).

When considering employee transportation decisions, i.e., travel for commuting purposes or travel during the workday (for work purposes), travel arrangements can be a part of the overall employment

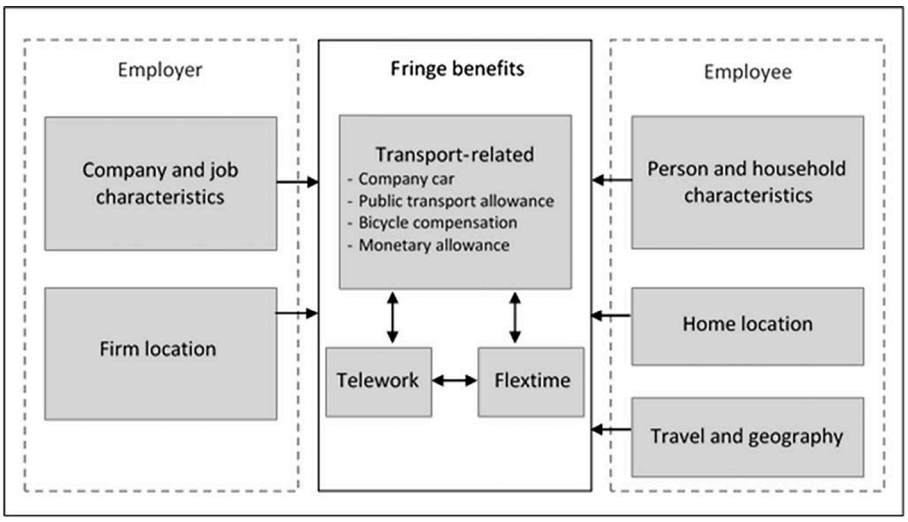

Fig. 1. Conceptual framework of transportation-related fringe benefits offered by Nijland & Dijst (2015).

relationship. Whether based on trade unions' collective bargaining or individual contracting, employer involvement in employees' transportation emerges in two main ways: (1) ensuring basic employment standards, sometimes according to local laws; (2) offering fringe benefits.

Standards for adequate employment which are applied to all employees regardless of their workplace status, regulate basic labor rights, such as minimum working age or rest hours, and are embedded in governmental laws and/or promoted by international organizations, trade agreements and NGO's (Egels-Zandén, 2009). One example of a labor standard in the context of employee mobility is the compensation for on-duty travel, common in many developed countries.

Fringe benefits, however, depend on a bargaining process between employers and labor unions or independent employees. Their final form varies and is dependent on a myriad of factors such as employee status within the workplace, competition over labor, the employers' ability to offer those benefits, a country's taxation system and idiosyncratic national characteristics (Kalleberg, 2011; Vanoutrive et al., 2010). For example, as discussed above, in some countries, employers commonly participate in employee commuting costs (for different modes of transportation), while in others, commuting is perceived as a private matter rather than a work-related expense (Harding, 2014; Potter et al., 2006). When they become institutionalized, transportation-related fringe benefits can be considered to be part of the remuneration package (Vanoutrive et al., 2010), even when their provision is disputed or subject to negotiation.

3. The study case of vehicle reimbursement

3.1. Israel's transportation challenges

Israel suffers from severe transportation problems. In 2014 it was crowned with the dubious distinction of being the most congested country in the OECD. This is reflected in roads being 3.5 times more crowded with vehicles than the OECD average: 2700 car/km of road in Israel compared to an OECD average density of 773 car/km of road. Despite the country's small size, Israeli drivers also excel in car use, driving an average of 17,000 km per year. Only the U.S. has a higher annual, per capita mileage rate (OECD, 2016). At the same time, alternatives to private transportation remain underdeveloped. Tel Aviv, the country's largest metropolis does not have mass rapid transit, and only now is its first light rail line being built. Bus services, which offer the primary public transportation alternative, also suffer from substantial problems, such as lack of a continuous network of bus only lanes, and unreliable provision of service (The State Comptroller and Ombudsman of Israel, 2019).

The most conspicuous consequence of Israel's transportation challenges involves acute congestion on the country's highways: according to a report by Israel's Ministry of Environmental Protection (April 2019), given the projected increase in population and vehicle ownership, by 2030 commuters who presently suffer a 30-minute delay per day on average, traveling to and from work, are forecast to spend a maddening 90 min in traffic jams daily (Shmil & Bareket, 2019). Chronic congestion produces mounting environmental and social costs. Given Israel's current motorization trends (4% per year (CBS, 2018d))[1] and rapid population growth (1.9% in 2019, compared to an average of 0.4% for high income countries (The World Bank, 2019)), the adverse societal impacts from private transportation promise to become far worse in the near future (IMF, 2017; OECD, 2018).

3.2. Policy of vehicle reimbursement

In Israel, public sector employees account for 19.7% of the total workforce, slightly higher than the OECD average (OECD, 2019). Since the 1960 s, the Israeli government maintains a policy that associates private vehicle ownership with salary increases through a salary component entitled: "reimbursement of expenses for using a privately owned vehicle for work purposes" (hereinafter: "vehicle reimbursement") (The Accountant General's Office, 2017). In order to receive this salary component, employees are required to possess a driver's license, a valid vehicle registration, and to own their own vehicle. The associated salary payment includes refunds for variable and fixed costs associated with car ownership and use. Variable costs include a refund for kilometers travelled up to an approved maximum, ranging from 1,000 km to 10,000 km per year (0.68 shekels[2] per km). At the higher end of the vehicle reimbursement hierarchy, payments for the full cost of insurance (up to 7,000 shekels a year) and annual vehicle inspection (1,632 shekels for car and 301 shekels for motorbike) are provided as well (The Accountant General's Office, 2017, 2018a, 2018b). Overall, a considerable part of the public sector employees' salary, which averages roughly 20% of total income (Science and Technology Committee, 2017), is defined as "vehicle reimbursement.".

When the policy was initially introduced, only middle and high-level public servants in the central government received vehicle

[1] Average growth for the years 2010–2018.
[2] 1 Israeli shekel = 0.3 US dollars as of 30 November 2020.

reimbursement (Brutskus, 1974). Over the years, though, compensation expanded to include additional government workers as well as other public sector employees. By now it is part of the official collective bargaining agreement between the country's public service labor union and the government. Approximately 600,000 workers in Israel's public sector are eligible to receive this reimbursement. This translates to 15% of all salaried employees in the country (i.e., central government workers, municipal authority employees, public agencies and state-owned enterprises).[3] The scope of workers receiving vehicle reimbursement varies from one public sector to another. For instance, about 52% of 77,500 central government workers (The Accountant General's Office, 2018c),[4] 59% of 9,000 employees in the Tel Aviv municipality (Milman, 2017), and 81% of 3,800 Israel Railways workers enjoy this salary benefit (Israel Railways, 2018). All told, it is estimated that approximately 362,000 public servants, (i.e. 10% of all Israeli employees) receive a significant vehicle reimbursement component in their salaries. This is *in addition* to another 9.4% of Israeli private sector employees who receive a "company car" as part of their remuneration (Tax Authority – Department of Planning and Economics, 2018).

The origins of this extreme commitment to covering the expense of employees' private cars are somewhat idiosyncratic. As a country with a particularly high military budget (CBS, 2019b) and social security services, tax rates paid by middle class Israeli workers were among the highest in the world until a reform was launched in 2003 (Committee for income tax reform led by CPA Yair Rabinovich, 2002). Originally, vehicle reimbursement was considered an elegant way to circumvent exorbitant taxation rates, that by the mid-1970 s for many Israelis reached as high as 87% of disposable income. Car expenses joined a list of approved reimbursements that were recognized as a way for workers to increase their remuneration while avoiding income tax. The practice even gained a pejorative nickname, when a popular satiric television show called it "Isra-bluff". At the time it was initiated, however, vehicle ownership was much less pervasive. There were a mere 147,785 private cars on Israeli roads in 1970 (CBS, 2018c) compared to 3 million in 2019 (CBS, 2020).

Accordingly, compensation for vehicle costs is not considered in the calculation of percentage salary set aside for pension payments.[5] The requirement that a worker must own a car if she or he wishes to be eligible for the reimbursement benefit stemmed from government concerns over its pension liabilities, especially if workers were able to prove that the perk was a *fictitious* salary component. The result is that if a family consists of two workers in the public sector, each must own a car in order to receive the full payment (The Accountant General's Office, 2017).

The Israeli framework for employee vehicle reimbursement emerges as unique when compared with a variety of high-income countries. A review of policies in a sample of these countries[6] reveals that government employees usually are given a choice between accepting a travel subsidy or receiving another form of compensation. They do not have to actually own a car to receive work-associated travel reimbursement of purchasing a vehicle and receiving remuneration or forgoing such benefits completely. Even in Germany, a country with a significant automotive industry, government guidelines do not stipulate vehicle ownership among civil service workers. In addition, in other high-income countries, private vehicles do not constitute a default medium of transportation. Workers are allowed to choose the mode of transportation most suitable for their circumstances. Furthermore, there is no pre-approved monthly "kilometer quota" for which they are reimbursed, as is the case in Israel. Finally, Israel appears to be unique in that the government bears additional fixed costs of vehicle ownership, such as insurance and mandatory annual mechanical and emissions inspections.

4. Research objectives and methods

4.1. Research objectives

The present research focuses on two main objectives. First, taking Israel as a case study, the research seeks to better characterize the effect of vehicle reimbursement policies on travel behavior and employees' perceptions toward it. In this context the two key questions explored were:

1) To what extent does vehicle reimbursement encourage both car ownership and car usage among public workers? and.

2) To what extent might workers be willing to replace the vehicle reimbursement salary component for a substitute that does not require car ownership, and what are the characteristics of public employees who are or are not willing to decouple their salaries from car ownership?

The second objective is to theorize the potential effect of employment policies on workers' transportation preferences and on the ratchet effect of car dependency. In particular we examined the role of labor unions and employment regulations in determining transportation-related benefits.

4.2. Hypotheses of the potential effect of vehicle reimbursement

We hypothesized that the primary impact of vehicle reimbursement eligibility will be on car ownership. A standard model of demand assumes that individuals consider the price of a car relative to other services and goods, disposable income and personal preferences (Chin & Smith, 1997). Therefore, we assumed that workers take into consideration the value of the transportation benefits they receive that are borne by the employer. Since it is not a onetime payment, but rather a remittance paid regularly that includes maintenance costs over time, it can be expected to affect car ownership rates positively. Moreover, the greater the transportation payments are relative to income, the greater the incentive to own a car becomes (Chin & Smith, 1997; Weinberger & Lucas, 2011). Finally, various personal preferences can affect car ownership. These range from individual preferences to the social and spatial contexts affecting the decision to own a car (e.g., past experience, peer group motorization rates, place of residence) (Goetzke & Weinberger, 2012; Lucas & Jones, 2009; Weinberger & Goetzke, 2011). The preferences also reflect dynamics created over time: as people become accustomed to owning a private car, households become more dependent on them for traveling and errands. In a gradual process, cars move from being a "prestige" possession to a necessity (Lucas & Jones, 2009).

Our second hypothesis is that vehicle ownership is expected to be positively correlated with usage (Tao et al., 2019; Van Acker & Witlox, 2010). This is based on a secondary impact whereby after employees own and insure their cars, the marginal costs of operating them are relatively low. Since in the case of Israel, reimbursement for car ownership is paid regularly, without any actual connection to proven work-related usage, ostensibly an incentive exists to reduce variable

[3] The government sector, together with governmental companies, includes 600,000 positions (CBS, 2019a). This does not include 175,305 education employees (CBS, 2018a) and 40,301 police and Israeli prison services employees (CBS, 2018b), Together, employees in the public sector constitute approximately 15% of positions in the country's labor market (599,400 of 3,952,500 employees).

[4] The proportion of reimbursement recipients is calculated according to 40,352 fixed-expense recipients in 2017, divided by a total of 77,428 employees working in government ministries.

[5] Since 1975, it is, however, a taxable salary component (Amendment 22 of the Income Tax Ordinance (no. 22), 1975).

[6] Including Canada (National Joint Council, 2018a; National Joint Council, 2018b; Government of Canada, 2018), Finland (Finish Tax Administration, 2018; Collective Agreement Concerning Compensation for Travelling Expenses, 2017), USA (Internal Revenue Service, 2017; Federal Travel Regulation, 2018) and Germany (German Travel Expenses Act (Bundesreisekostengesetz, BRKG) 2005; Frequently asked questions about the Federal Travel Expenses Act (BRKG), 2016).

costs, such as gas consumption. The literature, however, holds that since there are no significant constraints placed on commuting by car (in particular parking limitations), most employees choose to drive to work (Hamre & Buehler, 2014; Ghimire & Lancelin, 2019; Hess, 2001; Weinberger & Lucas, 2011). This is expected to be the case, even when there are reasonable public transportation services available and workers do not need to use their car for work purposes.

We also hypothesized that salary arrangements that include reimbursement for private car usage will affect worker's transportation decisions in both the short and the long terms. Also, since the salary component of vehicle reimbursement has become a *fait accompli* during the last 50 years, we surmise that it will have a substantial effect on employers' policies regarding their workers' transportation as well (e.g., building and providing parking lots, increasing salary remuneration for travel reimbursement, etc.).

4.3. Methods

The primary research tool employed in the research was a survey of workers in Israel's public sector. To ensure the validity of the survey instrument, revisions were made based on feedback from a small initial sample of participants and an expert advisory committee. The final survey instrument contained 44 closed and open questions. The questionnaire was distributed to civil servants, via email, relevant Facebook groups, and various personal networks. Completion of the online survey took 10 min on average. It was completed by a total of 276 public servants: 64% from the central government (N = 176), 25% who work in the municipal government (N = 70) and 11% from other public agencies (N = 30). Other data were collected from requests submitted through the local Freedom of Information Law and statistics extracted from information provided by Israel's Ministry of Finance.

In addition to the survey instrument, we conducted semi-structured interviews with four past and present senior officials in the public sector. These included (1) the former Minister of Interior, (2) a former senior civil servant in the Ministry of Environmental Protection, (2) a current senior staff member in the Ministry of Environmental Protection who serves as the ministry's employee union representative, and (4) the chairperson of the labor union for central government workers (one of the country's most powerful labor unions). Each interview took between 35 and 120 min and was transcribed for analysis. The objective of the interviews was to better understand the motivations for the policies as well as the barriers to policy reform.

The results allow for both quantitative and qualitative analysis. In order to assess the representativeness of the sample, the sample data taken from employees of the central government were compared to those of the overall population of central government employees, for whom data were available from the Ministry of Finance. As shown in Table 1, the sample was found to be representative in terms of gender, while the average age of respondents was slightly lower than the average working population (39.6 years among the sample compared to 43.8 years in the central government population). This can likely be best explained by the relative rates of Facebook and social media engagement in the different age cohorts.

The central government respondents were compared to the two other public sector cohorts (municipal and other government employees) and the different groups were found to be largely comparable with no statistically significant differences. Descriptive statistics were collected to identify the socio-demographic characteristics of the sample, the motivations for transportation choices such as the decision to purchase and/or use a vehicle or where to live, and their opinions regarding transportation options, including their amenability to accepting monetary remuneration in lieu of transportation-related benefits. Regression analysis was also used to identify variables associated with the extent to which having vehicle reimbursement is perceived by those receiving the benefit as encouraging car ownership, and variables associated with the willingness of current benefit-eligible employees to consider a vehicle reimbursement substitute that does not require car ownership. Table 2 describes the independent variables applied.

Table 1
Comparison of sampled respondent characeristics with general Israeli population.

	All sampled respondents (N = 276)	Sampled central government workers (N = 176)	Sampled workers in other sectors (N = 100)	Central government workers (N = 77,428)
Gender				
Women	66.5%	66.7%	67.0%	65.7%
Men	33.5%	33.3%	33.0%	34.3%
Age				
Average	39.9	39.6	39.0	43.8
Range	22–65	22–67	23–67	19–67
SD	(10.22)	(10.27)	(10.39)	(11.92)
Age breakdown				
19–34	35.2%	37.0%	40.0%	27.0%
35–50	48.3%	46.7%	44.0%	41.5%
51+	16.5%	16.3%	16.0%	31.5%
Seniority				
Average	10.7	9.8	8.1	–
Median	7.0	6.0	4.8	9.6
Range	Several months – 41 years	Several months – 41 years	Several months – 40 years	–
SD	(9.83)	(9.41)	(8.41)	–
Reimbursement				
Vehicle reimbursement	75.6%	67.0%	52.0%	52.1%
Company car	4.0%	6.2%	10.0%	2.5%
Does not have any reimbursement	18.8%	25.0%	36.0%	
Unknown	1.7%	1.8%	2.0%	

The analysis assumed that travel alternatives from respondents' place of residence can also constitute an explanatory variable for the dependent variables. However, the Israeli public transportation network is characterized by major supply gaps, so that transportation services are not well correlated with the size of community or motorization rates (Ministry of Transportation and Road Safety, 2016). Accordingly, the variable "place of residence" was excluded from the regression analysis.

For the open questions we defined categories that arose from their answers, and then coded and compared the responses to the relevant closed questions in order to provide indicative and systematic explanations (Spencer et al., 2003). In addition, the responses to open questions also informed the content of semi-structured interviews with government and labor union officials.

5. Results

5.1. Vehicle reimbursement impact on car ownership

Most of the public servants responding (61%) reported access to a car they own during most days of the week, for which they receive reimbursement. As shown in Fig. 2, among workers receiving reimbursement, the majority (56%) describe the incentive as having at least "somewhat influenced" their decision to purchase a car. Among them, 26% mentioned that the reimbursement policy influenced their decision "to a meaningful extent" or "to a great extent".

When examining the association between eligibility for vehicle reimbursement and car ownership, among respondents who indicated that they earn more than a median income, 70% reported that the salary reimbursement had little or no impact on their decision to purchase a car, in contrast to only 45% of those reporting average or below average incomes. Linear regression was utilized to more accurately identify factors that influence workers' responses (Table 3). The higher an employee's income, the lower the influence that reimbursement has on the

Table 2
Independent variables considered for regression analysis.

Variable	Description
Gender	Men = 0 Women = 1
Seniority	Continuous
Income	Well below average = 1 Below average = 2 Similarity to the average = 3 Above average = 4 Well above average = 5
Education	High school = 1 Diploma = 2 Undergraduate student = 3 Bachelor's degree = 4 Master's degree = 5 PhD and above = 6
Cars per adult in household	No car for every adult = 0 Car for every adult = 1
Central government or other sectors	Other public sectors = 0 Central government = 1
Reimbursement level	Lowest reimbursement = 1 = 2 = 3 = 4 Highest reimbursement = 5
Frequency of work journeys	Not at all = 1 2–3 times a month = 2 1–2 times a week = 3 3–6 times a week = 4
Frequency of commuting by car	Not at all = 1 2–3 times a month = 2 1–2 times a week = 3 3–6 times a week = 4
Extent to which eligibility for vehicle reimbursement affects car ownership	Had no influence = 1 To a limited extent = 2 Certain extent = 3 Meaningful extent = 4 Great extent = 5

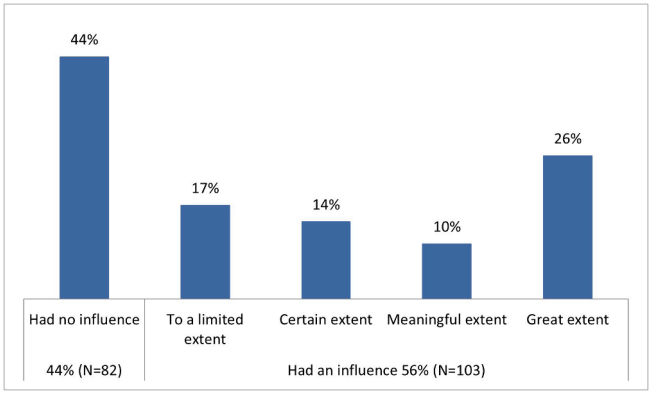

Fig. 2. To what extent did having vehicle reimbursement encourage car ownership? Answers among workers receiving the refund.

decision to purchase a car. "*I have enough money to own and maintain a car*" was a typical response from the open questions in a questionnaire of one of the high-income workers.

Among lower-income workers, the addition of the vehicle reimbursement within monthly salaries, along with the employer-provided funding of insurance and mechanical inspection, enables a first car purchase and allows some households to own more than one car. Thus, a majority (55% of average or below average income earners) indicated

Table 3
Linear regression – variables associated with the extent to which eligibility for vehicle reimbursement affects car ownership.

Model	Unstandardized Coefficients B	Std. Error	Sig.
(Constant)	3.642	0.695	0.000
Income	**−0.249**	**0.110**	**0.026**
Central government employee (binary)	**−0.656**	**0.295**	**0.028**
Reimbursement level	**0.209**	**0.096**	**0.031**
Gender	−0.150	0.256	0.558
Seniority	−0.011	0.012	0.388
Education	−0.129	0.120	0.287

that the reimbursement policy played a role in their vehicle purchase, with many indicating that it played an important role. Respondents frequently answered that without this support, vehicle acquisition would be impossible. "*Because this is a long-term job, according to my plans, a strong economic incentive is created. I might have avoided the decision to buy a car without the incentive*" said one of the participating public servants. Another respondent stated, "*The vehicle reimbursement helps us to own two cars.*" In other words, for some workers, receiving a vehicle reimbursement constitutes a highly significant subsidy for owning and maintaining one or more cars.

Also, the findings suggest, not surprisingly, that the higher the payment is in relation to the employee's salary, the greater the economic incentive to own a car. Vehicle reimbursement eligibility is less likely to influence whether employees working in the central government purchase a car, relative to employees in other public sectors. This is likely a function of their relatively higher salaries.

5.2. *Incentive for usage*

Under the current policy, reimbursement for car ownership is paid out regularly, according to a preapproved number of kilometers, without any actual connection to proven work-related usage. As such, ostensibly commuters still have an incentive to reduce variable costs, such as gas consumption. The present system is designed so that government employees have a fixed "Mobility Budget", which they can optimize by choosing a less expensive travel options (Zijlstra et al., 2019). The findings, however, suggest that there is a positive correlation between the availability of a car and its utilization for commuting. Specifically, only 12% of workers with access to an available car during the week choose to limit their use of it to only a few times a month or less. Additionally, Fig. 3 demonstrates the absence of an association between frequency of car usage for commuting and frequency of on-duty travel. In other words, it appears that people's decision to drive to work has little or nothing to do with their need to drive their car during the course of their work routine. As will be elaborated on in the discussion section, this finding is in line with the broader existing literature that

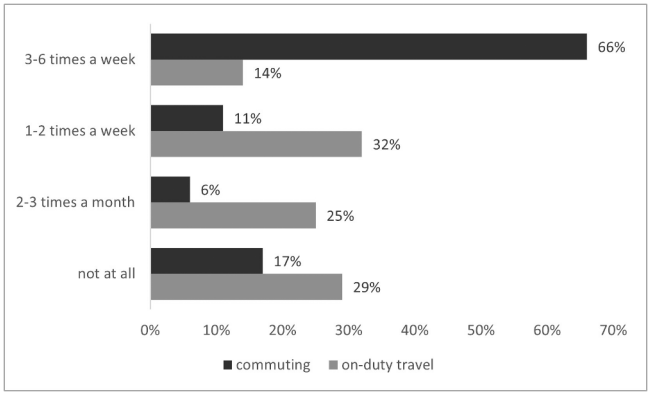

Fig. 3. Frequency of commuting relative to on-duty travel.

indicates that provision of vehicle subsidies encourages usage.

This conclusion is supported by the respondents in the open questions. Workers report that receiving vehicle reimbursement encourages them to use their car and discourages them from using other means of transportation. For example, "*I work for the Environmental Protection Authority*," said one municipality employee, "*It is very important for me to travel on public transportation… But as long I know I have a vehicle outside the house, I prefer it*".

It is important to emphasize that over time, this subtle "choice architecture" appears to affect workers' decision of where to live. Public employees choose to live greater distances from their work. A recent quantitative study conducted by the Ministry of Finance found that the average distance between home and workplace is 24 km among central government workers, compared with an average of only 18 km traveled by the country's workforce in general (Wage & Labor Agreement Office, 2019). Anecdotal evidence from our survey responses seems to indicate that reimbursement policies play a factor in this dynamic. In a representative explanation, one respondent noted: "*Without the reimbursement it might be worth moving closer to work, using kindergartens closer to home and using public transportation. In that case, the second car would be less cost-effective*".

5.3. Employees' willingness to replace vehicle reimbursement with alternative payment

Respondents were asked about their willingness to replace existing vehicle reimbursements with a substitute payment that does not require car ownership. The answers were not uniform (Fig. 4). 35% were not willing to consider any alternative payment to their car reimbursements, while 26% would be happy to accept a substitute payment. The majority of respondents (39%) were not sure of their position but indicated that they were "willing to consider it." In other words, nearly 2/3 of public sector workers expressed support for – or willingness to – consider alternative salary remuneration in lieu of the traditional vehicle reimbursement subsidy.

Several demographic and travel-related characteristics appear to be salient factors in affecting respondents' positions on this issue. As shown in Table 4 below, a logistic regression that explored the willingness to replace vehicle reimbursement with a substitute that does not require car ownership, found four significant variables when comparing the "Maybe" and "No" groups to the "Yes" group:

1. *Seniority* – every additional year in the public sector reduces the chance that a respondent would consider replacing vehicle reimbursements by 5.5%. *"By this point I have already gotten used to the car. If I had been offered such an option at an earlier time, I would certainly have chosen it. At least for that stage,"* said one worker with relatively high seniority.

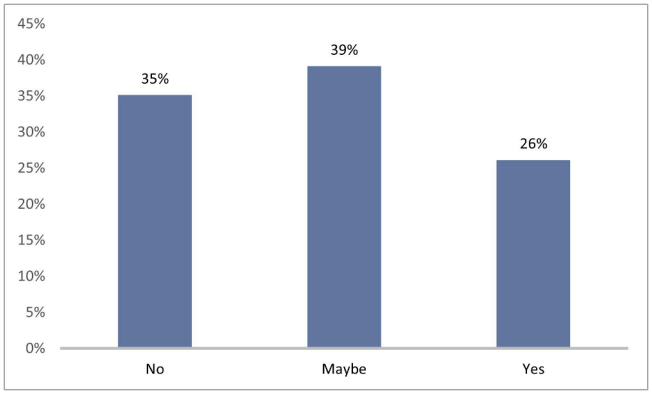

Fig. 4. Willingness to replace vehicle reimbursement with a substitute that does not require car ownership.

Table 4
Variables associated with the willingness to consider a vehicle reimbursement substitute.

Exp(B)	Sig.	S.E.	B	
12.876	0.107	1.588	2.555	*Constant*
0.369	**0.041**	**0.488**	**−0.998**	**Gender**
0.945	**0.005**	**0.020**	**−0.057**	**Seniority**
0.554	**0.026**	**0.265**	**−0.591**	**Frequency of commuting by car**
1.626	**0.001**	**0.147**	**0.486**	**Extent to which eligibility for vehicle reimbursement affects car ownership**
1.211	0.381	0.219	0.191	Education
0.928	0.697	0.192	−0.075	Income
0.498	0.138	0.471	−0.698	Cars per adult in household
1.279	0.649	0.541	0.246	Central government or other sectors
0.876	0.418	0.163	−0.132	Type of reimbursement
1.405	0.123	0.220	0.340	Frequency of work journeys

2. *Gender* – women have a 63% *less* chance of considering a replacement salary remuneration for vehicle reimbursement. Possible explanations for this significant disparity include their tighter schedules and the unequal division of domestic roles between men and women in Israel (Haris-Olshak, 2015), an enhanced personal sense of confidence when driving, or financial conservatism relative to men (Jianakoplos & Bernasek, 1998).
3. *Frequency of commuting by car* – for every increase in the level of commuting frequency (not at all, 2–3 times a month, 1–2 times a week, 3–6 times a week), there is a corresponding decrease in the likelihood of considering an alternative to vehicle reimbursement. The higher the car dependency is, the lower the willingness to give up the vehicle reimbursement benefit.
4. *Dependence on vehicle reimbursement for covering car costs* – every increase in the degree to which employees perceive the reimbursement as having an effect on their decision to own a car (from "had no influence" to "great extent", as shown in Fig. 2), the likelihood of their considering an alternative to vehicle reimbursement increases by a factor of 1.6. It seems that this group of public employees, ultimately, is more interested in receiving extra income than in owning an additional car per se. Respondents cited the disadvantages of the current situation, explaining that in practice they may not really need a car at all or do not need a second one. "*If I didn't own a car my salary would decrease. Although I commute by train and electric scooter, I'm obligated to keep the car"* said one of the workers. Another respondent explained: "*I didn't buy a car, but took one from my parents that they planned to sell. We are a couple that owns two cars in order to receive the benefits. One sits in the parking lot and the other one is actually in use. It is ridiculous that for a salary raise you need to drag a vehicle onto the roads*."

5.4. Changing vehicle reimbursement: Dynamics between the employer, the trade union and the employees

Salary arrangements in the Israeli public sector are a result of negotiation between labor unions and the government as employer. Therefore, a critical issue in any initiative to reform the present policy involves the openness of the workers' representatives in the powerful public service union to consider alternative payment schemes. Interviews with present and former government officials, as well as the representatives of the Israeli Civil Service Labor Union, were conducted to explore the potential for change.

From the labor union's point of view, their first interest as representative is to preserve the status quo. However, due to a growing awareness of the problematic dynamics of commuting by car, some

willingness appears to cash-out free parking, i.e accept monetary compensation instead of free parking space at work. Such an alternative parking management scheme would contrast with current government policies. The costs of supplying free parking to workers rise every year. For the central government, it is currently estimated to constitute an annual expense that reaches hundreds of millions of shekels.[7] (These are the direct costs that the government, as an employer, bears for the cost of parking. In addition, societal costs of free-parking also include the external costs of traveling to work by cars).

Also, meeting the demand for safe and expeditious arrival by car has become increasingly challenging. Growing traffic congestion and parking shortages lead to worker expectations of additional compensation for lost hours on the road. A conspicuous example of such dynamics can be found among employees who work in the central government offices in Tel Aviv. Although these offices are located in the most crowded urban center of Israel, where there is reasonable public transportation access, in practice most public employees choose to drive to work. This leads to days when there is as much as an hour and a half delay for workers leaving the central government building's parking lot. These drivers demanded (and received) from their ministries additional compensation for time spent in the parking lot (Etzion, 2019).

Similarly, workers (most of whom worked for the Ministry of Environmental Protection) and their representatives voiced considerable objections to the Treasury Ministry's intentions to transfer1,800 employees who had enjoyed free parking facilities for every employee, to a new building, built intentionally with limited parking capacity (only 350 parking spaces).While these employees eventually moved to the new building, because of the protests, a new building that is planned for other government employees will be built with a parking space for every worker.

According to the Chairperson of Israel's Civil Service Labor Union, the issue of changing the salary component has never been seriously discussed and Israel's treasury officials have never offered any alternative concrete proposals. In fact, treasury officials project that changing the constituent components of existing salaries among public servants is expected to be a complex, and ultimately costly, step. Recognizing it as formal income could result in additional pension liabilities for the government of between 140 and 190 billion shekels (Shmil, 2014). There is some uncertainty about the full implications of formally integrating vehicle reimbursement into the taxable income of workers' salaries. In such cases, employers and employees would need to expand associated pension payments. This is a result of an apparent conflict with other legal obligations, including the "Severance Pay Law" and the "Retirement Service Law". Another concern involves the need to extend this obligation to non-eligible populations. There is even greater confusion about the meaning of including compensation for additional components of the vehicle reimbursement currently paid by the government, such as: a license fee, insurance costs as well as free parking in the workplace (Asher Haled, Attorneys Office, 2014; Science and Technology committee, 2017).

6. Discussion

Our findings support the intuition that the requirement to prove car ownership in order to receive extra payment incentivizes a substantial segment of the employees to own one or more vehicles. The effect though is not uniform among workers. The vehicle reimbursement's influence is more significant among low-income workers, a finding consistent with existing studies in the literature, explaining the relationship between costs of automobiles and car ownership (Chin & Smith, 1997; Weinberger & Lucas, 2011).

Results also show, however, that for almost half of Israel's public employees, receiving automotive reimbursement does not have any meaningful impact on their decisions regarding car ownership. Explanations given by such respondents pointed to previous car ownership and/or to a feeling that owning a car was a necessity regardless of employment. These findings are consistent with the standard model of demand presented in the theoretical section. Consumer preferences vary, and are a function of the degree to which workers have a car-dependent lifestyle (Goetzke & Weinberger, 2012; Lucas & Jones, 2009; Weinberger & Goetzke, 2011).

Regarding usage, survey results show that employees prefer to commute by car rather than save money by selecting cheaper travel options. In practice, their decision to drive to work has little or nothing to do with their actual need to drive their car during the course of their work routine. These findings are consistent with dynamics described in the literature (Ghimire & Lancelin, 2019; Hess, 2001; Weinberger & Lucas, 2011): Employees choose to drive to work as long as there are no significant constraints placed on commuting by car. Many explanations appeared over the years for these dynamics, including the costs of public transport relative to those already paid for fixed car costs (Weinberger & Lucas, 2011), the perceived costs of public transport (Gardner & Abraham, 2007), perceptions about the quality of travel alternatives, knowledge gaps regarding alternatives, the degree of car dependent lifestyle, etc. (Lucas & Jones, 2009; Weinberger & Lucas, 2011). Qualitative responses to the survey undertaken in this study also indicated that the reimbursement payment affects at least some people's choice to live a greater distance from work, which in turn increases car dependency.

In addition, employees' responses indicate that contrary to conventional wisdom, a considerable proportion of workers are not committed to the current vehicle reimbursement arrangement and are willing to consider replacing it with a salary component of equal financial value that does not include a requirement of car ownership. Statistically, this position is most commonly found among males, employees with low seniority or workers who do not commute by car every day. One possible explanation is that these workers have not yet adopted a car-dependent-lifestyle nor have they gotten used to the "psychological contract" according to which vehicle reimbursement is an assumed salary component.

The presence of a strong labor union appears as a confounding factor in any willingness to change Israel's transportation-related salary component, or any other transportation-related fringe benefit. Historical employment and transportation arrangements, accompanied by local laws and regulations, lead the employer, in this case the Israeli government, to avoid pushing for substantial changes. This is in line with the description of the dynamics in Belgium presented by Vanoutrive et al. (2010). The presence of work councils at the workplace affects mobility management initiatives, and the perception of some transportation-related benefits as part of remuneration standards.

There are a few lessons to be learned with regards to the broad implications of employer policies on employees' transportation preferences. First, while the theoretical literature so far has focused on the role of the state in reducing private car usage through regulatory and planning measures (congestion toll, parking policy, etc.), little emphasis has been placed on its role as an employer. This study shows that contrary to what might be expected, as employers, countries may also adopt policies that increase private transportation use, despite the known negative effects.

Second, as observed by Van Malderen et al. (2012) and Vanoutrive et al. (2010), the role of the employer in affecting transportation policy receives scant attention in the academic literature. If a country or locality wants to reduce external costs from work-related transportation, trying to influence individual preferences and choices through

[7] Assuming a use of 65% in private vehicles, out of 77,482 central government employees, a parking cost of 35 ILS per day, and 200 work days per year, these costs amount to approximately 388 million shekels per year. The Tel Aviv Municipality reports that in 2017, it spent over 8 million shekels of the municipal budget on parking services for employees (Science and Technology committee, 2017).

regulatory interventions is not enough. The policy of the organization to which the individual belongs also plays an important role. A compelling example can be found in Victoria, Australia and its attempts to impose parking levies. The levy introduced off-street parking spaces in Melbourne's central business district and surrounding inner city areas for long-stays, in order to reduce car commuters and open up parking options for shoppers and visitors. Hamer et al. (2012), however, showed that for a significant proportion of commuters who contribute to the congestion problem, the levy was actually paid by their employers. In practice, employers were at odds with concomitant transportation regulation efforts. Therefore, effective implementation of transportation policies should consider the relevant non-transportation actors (Cohen-Blankshtain, 2008), such as employers, labor unions and others, and better identify their various interests and objectives.

The case study of Israel presented can serve as an exceptional example of how transportation-related subsidization and fringe benefits given by employers, can affect employees' decision-making in the short term (in their decision to own a private car) and in the long term (on usage habits and place of residence). The employer can trigger and perpetuate the "ratchet" effect of car dependency described in the literature (Jones, 2011; Lucas & Jones, 2009) through a policy of transportation benefits (see Fig. 5).

Our results indicate that changing present vehicle reimbursement policies can truncate the cycle of car dependency at various stages. A different salary incentive structure could serve to reduce ownership of private cars; alter usage patterns by indirectly supporting new forms of transportation; and even affect decisions regarding where commuters choose to live.

Although harder to prove, it can be assumed that the transportation policy of the largest employer in the Israeli economy affects the country's built environment. In the short term, hundreds of thousands of employees burden the already congested roads and parking infrastructures. In the long term, the need to provide the infrastructure for employees' car commuting encourages auto-oriented development. This unfortunate relationship is not direct and is manifested only after a long period of time. The construction of new buildings with parking available for every employee as a result of employees' demands, however, can serve as an example of such dynamics, where transportation benefits such as vehicle reimbursement ultimately contribute to an environment designed for cars.

Fig. 6 expands on the conceptual framework developed by Nijland & Dijst (2015) regarding the relationship between transportation-related fringe benefits, employers and employees. First, in their conceptualization, fringe benefits reflect employees' preferences. One can learn from the Israeli case, that the type of benefits provided are not always a result of employees' 'free choice', and that they can be determined by historical employment arrangements. Intervening factors, such as the presence of a strong labor union, can serve to entrench policy, adding a level of negotiation and transaction costs to any attempts at policy reform. Secondly, the type of transportation-related benefits is not only affected by employee and employer preferences, as manifested in this model, but it also affects individual and employer decision-making (e.g., place of residence or type of building). As demonstrated by the arrows between fringe benefits, employers and employee characteristics in Fig. 6, causality can go in both directions.

Admittedly, it can be argued that unlike vehicle reimbursement, transportation-related fringe benefits constitute a flexible salary component that depend on employers' own decisions. Sometimes, however, as can be seen in the Israeli case, strong labor unions and/or local laws can hinder any change in current employment arrangements. Also, workplaces operate according to the prevailing, accepted norms. Assuming that they are competing for high qualified employees, workplaces might be afraid to initiate changes that undermine their ability to recruit and retain employees. Thus, they will continue to make costly transportation-related decisions (like renting parking lots in expensive business centers or choosing a particularly accessible location for commuter convenience) as long as they manage to maintain their relative advantage. This research only offers a conceptual framework. Further research is recommended to understand the relationships and dynamics between employers, employees, and their representatives with regard to employees' mobility policies.

Also, mitigating car use and improving public transportation are usually perceived in the literature as distinctly different transportation policy goals (Martens, 2017; Martens, 2015). From this case we can

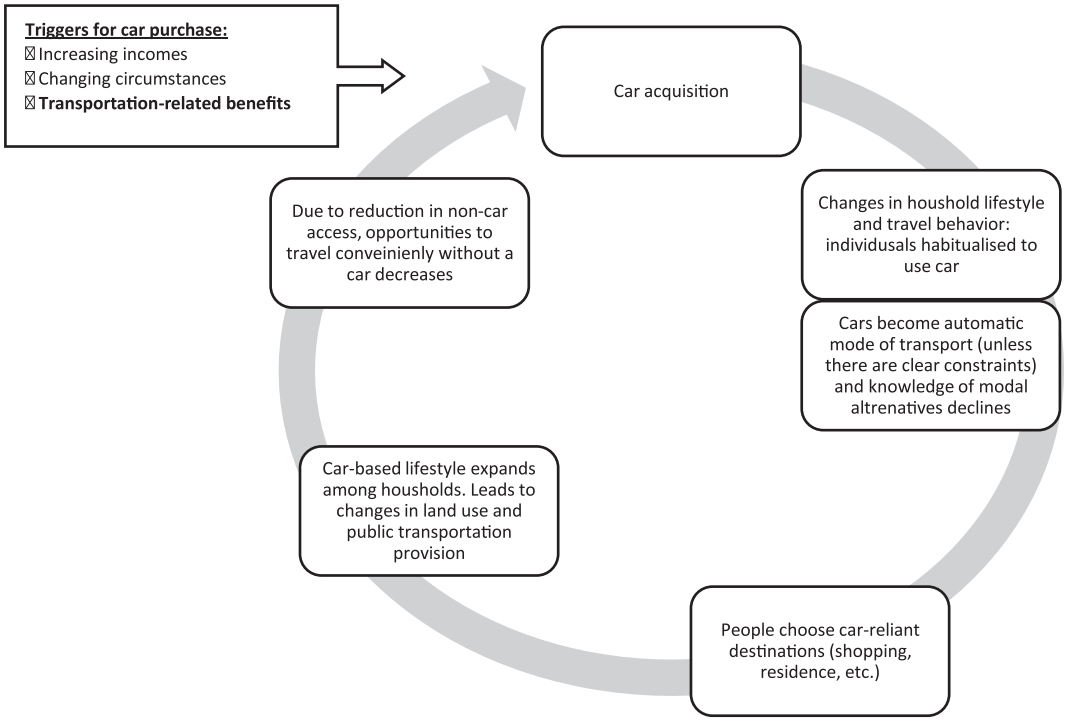

Fig. 5. Conceptualization of car dependence dynamics based on Lucas and Jones (2009).

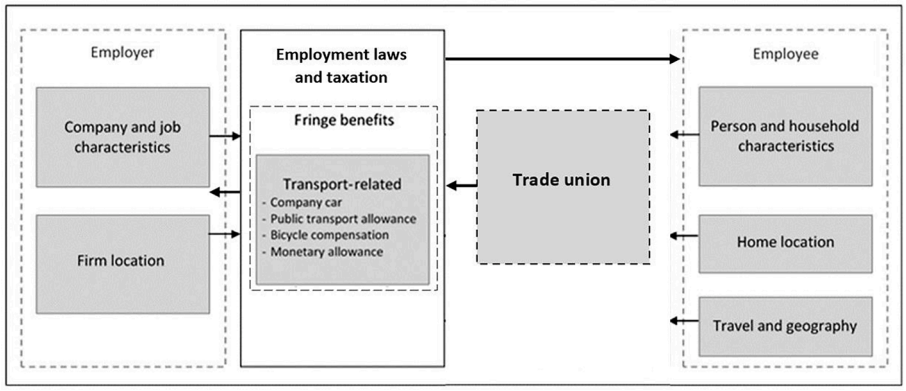

Fig. 6. Expanded conceptual framework of transportation-related fringe benefits, based on Nijland & Dijst (2015).

discern a possible relationship between them: the prioritization of private transportation over public transportation by decision-makers in the government sector, by means of car-related benefits given by employers, serves to weaken public pressure to improve public transportation services. As a result, pressure increases to expand the infrastructure needed for private vehicles. Planning and economic resources are then diverted to further investment in auto-oriented infrastructures, and attempts to prioritize other means of transportation encounter opposition.

The study has several limitations. First, assessment of the effect of the salary component on increased ownership and use of cars is based on employee responses. As a result, there is a fear that their perceptions may be skewed and do not accurately reflect reality. However, the sample size, variance in responses, as well as high vehicle ownership rates among survey respondents compared to the general population (95.7% of survey respondents had at least one car in the household compared with 72.1% in the general population (CBS, 2019c)), mitigate this concern to some extent. In addition, the validation of the quantitative findings by the qualitative findings offers an important contribution to understanding the related dynamics. The verbal explanations by employees as to how the car-reimbursement salary component constitutes a consideration in their decision to purchase a vehicle and ultimately influences their decisions to use it, significantly reinforces claims that this issue is a germane concern for the public sector. Although it can be said that respondents only offer their subjective perceptions, the decision to purchase a private car is a substantial one from an economic and personal perspective, and vehicle usage is an objective action that either occurs or doesn't. Therefore, it can be argued that employees' answers on this topic likely reflect actual considerations in decision-making and behavior. Further research should examine the gaps in vehicle ownership and use, as well as those existing between vehicle reimbursement recipients and non-recipients, while controlling for other explanatory and intervening variables. Another research limitation is that the assessment of workers' willingness to replace vehicle reimbursement was based on a general question, rather than clearly defined alternatives. As the research team was aware of this limitation, extra precautions were taken by analyzing the group of "Maybe" and "No" compared to the "Yes" group.

In order to be effective, design of alternative compensation packages for such a large class of workers needs to consider the diversity among employees. As Van Der Meer & Van Veen (2009, p.3) explain: "Standardization of employment benefits for large groups implies that the benefits in the collective labor agreement (CLA) are adapted to a hypothetical employer and employee, both with ideal typical characteristics. Variation in employer and employee preferences is seldom incorporated. As a result, the collective benefits of CLAs are created partly at the expense of meeting the varying local preferences of both employers and employees and thus seem sub-optimal".

Therefore, further research, possibly led by government officials, together with employee labor representatives, should examine employees' willingness to adopt a number of clearly defined alternatives, as well as estimated expected costs of their implementation. The study by Zijlstra, Goos, and Verhetsel (2019) that looked at possible compensation for company cars holders in Belgium using a mixture-amount stated preference method can serve as a possible model and would be an excellent subject for evaluation research, before adopting sweeping policy reforms in this area. This approach considers the total amount (which already varies among employees) and involves a variety of both remuneration options (e.g. pension-related monetary compensation, telecommuting options, cashing-out free parking, etc.), and travel choices (e.g., whether for work-related or leisure travel).

Other areas of research that could be valuable for policy making in this area include an international comparative review of car-benefits to public sector employees, and further studies on the effect of employment regulation and tax reforms on the adoption of different transport-related salary benefits. Studies that address the impacts of government sponsored employee travel benefits in low-income countries (e.g., Mauritius (Pay Research Bureau, 2013) and Kenya (The National Treasury & Economic Planning - Republic of Kenya, n.d.)), would be especially valuable, as these countries tend to be underrepresented in the published literature. Such a comparative study may also contrast "take it or leave it" travel reimbursement policies with those that offer employees a choice of compensation packages. In addition, future studies may expand the investigation into the role on labor unions in promoting sustainable commuting, considering the possible discrepancies between unionized workers' interests and broader social and environmental interests.

7. Conclusion

Governments often serve as large employers. As such, their transport-related policies for employees can have a significant impact on overall transportation infrastructure and behavior. This article focuses on the effects of governmental employment practices that reimburse vehicle expenses to public sector employees. The primary unintended consequence appears to be the incentivizing of private car ownership and use. The magnitude of this effect grows in relation to the ratio of the reimbursement amount relative to a worker's salary.

The role of these employers, as well as other intervening actors such as labor unions who affect the formulation of transport-related benefits, cannot be underestimated when designing future transportation policy. As indicated by the case study, the government's transportation policies when it wears its "employer's hat", can be in direct opposition to stated government goals of limiting social and environmental impacts of increased reliance on private transportation and can serve to undermine the broader transportation policy objective of improved mobility.

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Yaara Tsairi: Conceptualization, Methodology, Formal analysis, Investigation, Data curation, Visualization, Writing – original draft, Writing – review & editing. **Alon Tal:** Conceptualization, Methodology, Validation, Writing – review & editing, Supervision. **David Katz:** Conceptualization, Methodology, Validation, Writing – review & editing, Supervision.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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