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Why (not) abolish fares? Exploring the global geography of fare-free public transport

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Abstract
Although the policy of abolishing fares in public transport—here referred to as "fare-free public transport" (FFPT)—exists in nearly 100 localities worldwide, it has not been thoroughly researched. To start filling this gap, I enhance the conceptual clarity about fare abolition. I start by providing a definition of FFPT, discussing its different forms, and introducing a distinction between "partial" FFPT and—the main focus of the paper—"full" FFPT. Next, I distinguish three perspectives on full FFPT—first, approaches that assess fare abolition primarily against its economic impact; second, analyses that look at its contribution to "sustainable" development; third, more critical arguments highlighting its politically transformative and socially just potential. Against the background of this debate I offer the most comprehensive inventory of full FFPT programmes to date, and begin to chart and examine their global geography. As a result, FFPT emerges as a policy that takes diverse forms and exists in diverse locations. Supported and contested by diverse rationales, it cannot be analysed as transport instrument alone.

Keywords Fare-free public transport · Public transport · Urban transport · Transport policy · Transport geography · Fares

Introduction

Although the policy of abolishing fares in public transport (PT)—here referred to as "fare-free public transport" (FFPT)—exists in full form in nearly 100 cities worldwide, it remains highly controversial. On the one hand, it is criticised by transport engineers and economists. They argue that from the perspective of utility, efficiency and economic growth (Cervero 1990; Storchmann 2003), zeroing fares may harm PT networks financially and generate "useless mobility" (Baum 1973; Duhamel 2004). They further claim that FFPT negates the essentially liberal principle according to which a commodity such as collective transport must always come at a "right" price (CERTU 2010). Moreover, scholars and practitioners who perceive

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mobility problems through the question of "sustainable" development (Kębłowski and Bassens 2018) point out the weakness of FFPT in terms of generating a modal shift from private vehicles to PT (Cats et al. 2014, 2017; Cervero 1990; Fearnley 2013). On the other hand, albeit much less prominently, a number of arguments in favour of FFPT have been raised by academics working in the field of transport and mobility (Briche et al. 2017a; b; Volinski 2012), as well as outside it—most notably by political scientists (Ariès 2011; Larrabure 2016), urbanists (Brown et al. 2001, 2003; Kipfer 2012; Maricato 2013), critical historians and sociologists (Schein 2011), and communication scholars (Santana and Silva 2013). FFPT is also praised by a plethora of non-scientific publications, in which political activists and public officials (Brie 2012; Cosse 2010; Ługowski 2017; Prince and Dellheim 2018; Robert et al. 2015) have defended fare abolition, often speaking from cities where this policy has been put to a test (Giovanangelli and Sagot-Duvauroux 2012). They posit that FFPT may not only generate operational savings, generate a modest shift from cars to PT and reduce car traffic externalities, but also work towards a social and political transformation.

Despite the controversy surrounding fare abolition, few studies have attempted to closely scrutinise it, focusing on specific regions or countries (Briche et al. 2017; Cordier 2007; Volinski 2012), or on specific cases (Brown et al. 2003; Cats et al. 2017; Fearnley 2013; van Goeverden et al. 2006; Storchmann 2003). Academics—within and outside the field of transport and mobility—rarely discuss FFPT. As a result, it is insufficiently researched, and there exists no comprehensive global overview of fare abolition programmes. In this paper I aim to start filling this gap. My first objective is to enhance conceptual clarity: in the following section, I provide a definition of FFPT and discuss its different forms. Most notably, I introduce a distinction between "partial" FFPT and—the main focus of the paper—"full" FFPT. Next, building on a typology of approaches to urban transport that I have developed elsewhere (Kębłowski and Bassens 2018), I distinguish three perspectives on fare abolition—first, arguments that refer primarily to its economic performance; second, analyses that focus on its contribution to "sustainable" development; third, arguments highlighting its politically transformative and socially just potential. As these three outlooks on FFPT offer a variety of arguments pro and contra its viability and desirability, they serve as an analytical lens through which I identify and examine the geographical distribution of FFPT. Consequently, the key contribution of the paper lies in providing the most comprehensive inventory of full FFPT programmes to date, charting their geography, and beginning to unpack the diversity of different motivations behind fare abolition. To this end, I draw on three empirical vignettes to highlight the diversity of existing fare abolition programmes, and to give a preliminary insight into the impact of FFPT. This constitutes a first step towards providing a comprehensive study of how FFPT affects local finances, mobility patterns, and socio-political geography of cities and towns in which it is applied. Such a review should form part of a future research agenda, which builds on several conclusions drawn from the mapping exercise explored in the paper.

Conceptualising and defining different forms of FFPT

To prepare a comprehensive global overview of FFPT, I began by identifying academic literature on the policy. I searched Google Scholar, Scopus, Web of Science, China Science and Technology Journal Database, and cairn.info for sources in Chinese (Mandarin), English, French, German, Polish, Portuguese, Russian and Spanish.[1] The scope of thus retrieved scientific literature was nonetheless very small, as less than 50 relevant academic articles were found. Therefore, the second step towards creating an inventory of fare abolition programmes involved studying a variety of FFPT-related websites, blogs, Wikipedia entries and thematic Facebook groups and sites.[2] Needless to say, I did not take these non-scientific internet sources verbatim, and instead approached them as entry points for identifying existing fare abolition programmes. I then verified each case reported by these outlets by analysing documents of relevant authorities in localities where particular cases were reported to have been implemented, and by scanning local think-tank and media reports. Moreover, I conducted my own research on selected full FFPT cases in Estonia, France and Poland, and since 2015 have regularly participated in FFPT-related conferences and seminars. Thus gathered empirical material includes 40 semi-structured interviews with a variety of stakeholders (municipal officials, PT operators, urban activists) involved in the FFPT policy network, from whom information about specific cases could be acquired. I concluded collecting data from these various sources in January 2017—a timeframe that is reflected throughout the paper.

What emerges from my research is that the idea of "free" public transport is far from uniform, as it takes a variety of forms, exists in diverse locations, and for diverse reasons. However, before exploring their landscape, several conceptual issues need to be clarified. First, it is important to address an oft-made critique according to which the terms "free public transport" and "free transit" inaccurately suggest that as riding on board of public transport is "free," nobody pays for it. Accordingly, throughout the paper I refer to the notion of "*fare*-free" networks. It highlights the absence of tickets or distribution of zero-fare tickets as the principal and unique characteristic of the policy, and accentuates that fares are "free" only because they are fully subsidised. A further clarification has to be made with regard to the ownership structure of fare-free transport. There exists a plethora of fare-free collective transport services that are *private*. Their instances include services offered by shopping centres interested in linking up with customers, large companies providing a commuting service to their employees or paying for their travelcards, hotel shuttles, or car-pool initiatives operating at different degrees of formality, and often

[1] I applied the following keywords (and their translations into respective languages listed above): 'free transit', 'free public transport', 'zero-fare public transport' and 'fare-free public transport'. In English, the 'transport*' string was applied to capture both 'transport' and 'transportation', thus embracing European as well as North American contributions.

[2] They have included sites attempting to depict the worldwide landscape of FFPT (https://farefreepublictransport.com, https://www.facebook.com/freepublictransport, http://freepublictransit.org/, http://fptlib.blogspot.com.ee/, http://frepubtra.blogspot.com.ee/, www.tarifazero.org) as well as those focusing on particular global regions: Europe (http://farefreeeu.blogspot.com.ee/), Africa (http://farefreeafrica.blogspot.com.ee/), post-Soviet Europe and Asia (http://transport-vsem.livejournal.com/), and Australia (http://farefreeaustralia.blogspot.com.ee/). Finally, I have analysed country-specific sites, looking at FFPT from the perspective of countries such as Brazil (www.farefreebrazil.blogspot.com.ee), China (http://farefreechina.blogspot.com.ee/), India (http://farefreeindia.blogspot.com.ee/), New Zealand (http://farefreeindia.blogspot.com.ee/), Philippines (http://farefreephilippines.blogspot.com.ee/), Poland (www.facebook.com/bezplatnakomunikacjamiejskawpolsce) and Taiwan (http://farefreetaiwan.blogspot.com.ee/).

organised via online platforms. The explicit focus of this paper is on fare-free *public* transport (FFPT), understood as a particular form of subsidy provided by (local) governments and institutions.

However, as I further explain below, not all instances of FFPT are equal, depending on when and for how long fares are suspended, where the fare-free programme occurs, and who obtains access to free rides. In other words, while some cases of FFPT can be identified as "full," others are "partial", as they incorporate important temporal, spatial and social limitations (as shown in Table 1). I define "full" FFPT as a system implemented on the vast majority of routes and services provided within a given PT network, available to the vast majority of its users, most of the time, and for a period of at least 12 months. "Partial" FFPT, on the one hand, appears to exist under four main forms: (a) "temporary," (b) "temporally-limited," (c) "spatially-limited," or (d) "socially-limited".

Temporary FFPT is implemented when fares are abolished for a short period of time, defined here as at least 1 month and less than 12 months. This may happen when after a limited trial period FFPT is assessed not to have produced the anticipated results, and consequently is abandoned. This occurred in Stavanger (Norway), where having abolished fares in August 2011 the municipality restored them in December that year. This definition of temporary FFPT excludes a variety of fare-free campaigns explicitly conceived as exceptional and isolated events, and put into practice for a very limited time, for instance to respond to high air pollution levels, natural disasters, terrorist attacks, or financial and political crises, or to promote PT usage within the framework of the "car-free day" celebrated annually on 22nd of September in various of municipalities worldwide.

Temporally-limited FFPT occurs when fares are not charged in specific and regular periods of time. For instance, in Chengdu (China, Sichuan) fares do not apply in the bus network before 7 a.m., while in Singapore collective transport is free to use before 7.45 a.m. Thereafter tickets have to be validated.

Spatially-limited FFPT applies to a specific section of the PT network, a specific mode of transport, or to PT services that are in fact composed of only one or two routes, and therefore could hardly be considered as a network. Examples of spatially-limited FFPT systems can be found in Melbourne (Australia), where free travel is available within a strictly-delimited "free tram zone," and in Boston (MA, United States), where it is limited to a single service within a larger PT network. Instances of specific ticket-free modes include urban ferries in Amsterdam (The Netherlands) and short-distance "neighbourhood" buses in Chengdu (China, Sichuan). Many cases of spatially-limited FFPT are located in the United States, where it is common for nature parks and university campuses to offer fare-free services that follow one or two routes only.

Socially-limited FFPT embraces a specific group of users, which may include children (e.g. Kingston, ON, Canada), youth (Kołobrzeg, Poland), students (Zagreb, Croatia), the disabled (Lublin, Poland), the elderly (Canberra, Australia) and the pensioners (Shanghai, China). PT companies frequently apply this form of FFPT, in particular in Europe. One example of a well-established socially-limited fare-free scheme is the old age pensioner (OAP) concessionary fare programme in the United Kingdom (Fearnley 2006; O'Reilly 1990). Socially-limited fare abolition may well exceed the urban scale and be applied on the national level—for instance, in Slovakia the railway network in offers zero-fare tickets to children, students, retired persons and seniors. Furthermore, socially-limited FFPT may be approached as a form of providing social welfare to low-income groups, the unemployed (Gdańsk, Poland) the disabled and their guardians and caretakers (Tarnów, Poland), or as free service for meant to attract visitors and tourists (Geneva, Switzerland), or car owners (Kraków, Poland).

Table 1 Typology of different forms of fare-free public transport (FFPT)

FFPT form	Key features	Selected examples of FFPT programmes
1. Full FFPT	A ticket-free system implemented on the vast majority of routes and services provided within a given urban PT network, available to the vast majority of its users, most of the time, and for a period of at least 12 months.	- Aubagne (France). The access to the entire local bus and tram network is unconditionally free of charge to all users, at all times. - Tallinn (Estonia). Free rides are available on all services (buses, tramways and trolleybuses), at all times, but only to official city residents. Visitors and commuters to the city continue to pay fares. As many as many as 95% of all trips are made free of charge. See Tables 3 and 4 in "Appendix" for a complete list of existing and discontinued full FFPT cases
2. Partial FFPT	A ticket-free system that is limited in one or more of the ways described below:	
(a) Temporary	Fares are abolished for a short period of time, defined here as less than 12 months.	- Asheville (North Carolina, United States) in August-November 2006; - Cape Breton (Nova Scotia, Canada) in July-August 2016; - Salt Lake City (Utah, United States) in October 1979; - Stavanger (Norway) in August-December 2011; - Topeka (Kansas, United States) in May 1988.
(b) Temporally-limited	Fares are suspended in specific yet regularly occurring periods of time.	- Before the morning peak (before 7 a.m. in Chengdu, Sichuan, China; before 7.45 a.m. in Singapore); - On every first day of the month (Jelenia Góra, Poland); - On weekends (Gorlice, Poland).
(c) Spatially-limited	Fares do not apply to a specific area or mode of transport, or the FFPT service is limited to 1 or 2 routes.	- Specific zone: Melbourne (Australia); - Specific service within a larger "paid" public transport network: Boston (MA, United States), Columbus (OH, United States) and Kuala Lumpur (Malaysia); - Specific mode: urban ferries in Amsterdam (The Netherlands) and short-distance "neighbourhood" buses in Chengdu (China, Sichuan); - A small-scale service (1 or 2 routes), e.g. in Læsø (Denmark), Treasure Valley (ID, United States), Stanford (CA, United States), Zielonka (Poland).

Table 1 (continued)

FFPT form	Key features	Selected examples of FFPT programmes
(d) Socially-limited	Fares do not apply to a specific group of users.	- Children (Kingston, ON, Canada); - Youth (Kluczbork county, Kołobrzeg, Lublin; all Poland); - Students (Zagreb, Croatia); the disabled (Lublin, Poland; Xiamen, China, Fujian) and their guardians and caretakers (Tarnów, Poland); - The elderly (Canberra, Australia) and pensioners (Shanghai, China); - Low-income groups (Timişoara, Romania), the unemployed (Gdańsk, Kraśnik, Radom, Rzeszów, and Tarnów; all Poland); - Visitors and tourists (Geneva canton, Switzerland); - Car owners (occassionally in Kraków, Warsaw; both Poland).

Finally, different partial forms of FFPT can be combined within the same transport system. For example, in Płock (Poland) FFPT is spatially-limited to a single line, the free use of which is further temporally-limited to weekends only. In Leuven (Belgium) fares are not charged in a small part of the local PT network (night buses), and only in specific periods of time (weekends).

Although the diversity of partial fare-free campaigns remains largely unstudied, in the remainder of the paper I focus on a somewhat more urgent issue of exploring full FFPT programmes as particularly holistic cases of fare abolition.

Why (not) abolish fares? Three perspectives on the (non-)viability and (non-)desirability of FFPT

The diversity of forms of fare abolition and the continuous growth of the number of cities and towns implementing this policy have not yet led to a fervent debate, within and outside academia. Nonetheless, when reviewing arguments in favour or against full FFPT, three main perspectives on this policy can be distinguished. Building on a typology of different approaches to urban transport that I have presented elsewhere (Kębłowski and Bassens 2018), I summarise them as viewing FFPT from the perspective of—respectively—economic rationality, sustainable development and socio-political transformation.

FFPT: economical?

Most transport academics and practitioners seem to view FFPT through the lens of utility, efficiency and economic growth. They criticise it for making negative impact on the financial stability of PT networks, as it reduces fare-box revenue while increasing costs related to additional maintenance, security, and higher passenger demand (Fearnley 2013; Storchmann 2003). As explained by the head of the PT company in Montpellier (France), many PT operators consider zeroing fares as a policy that "deprives public transport from resources essential for its development" (CERTU 2010). Therefore, from this perspective fare abolition is viable only in small PT networks in which the share of ticketing revenue, the demand for PT and passenger volumes are low (Duhamel 2004; Fearnley 2013), rather than in larger PT networks in which fare systems are more complex, and the market for public transport is significantly larger (Perone 2002).

Indeed, analysing a variety of US cases of FFPT, Volinski (2012) demonstrates that abolishing ticketing systems in small PT networks can lead to a significant decrease of equipment and personnel costs, which are often higher than the revenue raised from fares. However, there is also evidence from larger PT networks in which fare abolition helped to increase local budget revenue. In Aubagne (France), the implementation of FFPT facilitated an increase of local taxes, as discussed below in the section on European cases of fare abolition. In Tallinn (Estonia), the largest existing full FFPT programme worldwide, zeroed fares are offered to residents only. As a result, approximately 25,000 people registered in the city (of whom approximately 60% already lived within its borders), and Tallinn authorities can collect part of their personal income tax. This revenue amounts to €40 m annually, and is much higher than lost farebox revenue (− €12 m) combined with investments made to respond to increased demand (− €11.7 m) (Kębłowski et al. 2019).

Several economic studies further criticise FFPT as a "false good idea" that challenges the logic of the transport market. They argue that whereas FFPT offers a misguiding "illusion" (UTP 2011), the hard "economic reality" (FNAUT 2015) requires that collective transport follows the tenets of urban entrepreneurialism—it should function as a self-funding or for-profit agency subjected to market mechanisms, rather than a publicly subsidised system, or a welfare programme in which public transport acts as an element of a social policy. A fare-free service is further claimed to have no value to its providers and users alike, creating "an illusion that there are goods or services that have no cost" (CERTU 2010). Fearnley (2013) thus expresses a concern that "a fully 100 percent subsidised service will lose its focus on cost effectiveness and market orientation." In other words, one of the main reasons why transport practitioners do not want reducing fares to zero is because they see FFPT as eradicating fundamental financial incentive for PT operators (Duhamel 2004), and leading to symbolic devaluation of transport service in the eyes of its passengers-clients. As a result, the weakening of the relationship between the network and its users is argued to increase the amount of "problem riders." This phenomenon was indeed observed in several localities in the United States, particularly in—now discontinued—full-FFPT networks in Austin (TX) and Mercer County (NJ), and a socially-limited programme in Seattle (WA) (Hodge et al. 1994; Volinski 2012). However, Cervero's (1990) claim that this effect may be "universal" is at least partly refuted by the lack of evidence of "rowdiness" and vandalism in overwhelming majority of FFPT cases in US (Hodge et al. 1994; Volinski 2012), Poland (Ługowski 2017), and France (Briche et al. 2017a; b), three countries with the largest number of FFPT programmes (26, 21 and 19 respectively).[3]

Adding to the critiques made by economists, transport engineers further criticise FFPT for generating mobility that does not have a clear purpose (Baum 1973; Duhamel 2004). Since fares are meant to function as a demand management mechanism that prevents short or marginal trips and controls passenger behaviour, abolishing them supposedly leads to irregular use of PT networks, and generates more "non-productive trips" (Cats et al. 2014) that do not derive from actual mobility needs. There is very strong evidence that fare abolition "is virtually certain to result in significant ridership increases no matter where it is implemented" (Volinski 2012), which in certain contexts "exceeds expectations" (Fearnley 2013) and is considered "impressive" (Hodge et al. 1994). Many PT operators associate such a radical trip generation with the problem of network overcrowding, as well as decreased reliability and punctuality (Storchmann 2003). Nonetheless, with the exception of three discontinued programmes in the US (Austin, TX; Denver, CO; Mercer County, NJ) there is no strong evidence that in any of the existing or discontinued cases fare abolition affected PT network capacity and reliability in a significant and negative way. To the contrary, Volinski (2012) demonstrates that in some PT networks the lack of front-door ticket validation can allow for significantly faster boarding, shorter dwell time, and consequently minimally higher commercial speeds.

[3] Analysing FFPT programmes in the US, Volinski (2012) further notes that with the exception of discontinued programmes in Austin (TX), Denver (CO), and Mercer County (NJ), "most managers of fare-free transit systems did not regard disruptive passengers as a significant problem [and] bus operators prefer to deal with a few more disruptive passengers if it means that they do not have to deal with fare collection and fare disputes".

FFPT: sustainable?

Another set of arguments regarding FFPT revolves around its potential capacity in terms of contributing to the "sustainable" transport paradigm (Banister 2008). Research conducted in Denmark (Thøgersen and Møller 2008), Estonia (Cats et al. 2017) and Germany (Baum 1973) shows that an increase of PT usage among car drivers correlates less strongly with a reduction or abolition of PT prices than with increase of gas prices, restriction of parking and road usage, or increase of PT quality in terms of its speed, frequency and coverage (Cervero 1990). Therefore, as argued by Storchmann (2003) in his study of fare abolition in Templin (Germany), new passengers appealed by zeroed PT fares are mostly cyclists and pedestrians, not car drivers. Consequently, the argument goes on, as using PT is less accident-prone that cycling and walking, most benefits coming from FFPT are safety-related, which in turn translates to economic savings related to less road accidents. Nonetheless, from the perspective of sustainable transport, reducing fares has been criticised as an "unsuitable instrument for reducing car use and its external costs" and incapable for substituting trips made by cars (Fearnley 2013).

This critique is nuanced by evidence from several FFPT programmes in which fare abolition did produce a modal shift from cars to PT—albeit it occurred to a limited extent, and alongside a shift from walking and cycling. Brown et al. (2003) report that providing free access to PT to students of University of California increased bus ridership among commuters to its campus by 56% and reduced solo car ridership by 20%, suggesting that in this socially-limited form FFPT "can succeed almost anywhere". Cats et al. (2017) demonstrated that in Tallinn (Estonia) while FFPT has helped to generate a small 3% modal shift from cars to PT, it also led to a larger 5% shift from walking and cycling. In Hasselt (Belgium), fare abolition led to a 10-fold increase in ridership, albeit from very low ridership levels. However, as many as 63% of thus generated trips were made by former bus users. New passengers switched from the car (16% of trips made after the fare abolition), cycling (12%) and walking (9%) (van Goeverden et al. 2006). This indicates that the impact of FFPT on modal split may not be uniform, and—albeit this was not their primary aim—there are programmes in which fare abolition did reduce car usage, although to a limited extent.

The capacity of fare abolition to affect mobility patterns undoubtedly relates to the quality of PT service. Many PT operators associate reducing of the price of service with decreasing its quality (FNAUT 2015; UTP 2011). However, there is strong evidence from Aubagne (Kębłowski 2018), Dunkirk (Briche et al. 2017) and many Polish cities (Ługowski 2017) that, somewhat paradoxically, fare abolition can help to increase the quality of collective transport, and generates very high passenger satisfaction. The increased use of PT under a fare-free programme places collective transport on political agendas (Storchmann 2003), strengthens the public support for higher operation and investment subsidies, which in turn may give local authorities a stronger mandate for renewal PT fleet, design of new routes, and increase of frequencies (Giovanangelli and Sagot-Duvauroux 2012). Furthermore, a number of FFPT programmes have been explicitly conceived as part of large-scale urban renewal projects. This is the case in Dunkirk, where fare abolition has functioned as a crucial element of a large-scale urban renewal programme aiming to stop the city's post-industrial decline: the local bus network has been thoroughly redesigned, numerous out-of-way bus lanes have been implemented, and 40 state-of-the-art buses have been purchased to effectively expand the bus fleet to

140 vehicles. Nonetheless, the promotional effect of fare abolition may not be uniform, as evidenced by several cases in which full FFPT programmes were discontinued (see "United States" section below and Table 4 in "Appendix").

FFPT: socially just and politically transformative?

Rather than assess its economic viability or its contribution to urban sustainability, the third set of perspectives on FFPT intends to evaluate the potential of fare abolition to facilitate a profound and long-term social and political transformation. According to this approach, the fundamental value of fare abolition lies in introducing a simplified use of PT (Hodge et al. 1994), as "anyone can take [it] any time they want" (Cordier 2007). Abolishing fares is praised for directly addressing the issue of social exclusion, inequality, and transport poverty by increasing accessibility to PT of lower-income inhabitants (Larrabure 2016; Schein 2011). Cats et al. (2017) have demonstrated that fare abolition in Tallinn resulted in higher share of PT usage among a variety under-privileged groups, including the youth (+21%), elderly (+19%), the poor (+26%), and unemployed (+32%) (Cats et al. 2017). Similar observations have been made in the United States (Volinski 2012) and France (Briche et al. 2017; Kębłowski 2018), and in forecasts provided by the Danish Board of Technology (2006). Rather than focus on potentially negative operational consequences of fare abolition, this perspective asks whether a substantial increase of ridership and growth of transport market caused by reducing fares to zero could under any circumstances be considered as a negative phenomenon, provided that FFPT directly benefits less mobile inhabitants. Therefore, many activist groups campaign for FFPT as a measure that introduces a more socially just transport system that "shows solidarity with the weak, with those who cannot afford a car, with those who are dependent on public transport, who are particularly affected by its drawbacks" (Brie 2012).[4] According to this logic, as PT passengers do not drive private vehicles, and hence contribute less to traffic congestion and air pollution, they render a service to car users, and therefore their individual cost for accessing PT should be reduced (Kipfer 2012).

The plethora of urban movements and NGOs struggling for fare abolition further nuance the claim that fare abolition is rarely demanded by passengers (Cervero 1990; Yaden 1998). FFPT is acknowledged by academics (Larrabure 2016; Schein 2011) and activists (Ariès 2011; Giovanangelli and Sagot-Duvauroux 2012; Robert et al. 2015) for conceptualising collective transport not as a commodity, but as a common good—similar to many other public services including healthcare, parks, roads, sidewalks, cycling paths, streetlights and lamp posts, libraries, schools, and playgrounds.

In this sense, the apparently simple measure of abolishing tickets is argued to alter the logic underpinning transport, and to facilitate a transformation of power relations advocated by many activist groups (Dellheim 2016; Maricato 2013; Planka.nu 2016). They claim that as FFPT moves collective transport away from the market-oriented focus on profitability and demand management, it challenges a liberal perspective that "continues to envisage payment as a way of assuring that infrastructure is respected in the case of public transport" (Cosse

[4] Philipson and Willis (1990) have nonetheless questioned to what extent fares constitute a veritable barrier to mobility. They have argued that FFPT could discriminate against citizens who do not use PT, and provide a free service not to users who need it the most, but to all citizens including the highly-mobile and rich. However, there is strong evidence that across urban contexts the use of PT is related to social class, as the rich use PT much less than the poor. PT could therefore be argued to act as a policy of wealth distribution (Grengs 2005).

Table 2 The evolution the number of full FFPT cases worldwide (1970–2017)

Year	Full FFPT cases					
	Total	Europe	North America	South America	Australia	Asia
1970	1	–	1	–	–	–
1980	6	2	4	–	–	–
1990	13	4	9	–	–	–
2000	27	8	17	2	–	–
2010	60	29	25	5	–	1
2017	99	57	27	11	1	3

Note: The figures provided are cumulative

2010). One of their many examples is Movimento Passe Livre ("free fare movement") that emerged during protests against an increase of PT fares in Brazil in June 2013 (Larrabure 2016; Maricato 2013; Verlinghieri and Venturini 2017). The movement referred to the question of increased cost of using collective transport to highlight and contest stark inequalities between the highly-mobile car-driving urbanites and PT-bound urban poor, as well as to voice criticism against the continuing commodification of transport. Its demand for FFPT therefore constituted a radical attempt to create an alternative to capitalist modes of producing transport policy and infrastructure, and to lead "the struggle for the new commons" (Larrabure 2016)—away from purely economic or "sustainable" considerations. Fare abolition is further framed as an act of opposition to biopolitical control and surveillance, which is exercised over PT passengers through ticket personalisation, controls, barriers and identification systems (Kitchin 2014). In this way, fare abolition allows one to use PT regardless of their legal status or race (Kleiner 2010; Rice and Parkin 2010). There is evidence from Brussels, London and Stockholm that fare controls conducted within the framework of "full integrated police actions" (FIPA) are often utilised as tools of racial profiling (Niang 2013; Rensonnet 2018; Tsjeng 2013). Finally, this perspective on FFPT emphasizes its potential to improve the working conditions of PT drivers, who can focus on greeting and driving passengers, and do not experience insecurity related to cash handling and confronting fare-dodgers (Giovanangelli and Sagot-Duvauroux 2012; Kębłowski 2018).

Geography of full FFPT

Thus reviewed arguments for and against FFPT can serve as a lens for viewing the contemporary landscape of full FFPT. In my review I have identified as many as 99 of its cases worldwide, of which 57 are located in Europe, 27 in North America, 11 in South America, 3 in Asia, and 1 in Australia. While Table 2 briefly shows the historical trajectory of FFPT, Figs. 1 and 2 present its contemporary geography, mapping all confirmed

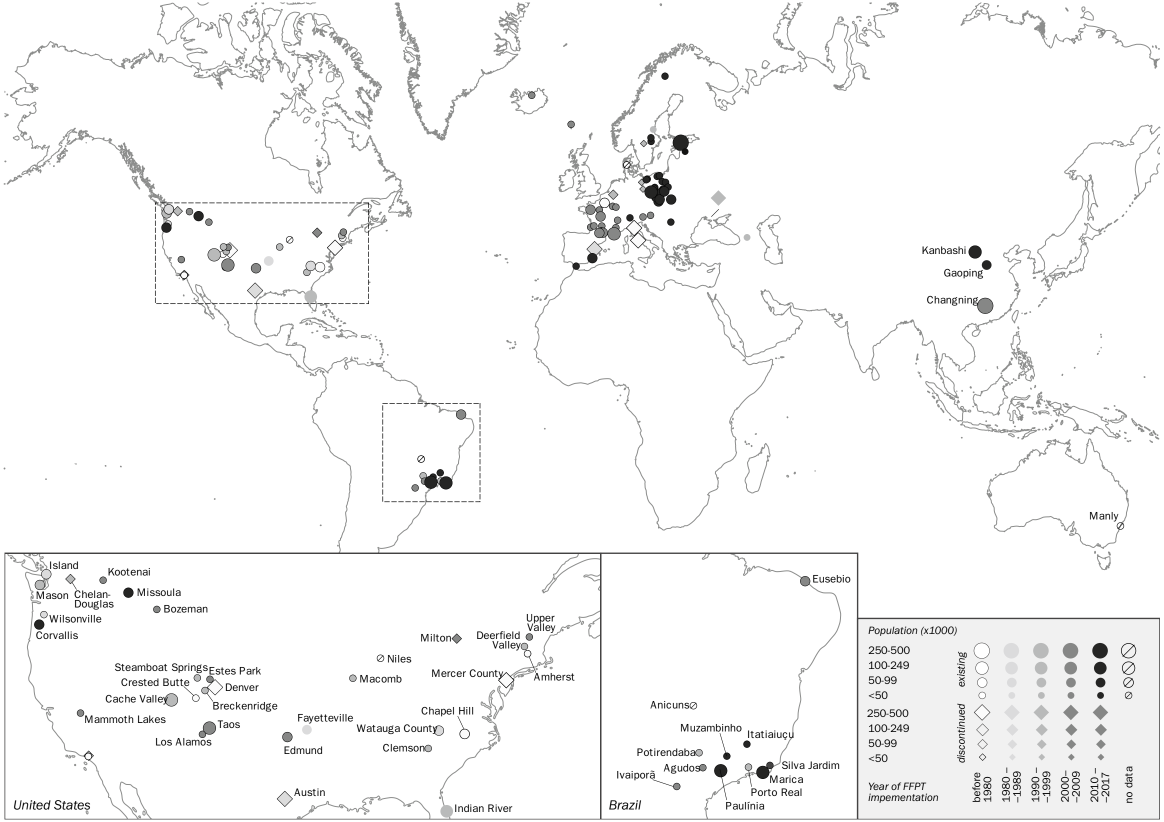

Fig. 1 Distribution of full FFPT cases (world)

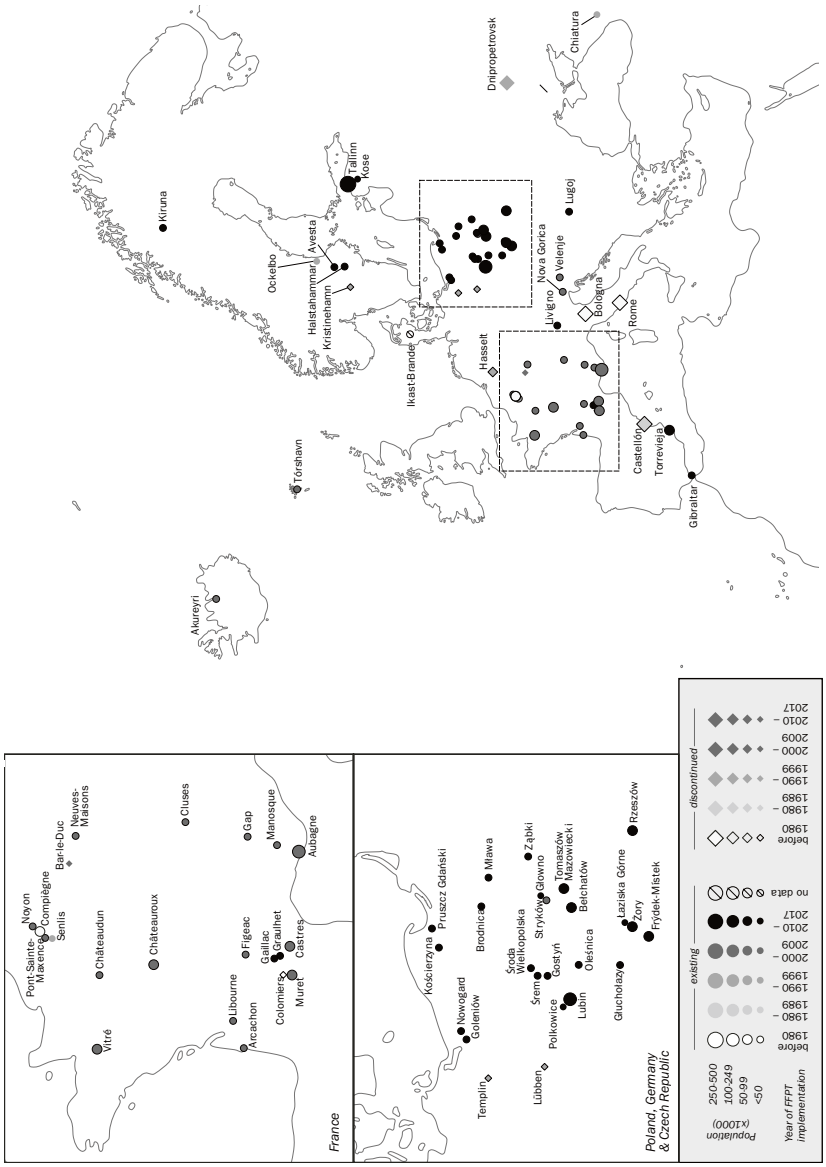

Fig. 2 Distribution of full FFPT cases (Europe)

existing and discontinued cases of full FFPT, which are further listed in Tables 3 and 4 (in "Appendix").[5]

Although full fare abolition—the form of FFPT that this section centres upon—may seem like a coherent and simple idea of abolishing fares, the rationale behind it appears to follow certain regional patterns, with variegating emphasis on specific economic, sustainable and socio-political arguments for FFPT. These regional patterns are discussed below. For each region explored, I present an overall landscape of fare abolition, and complement it with an empirical vignette. The purpose of the vignettes is to exemplify the diversity of FFPT programmes, and to provide additional insight into the impact of fare abolition. Each of the cases is representative of the region in which it is located. Corvallis (United States, Oregon) is a university campus town, which is one of the three types of localities with FFPT in North America. Aubagne, a mid-sized and traditionally socialist town, shares many characteristics with other fare-free municipalities across France. Moreover, for many years it has constituted the core of the national FFPT network, organising events and sending its officials to localities elsewhere. Maricá is the largest and best documented case of FFPT in Brazil.

United States

The United States is where the first reported case of full fare-free public transport (FFPT) system occurred—in 1962 in the town of Commerce in the suburbs of Los Angeles—and where throughout the 1970s, 1980s and 1990s most of full FFPT programmes were located. At that time, the proponents of fare abolition in North America referred to social and political arguments, pointing out anticipated social benefits of abolishing fares, and—signalling what in future would materialise as a call for "sustainable" mobility—claimed that zeroing fares could help to increase the use of PT and offset the high investment in automobile infrastructure (Aleshire 1971; Greenspan 1976; Scheiner 1976; Scheiner and Starling 1974). The opponents of FFPT cited economic theories to argue that a reduction of ticket prices to zero would not significantly alter passenger behaviour (Domencich and Kraft 1970; Studenmund and Connor 1982). The largest FFPT projects from that time have been discontinued. Fares were abolished in 1978 in Mercer County (New Jersey) and Denver (Colorado), but were re-installed a year later. Despite a significant increase of passenger volumes (+49% and +30% respectively), there was not enough political support for increasing network capacity, and responding to increased security issues. Similar reasons underpinned the cancellation of full FFPT programme in Austin, introduced in October 1989 and discontinued only 14 months later (Volinski 2012).

[5] While this review builds on a variety of sources cited in the section on "Conceptualising and defining different forms of FFPT", it is nonetheless likely that some cases of full FFPT have not been detected by the author. Herein presented review should therefore be considered as a first step towards a comprehensive long-term mapping of all cases of fare abolition. Furthermore, in the course of writing and reviewing the article, several new full FFPT programmes have been reported. In France, municipalities that have zeroed fares include Dunkirk (a weekend-only programme expanded in September 2017 to a full FFPT system) and Villeneuve-sur-Lot (since 2018). In Sweden, fare-free PT was implemented in April 2018 in Fagersta and Sala. As many as 12 cases of full FFPT have been reported in Poland throughout 2017 (Ostrołęka) and 2018 (Bolesławiec, Chocianów, Czernica, Działdowo, Giżycko, Kostrzyn, Kórnik, Nowy Dwór Mazowiecki, Pobiedziska, Wągrowiec, Wieluń). Although the news about these newly-emergent FFPT cases requires careful verification—notably regarding the form of fare abolition—it is likely that the overall count of full FFPT cases worldwide has increased by January 2019 to 115 (of which 73 are located in Europe, 27 in North America, 11 in South America, 3 in Asia, and 1 in Australia).

Three decades later, FFPT exists in full form in 27 localities, which can be divided into three groups: university campuses (e.g. Chapel Hill, NC; Macomb, IL), natural parks and tourist resorts (e.g. Crested Butte and Estes Park, both CO), and small urban/rural areas (e.g. Edmund, OK; Kootenai County, IH) (Volinski 2012). Most of these localities are small municipalities and counties, and only three of them have more than 100,000 inhabitants.

In the first two groups, fare-free programmes in the US do not seem to derive from socio-political motivations. The rationale behind fare abolition thus corresponds to the predominantly liberal views on the role of public institutions in the US, and in most cases FFPT is justified as an economic measure. For university campuses and tourist resorts, it means reducing maintenance costs, tackling parking saturation, decreasing investment in car infrastructure, and improving board speeds. It further functions as a "sustainable" policy helping to boost place attractiveness, liveability and competitiveness. In the third group, small urban/rural areas abolish fares to respond to socio-political concerns about the effects of economic recession, and consequently the need to help the unemployed and the working poor. Also, the increase in PT ridership resultant from withdrawing tickets translates into higher state subsidies (calculated per passenger) and lower costs per passenger.

Most of these motivations can be detected in the FFPT programme in Corvallis, a small Oregon town with a population of 54,462 (2010) and area of 3704 km^2. As described by Volinski (2012) and various municipal documents (e.g. City of Corvallis 2015), although its PT network is based at Oregon State University, it is run by the municipal authorities and covers the town's entire territory. It offers 13 day-time services from Monday to Saturday and 3 night-time bus routes from Thursday to Saturday. From February 2011 onwards they can be accessed free of charge by all users, all the time. Fare abolition emerged in Corvallis as a grassroots proposal, and was motivated by sustainable and socio-political arguments, envisioning free access to PT as a measure helping to tackle water and air pollution, reduce greenhouse gas emissions, as well as increase PT accessibility among the youth, elderly, unemployed and working poor. As no capacity issues were observed following the shift to a fare-free programme, no expenses had to made to respond to higher demand. The cost of the shift is estimated at $330,000, which was the total income from tickets and passes sold by the PT network. Most of the remaining part of the operator's €2,4 m budget comes from federal and state funds, university funding, and local property taxes. The lost revenue from tickets is compensated by a monthly tax (Transit Operations Fee, TOF) collected from households and companies. For the former, TOF ranges from $2.58 to $3.73 per month, while the latter are charged according to their business type and customer base, and in some cases pay over $1000 per month. The total revenue from TOF in the first year amounted to $1 m (Donin 2013), largely covering the cost of fare abolition. In the first two months following the fare abolition the ridership increased by +43%, and remained at that level, reaching approximately 2700 rides per day and nearly 1 m trips per year (City of Corvallis 2015). However, fare abolition coincided with increase of the local university student population, and is responsible for approximately 9–10% ridership increase (Donin 2013).[6] There

[6] This increase is nonetheless significant when compared to figures presented by PT networks in nearby communities. PT operator in the Lane County (Oregon) (population of 351.715 in 2010) reported a +0,28% increase of the number of passengers between 2011/12 and 2013/14 years, reaching 11.19 m trips per year (Lane Transit District 2018). In the same period of time, the PT network in Oregon's capital, Salem (population of 154.637 in 2010), observed a −1.21% decline, down to 3.32 m trips per year (Salem Area Mass Transit District 2012, 2014a, b).

is no evidence of modal shift, and there is no systematic analysis of passengers' social profiles. No security or capacity issues have been reported. Following significant infrastructural investment made in September 2012, when frequencies on 9 routes have been increased, the city's transport development plan, which is currently consulted with inhabitants, is likely to envision further development of the FFPT network.

Europe

Parallel to the diffusion of FFPT across the US, several important cases emerged in Europe between the 1970s and 1990s. Unlike in the US, however, fare abolition in Europe at that time was often associated with its anticipated contribution to a transition towards more sustainable mobility patterns. Additionally, in many municipalities with established left-wing traditions, the idea of providing unconditional access to PT was strongly related to socio-political rationales. The first European experiment with abolishing PT fares began in 1971 in Colomiers, in the suburbs of Toulouse (France). The French town was soon followed by Rome where, as *The New York Times* reported at the time, the left-wing municipality combined economic and socio-political motivations behind FFPT. Fares were zeroed "to ease the chronic congestion" (Hofmann 1971, 1972) on the one hand, and to provide the working class with better access to collective transport on the other hand. It was also due to economic reasons that after only seven months the fares were restored. Similar reasons guided the communist mayor of Bologna, who introduced FFPT in 1973 as a free service for local workers and students (Aftimus and Santini 2018). Fare abolition also formed part of a radical strategy of improving quality of urban environment by prioritising PT over private vehicles. The much discussed municipal manifesto titled "Bologna shall not suffocate" (Comune di Bologna 1972) could be identified as one of early examples of an urban policy advocating sustainable mobility. Meanwhile, the pros and cons of FFPT were debated in the Netherlands (van Hulten 1972) as well as in Western Germany (Baum 1973), where protests were held to highlight the social impact of PT fare increases in Bremen, Hanover, Heidelberg and Saarbrücken, and FFPT was briefly proposed by socialist governments in Munich and Frankfurt. Arguments explicitly referring to the question of sustainable mobility underpinned the decision to launch one the most famous FFPT programmes to date. Faced with the problem of high traffic congestion, the mayor of Hasselt (Belgium, Flanders) declared in 1996 that "we don't need new roads, we need new ideas" (Doumayrou 2012). Hasselt dropped the plans for constructing a new ring road and instead eliminated PT fares and reformed the network of collective transport, giving it clear priority vis-à-vis private vehicles. Despite the resultant increase of ridership and significant network expansion, the lack of political will among the local stakeholders led to the cancellation of Hasselt's fare-free policy in 2014. Decreased political support for FFPT was also one of key factors behind fare restoration in a number of European cases at that time, including in Castellón (Spain) and Colomiers (France).

Ever since the 2000s, a plethora of full FFPT systems have emerged in Europe. The highest number of localities offering fully abolished fares can be found in Poland (21, all of which appeared after 2010) and France (19). European FFPT programmes continue to be more firmly underpinned by "sustainable" arguments than their American counterparts (Briche et al. 2017; Cordier 2007, 2017; Ramböll 2015). Many European municipalities justify FFPT as a strategy working towards reducing car usage (e.g. Avesta, Sweden; Bełchatów, Goleniów and Gorlice, all Poland) and car-related pollution and noise (e.g. Tórshavn, Faroe Islands; Kristinehamn, Sweden; Livigno, Italy), thereby increasing the liveability and quality of urban environment (Ramböll 2015). Socio-political arguments prevail in many municipalities that

build on their socialist background. Several localities in France (e.g. Colomiers, Vitré) openly declare that the decision to abolish fares was not inspired by attempts to reduce car usage and generate a modal shift towards PT. Instead, as opposed to situation in the US, FFPT is often explicitly conceived as a social policy aiming at helping disadvantaged groups (as in Colomiers, Compiègne and Figeac), and introduced unconditional use of collective transport re-defined as common good (Briche et al. 2017; Cordier 2007). Similar arguments have been evoked by stakeholders in Avesta (Sweden), Nova Gorica, Velenje (both in Slovenia) and Tallinn (Estonia) (Isacsson 2015; Savisaar 2012). In Poland, FFPT is an element of municipal social policy (in Lubin) that aims at providing a transport service that is more accessible (Środa Wielkopolska) or common (Mława) (Ługowski 2017).

Fewer European municipalities justify their decision to abolish fares by referring to economic reasons such as operational savings (e.g. Hallstahammar and Ockelbo, Sweden) and increase of the efficiency in under-used small-scale PT networks (e.g. Châteaudun and Gap in France; Kościerzyna and Żory in Poland). In this perspective, FFPT has also been legitimised as an instrument for improving job accessibility (Goleniów, Poland) and acting as an element of territorial competition, vis-à-vis either the urban core (Ząbki, Poland) or the metropolitan periphery (Tallinn, Estonia) (Antov 2012; Perkowski 2014).

This diverse rationales behind FFPT are reflected by the case of Aubagne (France). This small town (population of 45,128 in 2014) is located in the periphery of Marseille, at the heart of former Communauté d'agglomération du pays d'Aubagne et de l'Étoile (Agglomeration community of Pays d'Aubagne et de l'Etoile, CAPAE; population of 104,018, area of 244.7 km^2), which gathers further 11 semi-urban municipalities. The local PT network is run by French multi-national TransDev, who operate 11 regular bus lines, 13 school bus lines, and a single tram line. This network extends across the whole territory of CAPAE, and since May 2009 has functioned free of charge for all passengers. FFPT has an inherently social and political dimension, as it was conceived as a welfare policy conceptualising PT as a common good, addressing impoverishment of the working class and youth exclusion, as well as the rising socio-spatial inequality within CAPAE (CAPAE 2012; Claux 2014; Giovanangelli and Sagot-Duvauroux 2012). The estimated cost of FFPT amounts to €1.57 m: 710,000€ for the lost revenue from fares and 860,000€ for costs related to increased demand for PT. It is covered by an increase of transport tax (from 0.6 to 1.8%) collected from companies of more than 11 employees. As the tax increase generated €5.7 m of revenue, FFPT was accompanied by a comprehensive network modernisation and triggered a stunning +135.8% increase of ridership, from 1.9 m passengers transported in 2008 to 4.48 m in 2011.[7] Among the new passengers in CAPAE, 50% previously used cars, while 20% cycled and 10% (CAPAE 2013). Studies conducted by the local authorities show that 63% of new trips generated by fare abolition would otherwise have been performed by a motorised vehicle (Giovanangelli and Sagot-Duvauroux 2012). While prior to fare abolition the PT network was primarily used by the youth and elderly, in the fare-free programme passengers are more diverse, as there are more salaried workers (+7%), and less students (−3%) and pensioners (−2%). PT network is used more for commuting to work (+5%) and for shopping (+3%), and less for leisure-related trips (−8%) (CAPAE 2013).

[7] To put these figures into perspective, in the neighbouring city of Marseille (population of 869.815 in 2015) the increase of passengers at that time (2009–2014) amounted to +9%, reaching 165,58 m trips per year (Observatoire des mobilités 2015). In Aix-en-Provence (population of 142.149 in 2014), the increase between 2009 and 2018 amounted to approximately +8%, reaching 15 m trips annually (https://www.aixenbus.fr/lentreprise/).

Brazil

Among the most recent additions to the landscape of FFPT are ticket-free programmes in Brazil (Aftimus and Santini 2018; Dia 2013; Fix et al. 2015; Gomes 2016). Several Brazilian FFPT cases are characterised by a strong emphasis on the political and social dimension of fare abolition, considered as a social policy that helps to tackle inequality (in Itatiaiuçu), provides common access to transport across the local population (Agudos, Ivaiporã) and thus integrates the urban territory (Itatiaiuçu, Ivaiporã). FFPT also represents a symbolic step signalling a thorough makeover of the PT network along the lines of sustainable development. In some municipalities, fare abolition was conceived as measure accompanying a radical improvement of network quality, supported by both left-wing and centre-right administration (Agudos and Silva Jardim respectively). Additionally, both socialist (Ivaiporã) and liberal (Silva Jardim) governments have legitimised FFPT as an economic strategy of increasing the use of otherwise empty PT vehicles, which in both cities now transport more 1500 passengers per day.

Many of these arguments in favour of fare abolition can be traced in Maricá, is the largest Brazilian city to have offered FFPT (population of 149,876 in 2016, area of 362 km^2). This relative prosperity of this community, located in the suburbs of Rio de Janeiro, derives from the presence of oil extraction industry, operated the Brazilian multinational Petrobras. As reported by Aftimus and Santini (2018), prior to the implementation of FFPT, collective transport was offered by a variety or private companies that, according to the municipal authorities, offered poor quality service, and charged at least 2.7€ Brazilian reals (0.85€) for a single fare. To "break the monopoly" of private operators (globo.com 2014), the local mayor proposed to create an entirely new, publicly run and fare-free network. The shift to FFPT was further explicitly conceived with social and political goals in mind, as local stakeholders described FFPT as a solidarity-driven policy of wealth distribution, providing free access PT as "people's right" (Prefeitura de Maricá 2015). For the head of public operator, "a bus is not just a type of transport, but a living public device that has the potential and space to take [on board] passengers, art and culture" (Prefeitura de Maricá 2015). Furthermore, the introduction of FFPT firmly anchored the question of collective transport in political agendas, as it became one of key issues in municipal elections in October 2016. The new service began to operate in December 2014 on 4 lines, using 10 buses. The initial cost of starting the new PT network amounted to 4.8 m Brazilian reals (€1.51 m), and generated monthly operational costs of 700,000 reals (€220,750) (Prefeitura de Maricá 2014). Passenger volumes were initially rather modest (3000 passengers on the first day of operation), but steadily increased to reach 10,500 riders per day (October 2017), and were projected to increase to 17,000 per day in spring 2018.[8] To respond to continuously growing demand, the system has been expanded to 11 lines, operated by 38 buses. Modal shift has not been studied, yet it appears that the achievements of FFPT in Maricá are greater in terms of social welfare, increasing mobility of under-privileged inhabitants, rather than in terms of advancing sustainable mobility.

China

A somewhat different blend of arguments has supported full abolition of fares in three Chinese cities: Changning (Hunan), Gapoing (Shanxi) and Kangbashi (Inner Mongolia) (Shen and Zheng 2015). According to scarce media reports available, while FFPT has officially

[8] This increase is all the more significant in the context of a decrease of the number of bus passengers in the state of Rio de Janeiro (−7.06%) and the city of Rio de Janeiro proper (−7.43%) between 2014 and 2017 (https://www.fetranspor.com.br/mobilidade-urbana-setor-em-numeros).

been developed as a socio-political strategy towards improving public welfare, it appears more centred on the objective of controlling rapidly increasing car congestion. In Kangbashi, FFPT is further expected to tackle an additional problem of underpopulation in an area that was built in anticipation of population growth, yet failed to attract many residents.

Conclusions

I opened this article by observing that albeit the policy of fare-free public transport (FFPT) abolition is controversial, it remains under-researched. To start filling this gap, I have defined and discussed different forms of FFPT. I then identified three main sets of approaches to the question of fare abolition in cities, which respectively view FFPT against its impact on economic stability of PT networks, its capacity to facilitate sustainable development, or its potential to contribute to a social and political transformation. These perspectives provide numerous arguments for and against FFPT, and I subsequently refer to them to start charting the geography of discontinued and existing cases of FFPT, and to begin unveiling different rationales behind fare abolition across this geography.

A number of conclusions can be drawn from this study, which offers the most complete inventory of full FFPT programmes to date. First, several regional centres of fare abolition can be distinguished: Europe, the US and Brazil. From 1970s to 1990s most ticket-free programmes were located in the US, and only several in Europe. Many of these early instances of FFPT are discontinued today, and the highest concentration of fare-free towns is located on the European continent, with a particularly high number of cases in France and Poland. Since 2000s several instances of FFPT have also emerged in Brazil, China and Australia.

Second, although FFPT might appear to be a simple and uniform idea, important variegations can be observed as to why it is implemented. On the one hand, FFPT follows certain regional patterns, as socio-political and sustainable arguments in favour of fare abolition are particularly present in Europe and Brazil, while being somewhat less visible in the US, where economic rationales behind FFPT are more prevalent. On the other hand, the way that particular municipalities justify FFPT seems to be loosely related to their political orientation. Whether FFPT is put into place as a project aiming at generating economic savings, promoting sustainable mobility or providing unconditional access to collective transport for all, does not appear to entirely depend on the political "colour" of local administration. In other words, FFPT cannot be labelled as policy that is "left-wing" or "right-wing", "conservative" or "progressive", "socialist," "green," or "liberal". Fares have been abolished in countries with established socialist traditions (France and Brazil), as well as those where an essentially liberal ideology predominates (the United States). While the change of municipal political majority in some cases has led to re-installing fares (e.g. in Hasselt, Belgium; Castellón, Spain), in many cities FFPT has proven resistant to shifts from left-wing to right-wing governments and vice versa (e.g. in Agudos, Brazil; Torrevieja, Spain).

Third, the geography of FFPT partially confirms that full abolition of fares that has been tested and applied primarily in small urban areas. FFPT has emerged primarily in second- or third-tier towns and cities with less than 100,000 inhabitants (see Tables 3, 4 in the "Appendix" below). However, the case of Tallinn (Estonia)—the largest one to date—seems to be an important exception to this rule, exemplifying how fare abolition works in a mid-sized urban area, a national capital, and a first-tier city. Further evidence about how FFPT can be tested in mid-sized cities is provided by FFPT programmes in Changning (China, Hunan) and—now discontinued—in Austin (Texas), Bologna (Italy), Denver (United States, CO)

and Dnipropetrovsk (Ukraine). The last case is the only identified example of a full FFPT programme implemented in a city of a population larger than than 500,000 inhabitants,

Fourth, the geography of FFPT embraces towns and cities that seldom appear on maps drawn by urban and transport geographers, and are largely absent from urban debates. As the majority of PT networks worldwide continue to charge fares, FFPT remains an exceptional and marginal policy, even though the rising number of cases of fare abolition indicates that it is an established practice.

FFPT thus emerges as a policy that takes diverse forms, is supported and contested for a variety of reasons. The form and motivation behind FFPT surely depends on the the local context, and this relationship requires further studies investigation case by case, since thus far "only a handful of full […] FFPT [programmes] were implemented and evaluated" (Cats et al. 2017). However, this paper clearly demonstrates that FFPT functions in very diverse urban configurations, and does not appear only in specific urban contexts.

Existing studies on FFPT are centred predominantly on transport-related issues, assessing fare abolition primarily against its economic and technical dimension, or its potential contribution to sustainable mobility. These approaches may indeed highlight a number of salient points, showing that FFPT runs the risk of generating additional mobility and costs, while not necessarily attracting car drivers to collective transport. However, researching FFPT should involve expanding the analytical lens to embrace a variety of environmental, social, spatial, and political arguments—many of which are developed and discussed outside academia—that frame the question of fare abolition in different terms altogether. These arguments demonstrate the importance of complementing transport-focused inquiries into ticket-free programmes by studying their social impact, the power relations that undergird them, the working conditions they offer, and the way they envision the position of passengers. Equally relevant seems analysing spatial dynamics caused by FFPT, the political trajectory that it follows from its conception to implementation in different urban contexts, and the wider political project it may signal. These questions could well be examined in studies centring on individual cases of FFPT, bringing empirical material from various localities, or employing a trans-local perspective on growing international network of cities and towns engaged in ticket-free systems. Crucially, future research on fare abolition should explore case by case the diversity of FFPT programmes, to understand not only the where and why FFPT exists, but also what impact it makes on local finances, mobility patterns, and socio-political geographies. This research agenda should explicitly recognise that although FFPT is firmly anchored in the field of transport, it cannot be understood as transport policy alone.

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Appendix

See Tables 3 and 4.

Table 3 Existing cases of full FFPT

City	Country	Year of FFPT implementation	Population[a]	Status	Level of administrative division
Europe					
Akureyri	Iceland	2007	18,294	Regional capital	First-level
Arcachon	France	2005	10,831	*Arrondissement* seat, suburban municipality	Third-level
Aubagne	France	2009	104,788	Agglomeration of suburban municipalities	Fourth-level
Avesta	Sweden	2012	22,781	Municipality	Second-level
Bełchatów	Poland	2014	58,667	County seat	Second-level
Brodnica	Poland	2016	28,471	County seat	Second-level
Castres-Mazamet	France	2008	81,564	*Arrondissement* seat (Castres); agglomeration of municipalities (Castres-Mazamet)	Third-level
Châteaudun	France	2009	13,567	*Arrondissement* seat	Third-level
Châteauroux	France	2001	77,318	*Arrondissement* seat	Third-level
Chiatura	Georgia	Ca. 1990	14,300	Municipality	Third-level
Cluses	France	2008	18,044	*Canton* seat	Fourth-level
Compiègne	France	1975	74,075	*Arrondissement* seat	Third-level
Figeac	France	2003	10,580	*Arrondissement* seat	Third-level
Frýdek-Místek	Czech Republic	2011	56,879	County seat	Second-level
Gaillac	France	2014	14,626	*Canton* seat	Fourth-level
Gap	France	2005	42,156	Department capital	Second-level
Gibraltar	Gibraltar	2011	33,140	British Overseas Territory	First-level
Głowno	Poland	2015	14,590	*Gmina*	Third-level
Głuchołazy	Poland	2016	13,925	*Gmina*	Third-level
Goleniów	Poland	2014	35,716	County seat	second-level
Gostyń	Poland	2014	20,168	County seat	second-level
Graulhet	France	2013	12,072	*Canton* seat	Fourth-level
Hallstahammar	Sweden	2006	15,645	Municipality	Second-level

Table 3 (continued)

City	Country	Year of FFPT implementation	Population[a]	Status	Level of administrative division
Ikast-Brande	Denmark	No data	40,798	Municipality	Second-level
Kiruna	Sweden	2011	23,178	Municipality	Second-level
Kose	Estonia	2017	7183	Rural municipality	Second-level
Kościerzyna	Poland	2015	23,744	County seat	Second-level
Libourne	France	2009	24,567	Suburban *arrondissement* seat	Third-level
Livigno	Italy	No data	6389	*Comune*	Third-level
Lubin county	Poland	2014	106,319	County	Second-level
Lugoj	Romania	2013	37,700	Municipality	Second-level
Łaziska Górne	Poland	2016	37,700	*Gmina*	Third-level
Manosque	France	2010	23,123	A *commune*	Sixth-level
Mława	Poland	2014	31,030	County seat	Second-level
Muret	France	2009	91,632	Suburban *arrondissement* seat	Third-level
Neuves-Maisons	France	2007	29,121	Suburban *arrondissement* seat	Third-level
Nowogard	Poland	2014	16,770	*Gmina*	Third-level
Nova Gorica	Slovenia	2006	13,290	Municipality	Second-level
Noyon	France	2008	14,303	*Canton* seat	Fourth-level
Ockelbo	Sweden	1995	5856	Municipality	Second-level
Oleśnica	Poland	2017	37,450	County seat	Second-level
Podkarpackie[b]	Poland	2014	78,816	A group of *gminas*[b]	Third-level
Polkowice	Poland	2014	22,535	County seat	Second-level
Pont-Sainte-Maxence	France	2006	12,827	*Canton* seat	Fourth-level
Pruszcz Gdański	Poland	2015	29,589	*Gmina*	Third-level
Senlis	France	2000	16,264	Suburban *arrondissement* seat	Third-level
Stryków	Poland	2007	3492	*Gmina*	Third-level

Table 3 (continued)

City	Country	Year of FFPT implementation	Population[a]	Status	Level of administrative division
Śrem	Poland	2016	29,983	County seat	Second-level
Środa Wielkopolska	Poland	2015	22,740	City-county	Second-level
Tallinn	Estonia	2013	423,420	National capital	First-level
Tomaszów Mazowiecki	Poland	2016	63,960	County seat	Second-level
Torrevieja	Spain	2011	88,447	Municipality	Fourth-level
Tórshavn	Faroe Islands	2007	20,521	Regional capital	First-level
Velenje	Slovenia	2011	25,935	Municipality	Second-level
Vitré	France	2001	77,581	*Canton* seat	Fourth-level
Ząbki	Poland	2011	33,818	Suburban *gmina*	Third-level
Żory	Poland	2014	61,945	City-county	Second-level
North America					
Amherst, MA	United States	1976	37,819	Municipality	Third-level
Bozeman, MT	United States	2001	43,405	County seat	Second-level
Breckenridge, CO	United States	1997	4540	County seat	Second-level
Cache Valley, UT	United States	1992	112,656	County	Second-level
Chapel Hill, NC	United States	1974	57,233	Municipality	Third-level
Clemson, SC	United States	1996	13,905	Municipality	Third-level
Commerce, CA	United States	1962	12,823	Suburban municipality	Third-level
Corvallis, OR	United States	2011	54,462	Municipality	Third-level
Crested Butte, CO	United States	1979	1487	Municipality	Third-level
Deerfield Valley, VT	United States	1996	5911	A group of municipalities	Third-level
Edmund, OK	United States	2009	81,405	Suburban municipality	Third-level
Estes Park, CO	United States	2006	5858	Municipality	Third-level
Fayetteville, AR	United States	1989	85,257	County seat	Second-level

Table 3 (continued)

City	Country	Year of FFPT implementation	Population[a]	Status	Level of administrative division
Indian River County, FL	United States	1994	138,028	County	Second-level
Island County, WA	United States	1987	78,506	County	Second-level
Kootenai County, ID	United States	2005	144,000	County	Second-level
Los Alamos, NM	United States	2007	12,019	County seat	Second-level
Macomb, IL	United States	1999	21,516	County seat	Second-level
Mammoth Lakes, CA	United States	2006	8234	Municipality	Third-level
Mason County, WA	United States	1992	60,699	County	Second-level
Missoula, MT	United States	2015	66,788	County seat	Second-level
Niles, IL	United States	No data	29,803	Municipality	Third-level
Steamboat Springs, CO	United States	1991	12,088	County seat	Second-level
Taos, NM	United States	2007	178,902	County seat	Second-level
Upper Valley, NH/VT	United States	2002	38,000	A group of municipalities	Third-level
Watauga County, NC	United States	1981	51,079	County	Second-level
Wilsonville, OR	United States	1989	19,509	Municipality	Third-level
South America					
Agudos, SP	Brazil	2002	36,704	Municipality	Second-level
Anicuns, GO	Brazil	No data	21,614	Municipality	Second-level
Eusebio, CE	Brazil	2010	51,913	A suburban municipality	Second-level
Itatiaiuçu, MG	Brazil	2015	10,882	Municipality	Second-level
Ivaiporã, PR	Brazil	2001	32,715	Municipality	Second-level
Maricá, RJ	Brazil	2013	149,876	Municipality	Second-level
Monte Carmelo, MG	Brazil	1994	44,367	Municipality	Second-level
Paulínia, SP	Brazil	2013	100,128	A suburban municipality	Second-level
Porto Real, RJ	Brazil	1994	18,552	Municipality	Second-level

Table 3 (continued)

City	Country	Year of FFPT implementation	Population[a]	Status	Level of administrative division
Potirendaba, SP	Brazil	1998	16,857	Municipality	Second-level
Silva Jardim, RJ	Brazil	2014	21,279	Municipality	Second-level
Australia and Oceania					
Manly	Australia	No data	15,072	Suburban *local government area*	Second-level
Asia					
Changning, Hunan	China	2008	332,927	County-level city	Third-level
Gaoping, Shanxi	China	2013	72,100	County-level city	Third-level
Kangbashi, Inner Mongolia	China	2015	100,000	Urban district	Fourth-level

[a]Population figures refer to the administrative boundaries of the localities listed, and the year of FFPT implementation, or the closest available data after FFPT implementation. Data sources: AD Statistiek, Amt für Statistik Berlin-Brandenburg, Brazilian Institute of Geography and Statistics, Central Statistical Office of Poland, Czech Statistical Office, Government of Gibraltar, Hagstova Føroya, Insee (Institut national de la statistique et des études économiques), Institutul National de Statistica, National Statistics Institute of Spain, Statistical Office of Slovenia, Statistics Canada, Statistics Estonia, Statistics Sweden, US Census Bureau, citypopulation.de (Changning), and forbes.com (Kangbashi)

[b]Podkarpackie: Podkarpacka Komunikacja Samochodowa (Boguchwała, Głogów Małopolski, Chmielnik, Trzebownisko, Czarna)

Table 4 Discontinued cases of full FFPT

City	Country	Time frame	Population[a]	Status	Level of administrative division
Austin, TX	United States	October 1989–December 1990	465,622	County seat	Second-level
Bologna	Italy	1973–1975	490,528	Provincial capital	Second-level
Bar-le-Duc	France	2008–2014	19,559	Department capital	Second-level
Chelan–Douglas Counties, WA	United States	December 1991–December 2000	99,219	County	Second-level
Colomiers	France	1971–2016	38,695	Suburban *arrondissement* seat	Third-level
Denver, CO	United States	February 1978–January 1979	492,694	State capital	First-level
Dnipropetrovsk	Ukraine	1992–1995	1,203,000	*Oblast* capital	Second-level
Hasselt	Belgium	1996–2014	75,991	Provincial capital	Second-level
Hawaii County, HI	United States	No data	185,326	County	Second-level
Kristinehamn	Sweden	1997–2001	17,839	Municipality	Second-level
Lübben	Germany	1998–2002	14,897	*Kreisstadt*	Third-level
Mercer County, NJ	United States	March 1978–February 1979	307,863	County	Second-level
Monterey Park, CA	United States	1986–1988	60,738	Suburban municipality	Second-level
Rome	Italy	December 1971–June 1972	2,781,000	National capital	First-level
Templin	Germany	1997–2003	17,773	*Gemeine*	Fourth-level

[a]As in Table 3

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