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Cycling to School: Building the Case for Sustainable Micromobility Practices in Portugal

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Abstract

Transports account for a very large share of the total amount of greenhouse gas emissions in a vast number of countries and currently, this sector is responsible for the highest volume of carbon dioxide emissions in Portugal. In a country with a significant car dependency, it is worth studying what prevents and encourages sustainable micromobility practices, in particular the simple act of cycling to school. Borrowing perspectives from Social Practice Theory, this paper analyses several examples of success stories recently experienced across Europe and North America - "bike bus", "bicibús", "cycling bus", "comboio de bicicletas" - as well as the benefits that were outlined by participating communities. It then focuses on parents who have their children attending three different Portuguese schools located in the municipality of Seixal. The survey results are highlighting the elements that can contribute to a higher adoption of such practices, through the lenses of Social Practice Theory. This paper offers a set of guidelines that could contribute to promoting similar initiatives in Portugal, in particular in urban areas such as the Metropolitan Area of Lisbon.

Keywords: mobility; micromobility; cycling; school; Portugal

Introduction

As the world population experiences or witnesses the damaging effects of climate change and most acknowledge the urgency of the issues that humankind is facing, scholars from a plurality of scientific backgrounds multiply efforts to contribute to the solution. It goes from working on research to understand the extent of the situation with scientific data, to equipping policy and decision-makers with the frameworks and tools required to promote the adoption of (more) sustainable practices as we look to decarbonize our societies.

In 2021, according to the International Energy Agency (IEA), the transport sector on its own produced nearly 7.7 Gigaton (Gt) of carbon dioxide (Co_2) globally, accounting for 37% of the total carbon dioxide emissions originated by end-use sectors. The largest share of Co_2 emissions comes from road transport (5.87 Gt), a sector heavily reliant on fossil fuels, despite a noticeable rise in the number of electric cars being sold, for which sales "nearly doubled year-on-year to 6.6 million in 2021" (IEA, 2022). Europe contributes 15% of the total Co_2 emissions globally, with road transport following the same pattern (IEA, 2022). According to the European Environment Agency (EEA), in the European Union (E.U.), road transport accounted for the highest proportion of the total emissions linked to the transport industry. In 2019, Germany was the biggest emitter of transport emissions (195.4 Million tonnes of Co_2 equivalent), followed by France (151 Mt), Italy (118 Mt), Spain (110.5 Mt) and Poland (69.3 Mt). Portugal occupied the 9th place out of 27 countries with 22.2 Mt Co_2e (EEA, 2022). Transports account for a very large portion of the world's carbon footprint and when looking at the total of Co_2 emissions in Portugal, they are indeed mostly originated by this industry (Figure 1). Results from the last census (2021) outline a concerning tendency: Portuguese citizens are using cars more intensively, 66% use them for daily commute, compared to 62% in 2011. Cars are the most commonly used means of transport, compared to others such as buses, trains, boats, and others, whose utilization decreased from 20% to 16,2% in the last 10 years. Interestingly, the use of bicycles hasn't decreased and witnessed a very shy rise from 0,5% in 2011 to 0,6% in 2021 (Figure 2). In urban contexts, micromobility could partially meet the objectives of cities willing to embrace more sustainable transport solutions, in particular cycling.

Cycling trends in Portugal vary significantly from one location to the other, largely influenced by the availability of transport options and cycle lanes in a given region.

Often linked to outdoor sports or tourism activities, this practice has been growing in popularity over the years in Portugal, with the appearance of new cycling communities (Urban Mobility by Bike Association - MUBI, Directory of cyclist clubs and Associations in Portugal, Portuguese Federation of Cyclotourism and bike users), software applications (Google Maps cycling directions, CityMapper bike directions, Bikemap, etc.) and websites built to promote bike tours across the country (Portugal bike tours, Ciclismo em Portugal, Portuguese cycling trails, etc.). However, the practice of cycling for other purposes than leisure, as a means of transport to go to work or school (utility cycling) is not a regular national habit. Data from 2017 found in Statista clearly shows that out of 10 other European countries, Portugal is the country in which a larger number of parents are taking children to school with motorized vehicles (76%) when compared to other alternatives — by foot or bike, or a combination of foot, bike, and other motorized vehicles. The other represented countries are France with 51% of the total number of children going to school with motorized vehicles, Latvia with 46%, Poland with 45%, Spain with 44%, Denmark and Lithuania both with 42%, Bulgaria 34% and, last but not least, Croatia and Romania with 32% (Statista, 2020). So what prevents parents from allowing their children to cycle to school in urban areas in Portugal since there is a huge gap between commuting habits to school when compared to other European countries?

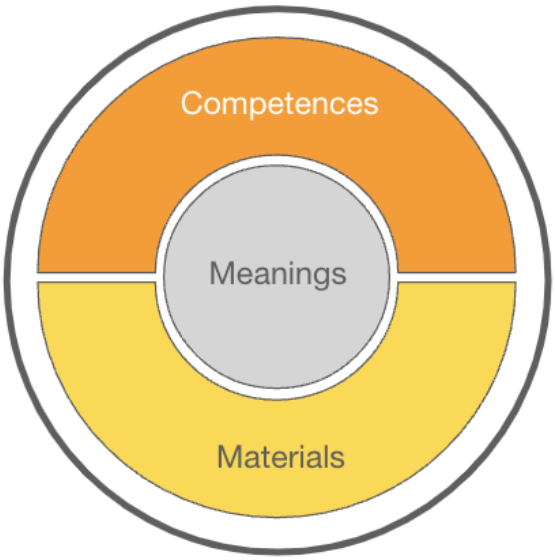
In this paper, focus will be given to the simple act of cycling to school to deepen the understanding of such practice in Portugal, in particular in the municipality of Seixal, located in the Metropolitan Area of Lisbon (AML). The municipality of Seixal does not benefit from the same investments in infrastructures as bigger Portuguese cities like Lisbon and Porto but has a growing population of over 166.000 inhabitants, a 5% increase, witnessed between 2011 and 2021 (INE, 2021). In Seixal, the population density is 1.744 inhabitants per km2, compared to a national average of 112 inhabitants per km2 (INE, 2021). How are children from this municipality commuting to school? What prevents them from cycling to school (more often)? Ultimately, could cycling to school motivate the population of this municipality, which is part of the Metropolitan Area of Lisbon — the most densely populated region of the country (INE, 2021) — to adopt more sustainable mobility practices for daily commute?

Cycling to School Through the Lenses of the Social Practice Theory

Social scientists have been studying the behavior of individuals, developing theories that can deepen our understanding and support strategies aimed at encouraging positive change. Social Practice Theory offers a different perspective from the ones most commonly adopted by policymakers when it comes to tackling the problem of climate change and engaging in solutions aimed at promoting a more sustainable way of life. There is a discernible tendency to approach such issues and design potential solutions with the premise that individuals' Attitudes, Behavior, and Choices (ABC) are a direct cause of unsustainable practices in our societies, but such views fail to take into account "dynamic processes of social change" (Shove, 2010). Confronted with the urgency of climate change and the pressing need to rethink less sustainable habits, scholars have intensified the debate about transition, researching how social change takes place, and hoping to find the answers that humanity aspires for. "Various researchers have argued that there is considerable doubt about the effectiveness of measures which assume that people lack information or motivation, that they need help" (Spotswood et al., 2015). Understanding social practices in the context of transport can shed light on the areas where policymakers should focus and offer some tools to define strategies that should, ultimately, effectively drive the adoption of more sustainable mobility practices (Kent, 2022).

In a book titled "The Dynamics of Social Practice", sociologists Elizabeth Shove, Mika Pantzar and Matt Watson start by asking the following question: "How do societies change?", determined to understand how practices emerge, how they persist, and eventually disappear. The authors stress that three elements prevail in understanding social practices and "all three elements must exist for the performance of the practice": competences, materials, and meanings. *Competences* are connected with "skills, know-how and technique", *Materials* consist of "things, technologies, tangible physical entities, and the stuff of which objects are made", whilst *Meanings* relate to "symbolic meanings, ideas and aspirations" (Shove et al., 2012; Spotswood et al., 2015).

Figure 1 – Competences,meanings and materials



In the context of transport, *Competences* relate to an individual's ability to drive, ride a motorcycle, or a bicycle, an individual's ability to understand how to utilize the public transport system, and understanding of the traffic light rules, for example. *Materials* relate to the available transport solutions - cars, motorcycles, bicycles, buses, trains, etc. - and infrastructures built to support them - roads, railways, metro or subway stations and connected locations, cycle lanes, sidewalks, etc. *Meanings* are tied to the mental and social connections that an individual builds and associates with certain objects and ideas, so in this case, one example could be the social status that one connects to owning more expensive and fast car brands (Spotswood et al., 2015). In the era of social media, it is very common to see influential people travel with their private jets, thus leading individuals to establish a connection between the notion of power, notoriety, and unsustainable means of transport. In most Western countries, political and business leaders rarely use public transport. They usually drive a private or company car. Only recently, owning an electric car became a trend among such individuals. However, electric cars remain unaffordable for a very large portion of the population and Portugal is no exception. Portuguese parliamentary representatives are rarely seen cycling to commute from home to work, and if they had done it, it would have probably made the news, for being considered rather unusual. Considering the above three elements of the social practice framework in the context of cycling, the following questions were formulated:

- *Competences*: They relate to the "competences required for the performance of the practice of cycling" (Spotswood et al., 2015). Sersli et al. state that "bicycling with children (...) requires new competences" (Sersli *et al*., 2020). **Are competences preventing parents from allowing their children to cycle to school in Seixal, Portugal?**

- *Materials*: This relates to owning a bicycle and the availability of adequate infrastructure, including the existence of cycle paths (Spotswood et al., 2015). **Are infrastructures or the lack of access to a bicycle preventing parents from allowing their children to cycle to school?**

- *Meanings*: There are several meanings usually connected to the practice of cycling: from the understanding of its practical benefits, perceived as a "cost-effective", "fast and efficient" means of transport, to concerns with safety, a "sense of danger and stress" linked to the practice (Spotswood et al., 2015; Sersli et al., 2020), as well as a perceived need to be "fit" and "strong" to practice (Spotswood et al., 2015), thus also linking cycling to wellbeing. Based on her research findings, Fiona Spotswood states that, in the UK, cycling is "not viewed as normal", and that to circulate on busy roads, a cyclist needs to be "adventurous", adding that for some individuals, it happens to be a "lifestyle commitment" (Spotswood et al., 2015). **How can individuals feel compelled to adopt more sustainable mobility practices? Could challenging associations to the need to be fit lead to healthier mobility practices (e.g. considering the use of electric bicycles)?** In her research findings, Spotswood found out that some respondents felt that "cycle commuting was only appropriate for lower-ranked workers". Going even further, Spotswood concludes that the "collective understanding of cycling as unattainable and culturally incongruous provides an example of the workings of the social practice". **Could "breaking" associations of power and influence to unsustainable lifestyles promote the adoption of micromobility practices, such as cycling?**

- *Interconnected practices*: **Which other practices are interconnected?** Nowadays, busy parents need to cope with a very demanding rhythm of life and a fast-paced working environment. Driving the children to school is one of the many tasks that parents have to handle and a huge responsibility. Most parents cannot afford extra commute time and, in practical terms, taking children to school by bike may not be compatible with their professional commitments.

In a study published in 2020, researchers Bruno and Nikolaeva highlight that in their journey to commute to work, bicycle users can face multiple challenges, to name a few: (1) road safety to reach train stations where there are no cycle lanes and the need to consider the "cycling experience leading to and from" the cycling lanes, (2) lack of dedicated space for bicycles in train carriages and the inability to use this dedicated space during busy times, as mandated by most railway companies, (3) the nonexistence of shower facilities once in the workplace, (4) the unavailability of lockers to store changing clothes and other pieces of equipment such as a helmet (Bruno, M., and Nikolaeva, A., 2020). These aspects are an increment to the challenges that most parents encounter when having to bring their children to school before the start of their usual work journey, assuming Monday-Friday 09h00 - 18h00. working times. Nevertheless, some other European countries, such as The Netherlands, have impressive cycling rates with 1⁄4 of all trips made by bicycle, according to Harms and Kansen (2018), cited and evidenced in Bruno and Nikolaeva's research (2020), and besides, professional commitments don't seem to prevent parents from cycling to school with their children.

Cycling in Portugal

Cycling lanes have been growing in number over the past years in several Portuguese municipalities, from North to South. As an example, Ciclovias.pt is a public portal, maintained by free-will benevolent citizens, based on a model very similar to Wikipedia — i.e., citizens can contribute with knowledge and/or donations to keep the site up and running — thus serving the general interest of cycling communities in Portugal. According to the portal, and based on citizen contributions, there are at least 5.230 kilometers of cycling lanes and about 3.007 bike parking spots in the country. When looking at the map (Figure 3), there is a very unequal distribution of cycling lanes across mainland, with a much larger number of them following the coastal lines, from northern regions down to the Spanish border in the region of Algarve and with a larger footprint in bigger cities, such as Lisbon, Porto and the city of Aveiro, known for its abundant flat roads. There are a few other municipalities with a higher number of lanes when compared to less populated areas, such as the municipality of Guarda, but considering that the portal is updated based on the goodwill of citizens, there could be missing lanes in other areas that haven't been reported yet and aren't visible in the map.

A team of researchers from Instituto Superior Técnico (IST), University of Lisbon, counted the number of cyclists in several lanes of the capital from 2017 onwards and noted that the number of users has been notably growing over the years. Between 2017 and 2018, the average volume of citizens riding a bike every hour in Lisbon rose by 97%, a number based on observations from 15 different locations. This number rose another 6% the following year, then decreased during the lockdowns forced by the SARS-Cov-2 global pandemic (-15%), and then grew again between 2019 and 2020 by 28% (Relatório Técnico sobre Ciclovias, 2020). The report highlights that the latest increase could be related to the fact that populations have been avoiding public transport, motivated by fear of the virus. It would be relevant to look at the latest data from 2021-2022 to confirm whether these rising trends remain and understand the purpose of each trip. For example, are bike riders commuting to work? Additionally, the socio-demographic profile of bike riders in Portugal and what motivates them to use this means of transport over other available options would be very relevant.

"Bus bike", "bicíbus", "cycling bus" or "comboio de bicicletas": success stories

Every morning, schools face the same challenge: chaotic drop-offs, unsafe roads with dozens of cars competing for a short number of car parking spaces and a stressful start for many parents rushing to their workplace. A one-off cycling event initially meant to promote the healthy habit of cycling to school, became a weekly habit for about 170 children from Portland, in the United States. And it grabbed the attention of many, being featured in international news. Every Wednesday morning, students from this city in the state of Oregon ride their bikes to school, leaving the school bus nearly empty. According to an article from The Washington Post, published in October 2022, "The bike bus has become the students' favorite way to get to school" (The Washington Post, 2022). Interestingly, the municipality of Portland offers instructions on how to start a bike train on their local page, with a reference to incentives and prizes for individuals willing to do it. The busy streets of Barcelona are no exception: *Bicibús* was launched and instantly became a success. I could find other examples across Europe: Sciennes Primary School and James Gillespie's Primary School in Scotland for example. On a website, participants in the initiative refer that "the last nine bike buses had roughly 120-140 taking part in each and were all great successes".

In Lisbon, the initiative was first launched by one father in 2015, who used to cycle with his child to the local primary school, *Escola Básica do Parque das Nações*, and then convinced other parents to join the movement. Witnessing the success of the "*comboio de bicicletas*" ("bikes train" when translated from Portuguese), the municipality of Lisbon (*Câmara de Lisboa)* decided to sponsor a wide initiative called *CicloExpresso* and launch it as a structured program, in partnership with a non-governmental organization called *Bicicultura*. To start with, *CicloExpresso* was launched as a pilot in two schools, *Colégio Pedro Arrupe* and the school where it began to gain traction, *Escola Básica do Parque das Nações*. The program was then extended to another three schools, allowing children from several neighborhoods of Lisbon to cycle to school, at least once a week, with the support of "experienced guides" (*monitores*). *CicloExpresso* is now available in several Portuguese cities — Lisbon, Almada, Aveiro, Braga, Matosinhos — and is expected to become available in many more.

In all the articles and videos found about the above initiatives, teachers, parents, and students emphasized many benefits:

- Promotion of healthy habits such as physical exercise
- Reduction of "morning drop-off" traffic and congestion
- Diminution of pollution caused by buses and cars
- The buildup of community spirit among participants
- Mitigation of issues with bus driver shortages
- Less concerns with safety as children cycle to school in groups
- Combat climate change by promoting sustainable practices

If the benefits are so many, why don't we see a bigger adoption of cycling to school in some locations? What prevents parents from allowing their children to commute to school by bike?

Methodology

To understand how *materials*, *competences*, and *meanings* influence the simple act of cycling to school, an online survey in Google Forms consisting of 9 questions was

sent to parents who have their children attending schools in the municipality of Seixal, in the district of Setúbal (Metropolitan Area of Lisbon).

One of the public schools surveyed, Escola Básica de Pinhal de Frades, welcomes students from the age of 10 to 15. Another one, Escola Básica de Arrentela, is also a public school for students aged between 10 and 13. The third school, Colégio Atlântico, is a private institution that oversees the education of children from nursery to the end of secondary school.

The survey was sent directly to some parents and groups of parents belonging to these three schools, through social media and email. The introduction to the survey was titled "Cycling to School" (*De Bicicleta Para a Escola*) and included a brief explanation of the context of the research, identifying the university and including the main goal of the study. It was explained that the data was being collected to challenge schools to encourage their students to cycle to school. The respondents were informed that their responses would be anonymous.

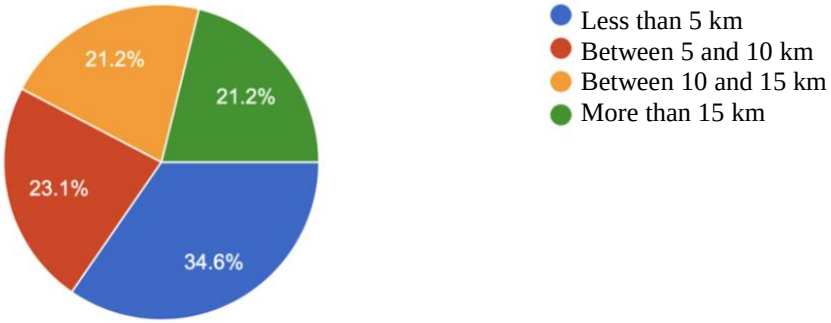
The survey included 7 multiple-choice questions and 2 open-ended questions with a free text field for respondents to add their comments. A total of 52 responses (n = 52) were collected between the 20th and 22nd of November 2022. The detailed survey results are available in Appendix II.

The sample of responses collected is not meant to be representative of the entire school community in Seixal but it provides some insightful considerations about the practice of going to school every day and the reasons that inhibit parents from allowing their children to cycle to school in this municipality. In addition to having received a limited number of responses, the sample does not cover all age ranges and socioeconomic contexts the diversity of the student community in Seixal provides.

Cycling to School in Seixal: Results

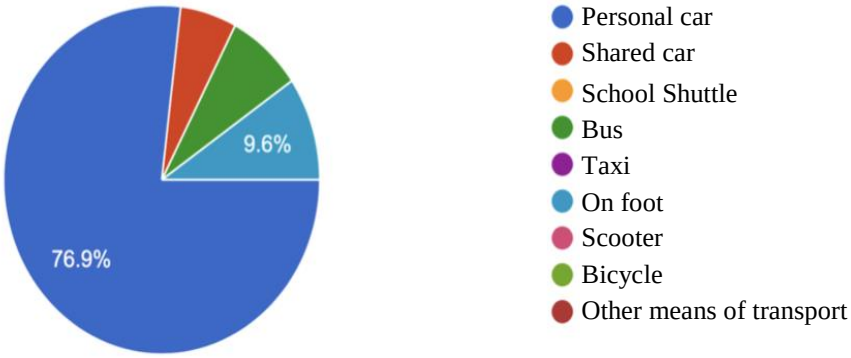
The first question "*At which distance do you currently live from school?*" had four given options to choose from, between "less than 5 kilometers", "between 5 and 10 kilometers", "between 10 and 15 kilometers" and "more than 15 kilometers". The majority of the respondents live within a 5-kilometer range of the school location (34.6%). Overall, we can conclude that over half of the parents who replied to the survey live at a reasonable distance from school, in this case, less than 10 kilometers.

Figure 2 –At which distance do you currently live from school?



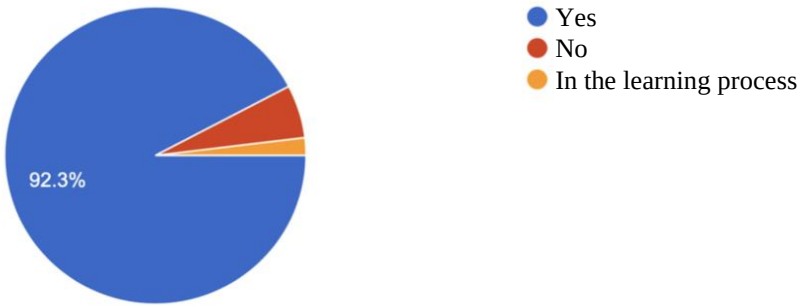
The second question was: "*How do your child/children go to school more often*?" and had nine options to choose from: private car, shared car, school shuttle, bus, taxi, walking to school, scooter, bicycle, or other. 76.9% of the respondents selected "private car" as the main means of transport to take children to school every day. There is, therefore, a very large majority of parents driving their children to school in the morning using their private cars. Such results match the data obtained from other sources and already referenced in this paper.

Figure 3 – How do your child/children go to school more often?



To the next question, "*Can your child/children ride a bicycle?*", 92.3% of the parents confirmed that their children know how to ride a bicycle.

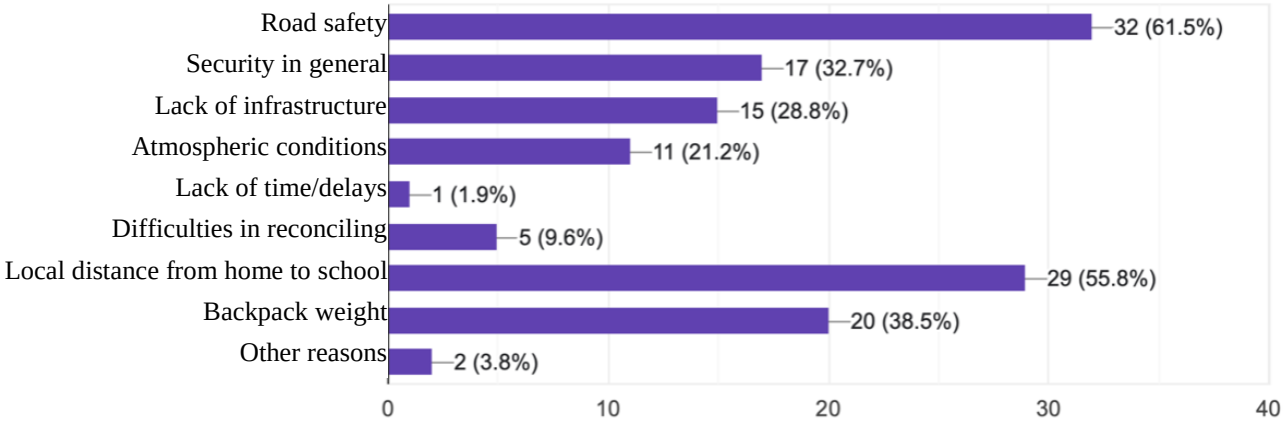
Figure 4 – Can your child/children ride a bicycle?



This demonstrates that although a majority of children have obtained the necessary skills, there are still children who need to acquire such competencies. This cannot be overlooked.

The following question was: "*What are the main reasons why you would consider excluding the possibility of your children commuting to school by bicycle? Please choose a maximum of three responses*". Out of nine possible options (road safety, general safety, lack of infrastructure for parking bicycles, weather conditions, lack of time, difficulties in meeting demanding schedule and work commitments, distance between home and school, weight of the school bag and other reasons), the three that stood out, from the most frequently selected to the least one were: (1) road safety with 65.1%, (2) distance between home and school with 55.8% and (3) weight of school bag with 38.5%.

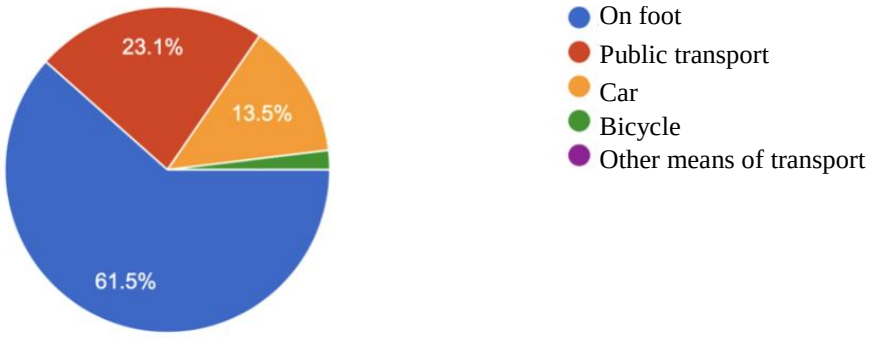
Figure 5 – What are the main reasons why you would consider excluding the possibility of your children commuting to school by bicycle? Please choose a maximum of three responses.



Road safety is of great concern for parents and the main reason for them not considering the bicycle as an option for their private cars, however, a good number of parents do not live close enough to the school location to think of it as a viable option, which is in line with the results obtained from the first question, about the distance between home and school.

The question that follows was open-ended and only meant to be answered if respondents had chosen the option "*Other reasons*" in the previous one. Only two respondents gave answers, one of them explaining that they would drive their child to school by car because it's on the way to their workplace, whilst the other respondents said that their child "is not mature enough" to go on their own to school.

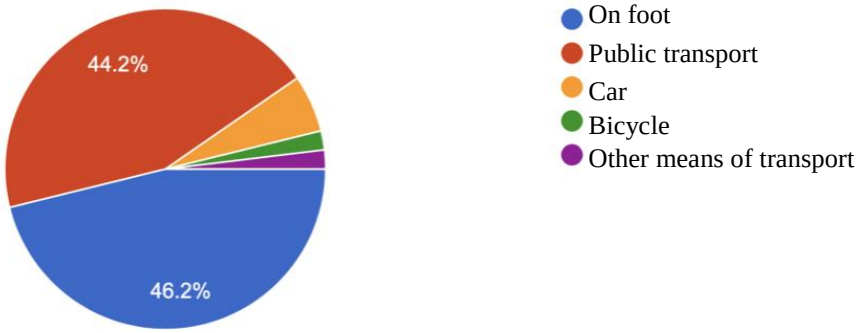
Figure 6 – When you were a primary school student, how were you commuting to school



The second section of the survey was built as an attempt to understand behavior changes over time. Therefore, parents were asked to share how they used to commute to school when they were primary school students (from age 6 to 15). They had five options to choose from, between "walking", "public transport", "car" "bicycle" and "other means of transport". The majority (61.5%) replied that they used to walk to school.

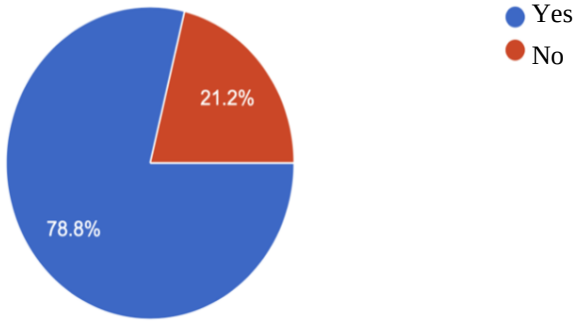
Then parents were asked to share how they used to commute to school when they were secondary school students (between age 15 and 18). 46.2% used to walk to school and another 44.2% used to take public transport.

Figure 7 – When you were a secondary school student, how were you commuting to school?



To the following question "*If your concerns were addressed, would you consider allowing your child/children to commute to school using a bicycle?*", with the option to either reply "yes" or "no", 78.8% of the parents replied "yes".

Figure 8 – If your concerns were addressed, would you consider allowing your child/children to commute to school using a bicycle?



In the final section of the survey, a video of the "bike bus" initiative lasting less than 2 minutes was included. Respondents were encouraged to watch it before answering: "*Please add comments and suggestions about the "bike bus" initiative*." A significant number of respondents praised the initiative, using adjectives such as "good" ("*boa iniciativa*"), "interesting" ("*interessante*"), "excellent" ("*excelente*"), "nice" ("*ótima*"), "ecological" ("*ecológica*"). However, some parents thought this wouldn't be "viable" or that this "wouldn't be viable in Portugal", highlighting "safety", "distance from home to school", "the lack of infrastructure for bicycles", the "architecture of cities and neighborhoods", "lack of human resources to make it happen", "lack of citizenship" and "societal values" as blockers. Some others suggested that the initiative could be

launched in Portugal but: "it would need to be well organized", it would require "safe cycle lanes", "safe roads", "human resources to ensure children's safety", and in some cases, it would also depend on "financial support" and on the "economic conditions of families". Some of the parents also said that the fact that children would be accompanied by adults would make commuting "more fun", that it would "stimulate the children's autonomy and the group spirit", whilst parents would feel "more reassured" about it. According to the respondents, the "bike bus" initiative would contribute to "promoting more outdoor physical activities", "social interactions" and "sustainability".

Conclusions

Could cycling to school become a regular practice in the Municipality of Seixal? And in other urban areas in Portugal? Based on the literature review grounded on Social Practice Theory, research, success stories, and the survey results included in this paper, the following conclusions were reached:

Competences: A very large portion of surveyed parents stated that their children know how to ride a bicycle, so we can exclude competences as a major factor preventing students from cycling to school in this case. Nevertheless, it is worth noting that we cannot assume that all children will have acquired these skills and therefore, **schools and communities need to create conditions for all children to learn and feel included**. When planning for such initiatives, it is equally important to take into account children who may be suffering from diseases and/or with reduced mobility, thus potentially preventing them from participating. Any gaps need to be considered and addressed to ensure that conditions are created for all children, regardless of their physical and/or mental ability.

It is worth noting that some Portuguese schools have adopted projects aimed at teaching children how to ride a bicycle from the age of 10 but these programs are currently optional for schools - "School Sport on Wheels" ("*Desporto escolar sobre rodas*") and "Ciclism goes to school" ("*O ciclismo vai à escola*"), both created in the context of the National Strategy for Active Cyclable Mobility 2020-2030 ("*Estratégia Nacional para a Mobilidade Ativa Ciclável* (ENMAC) 2020-2030") and the National Ciclism Program for All ("*Programa Nacional de Ciclismo para Todos* (PNCpT)").

These programs are not mandatory and are available in a limited number of national schools. **Implementing these cycling programs in every school, including schools from more deprived areas, could have a very positive effect.**

Materials: The lack of adequate infrastructure such as cycling lanes and parking for bicycles was frequently cited in the survey, as well as in the articles referenced in this paper, as an element preventing families from considering having their children commute to school by bicycle and/or participating in 'bike bus' alike initiatives. This topic could quite easily be addressed with **more investments from municipalities in building more and safer cycle lanes and parking spots for bicycles in schools**.

Concerning materiality, it is equally important to take into account children from families with less socio-economic conditions who may struggle to have access to a bicycle or simply won't have space to store them in safe conditions. We cannot assume that all families will be able to equip their children with a bicycle and need to consider that, depending on the child's age, different bicycle sizes would be required, which may not be affordable for all. In the context of the "School Sport on Wheels" mentioned above, schools will receive bicycles and helmets that will be used to teach children in school. **It is worth considering the implementation of a system to loan bicycles in schools, similar to the ones already in place for books or computers.** As an example, a partnership could be celebrated with entities such as a Portuguese Non-Governamental Organisation called *Sempre A Rodar* (https://semprearodar.pt/) which loans second-hand bicycles of every size for a symbolic amount, allowing parents to exchange bicycles for a bigger one when the one in use no longer fits.

Meanings: Road safety and general safety are major concerns for parents and the most important blockers for commuting to school by bike. This is the most important reason that the survey results have revealed. This demonstrates that **promoting safety would be a major enabler** for parents to consider having their children ride a bicycle to school. Building the infrastructure (cycling lanes and parking spots) won't be enough in itself. There seems to be a general understanding that roads aren't safe for bicycle riders (which may be true), linked to the fear of accidents. There are also concerns about general safety, likely exacerbated by news of children at risk on their way to school (cases of abduction for example). Parents are more aware of potential dangers and may feel more reassured by driving their children to school. This is probably the most

challenging "blocker" to address. **Understanding how "meanings" linked to such concerns and fears are dissipated in countries where there is a high number of children riding bicycles to school could be enlightening and is worth investigating further**.

Interconnected practices: Some interconnected practices, for example, **living or working further away from school, have a direct influence** and can prevent parents from considering 'bike buses' as a viable commuting solution. When looking at the commuting solutions used by parents when they were in primary and secondary school, a tremendous change in commuting habits is noticeable. This change can be linked to multiple factors but it seems that parents tend to live further away from their children's school location. **Studying further interconnections between the practice of cycling to school and other social practices and how these other practices can inhibit parents from allowing their children to cycle to school would be a worthwhile investment**. Cycling to school should also be considered and carefully planned under the 15-minute city planning initiatives.

On another note, we should also consider **teaching differently in driving schools to ensure that there is more respect for bicycle users**. In addition to this, t**eaching adults who don't know how to ride a bicycle** in local communities could influence the overall outcome.

Final Considerations

There is much more complexity in studying the act of cycling to school that this research won't contemplate and that deserves additional investigation. As Spotswood highlights in her paper, "a simple act such as cycling is embedded as a system within other systems", thus proving that promoting change requires richer perspectives than just focusing on individuals' attitudes, behaviors, and choices (Spotswood et al., 2015). Further developments of the social practice theory could provide, beyond the existing framework, some tools to support policymakers in their endeavor to drive change and promote the adoption of more sustainable mobility practices. In a country like Portugal, which heavily uses cars for regular commuting purposes and in which the transport sector is responsible for the largest share of carbon emissions, social practices deserve investment to further understand what promotes unsustainable practices and what could

lead to positive change. By addressing the elements that can easily be tackled — building the necessary infrastructure such as cycling lanes, whilst equipping schools and local communities with the necessary materials to equip children with bicycles and competences, as well as launching initiatives such as CicloExpresso — low-hanging fruits could be achieved and fruitful results could be obtained. Blocking elements tied to meanings, more complex to address in the short term, require more investigation and investments, as well as strong local and national support to deconstruct adverse associations over time.

Limitations to This Study

As stated in the methodology section of this article, the sample of responses that originated the above results is very limited. However, these first results have led to very insightful observations that would deserve to be studied in other municipalities. It is also important to note that this study focuses on a municipality located in an urban area and therefore its applicability can only be considered in this context. Less populated regions of the country could produce very different results.

Lastly, it is worth noting that by the time this survey was created and sent to the respondents, the "CicloExpress" initiative had already been launched in Lisbon (Portugal). If this local example had been selected and inserted in the survey, instead of the use case of Portland (USA), it could have produced different results in the last part of the survey where parents could write free comments.

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Videos

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- Bike bus Portland, USA https://www.youtube.com/watch?v=OF-p6h92rGc&t=54s
- Bike bus Blackford, Scotland https://www.youtube.com/watch?v=7n95Z1K8gUs
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Appendix I

Figure 1 - Co2 emissions contribution from the transport sector in Portugal (2015-2021). Source: Climate Trace (2021). https://climatetrace.org/inventory?sector=all&time=2021&country=PRT&gas=co2e100#trends

Figure 2 - Main transports used for daily commute in Portugal (2011-2021)
Source: Expresso, based on Census 2021 (2022).
https://expresso.pt/sociedade/censos-2021/2022-11-23-Uso-do-automovel-aumentou-na-ultima-decada-66-dos-portugueses-deslocam-se-de-carro-064f6e01

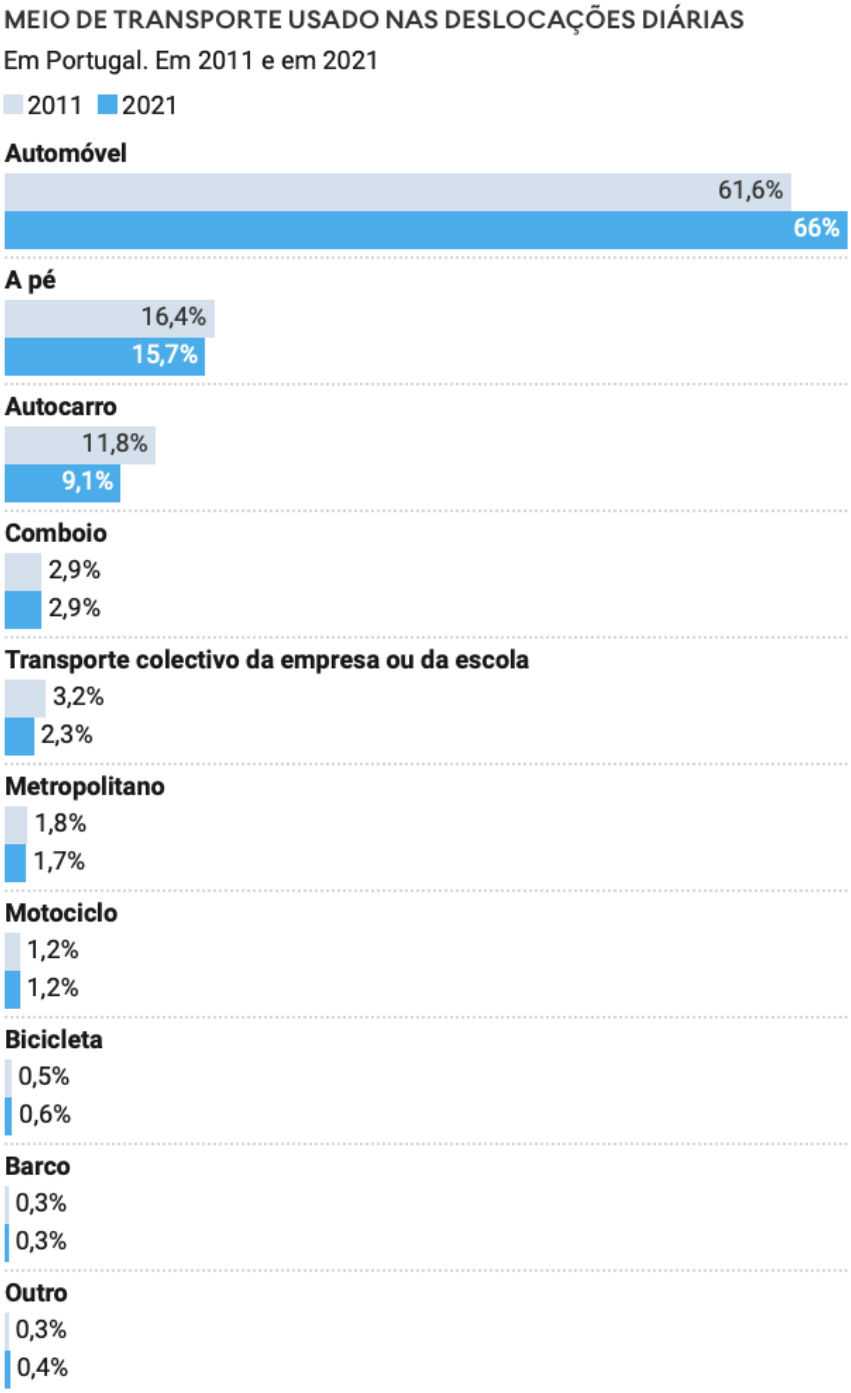
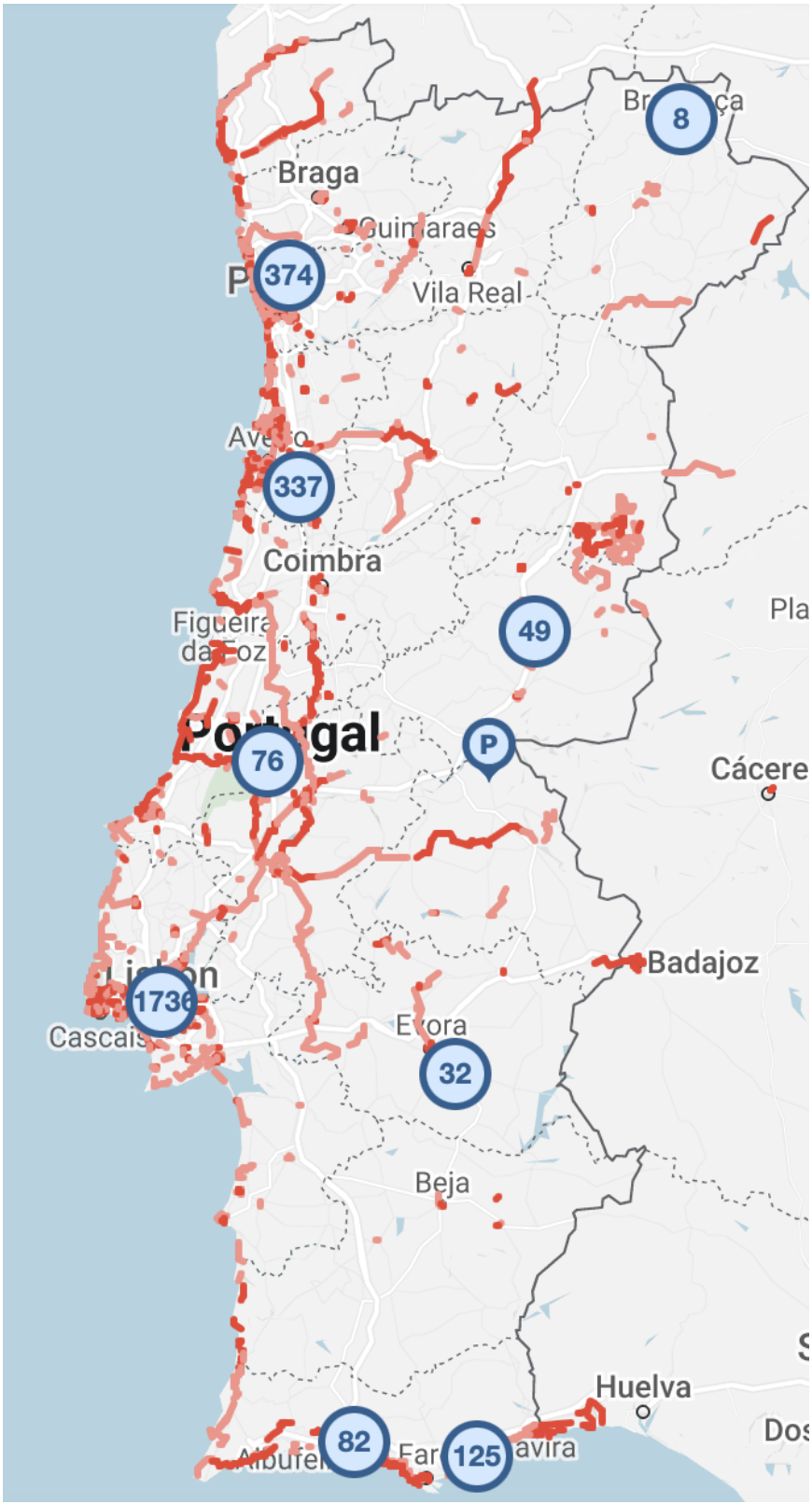


Figure 3 - Map of Cycle Lanes in Portugal (2022). Source: Ciclovias.pt (2022), Accessed on December the 14th, 2022. https://www.ciclovias.pt/



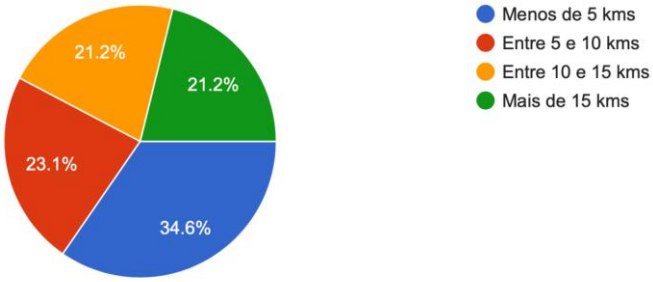
Appendix II

Detailed Survey Results

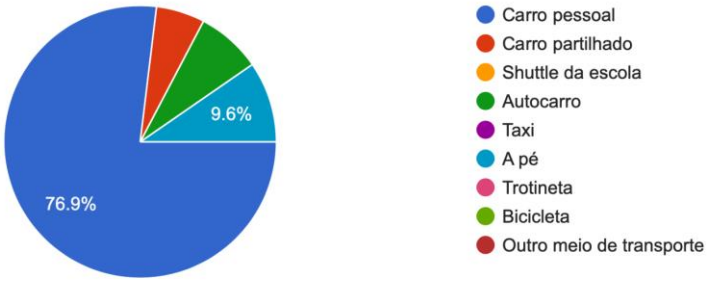
De bicicleta para a escola

No intuito de desafiar escolas a encorajar a deslocação de alunos para a escola de bicicleta e no contexto do meu doutoramento em Alterações Climáticas e Políticas de Desenvolvimento Sustentável pela Universidade de Lisboa (ICS), onde estou a estudar a questão das práticas em mobilidade e micromobilidade, gostaria de convidar-vos a responder a este breve inquérito. O inquérito é totalmente anónimo.
Muito agradecida pelo tempo dispensado.

A que distância da escola é que reside atualmente?
52 responses

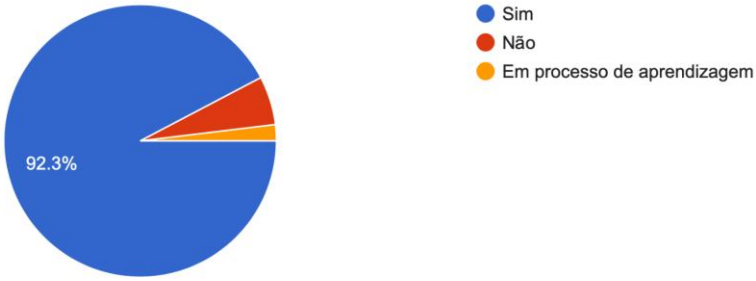


Como é que o(s) seu(s) filho(s) se deslocam para a escola mais frequentemente?
52 responses



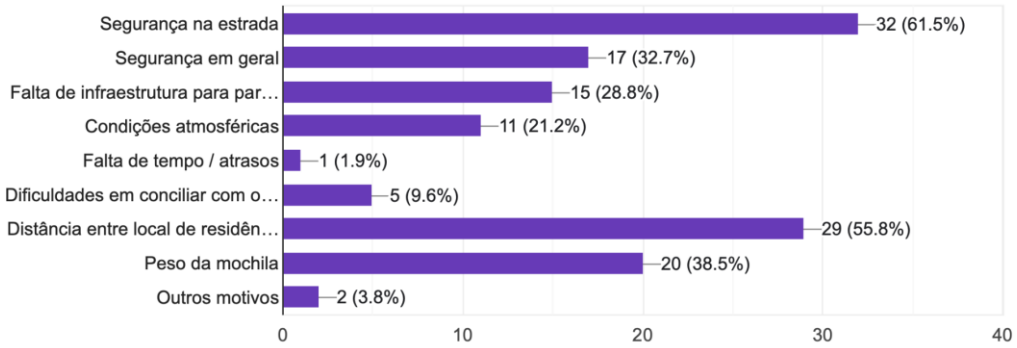
O(s) seu(s) filho(s) sabem andar de bicicleta?

52 responses



Quais são os principais motivos que a/o levariam a excluir a hipótese de o(s) seu(s) filho(s) se deslocar(em) de bicicleta para a escola? Escolhe no máximo três (3).

52 responses



Se escolheu "outros motivos" na pergunta anterior, por favor, descreva por breves palavras as suas preocupações:

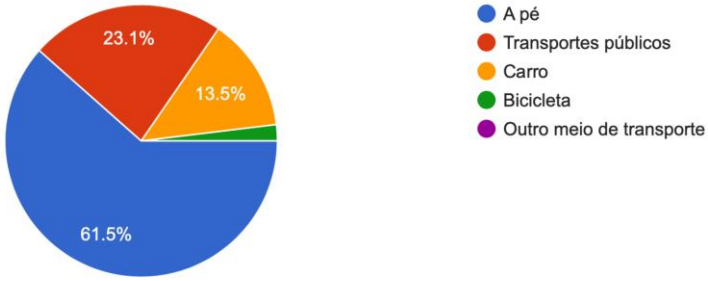
2 responses

O pai vai para o trabalho e deixa o filhote na escola.

Não tem maturidade para se deslocar sozinha

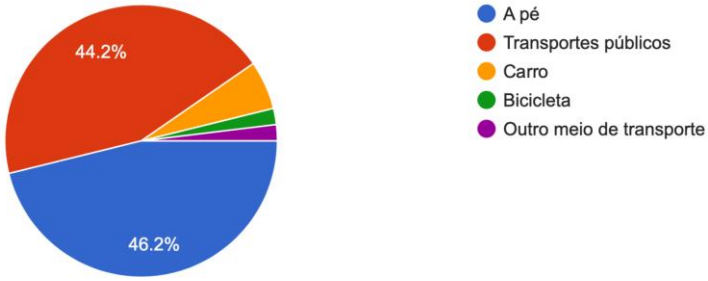
Quando era aluno/a do ensino básico, como se deslocava para a escola na altura?

52 responses



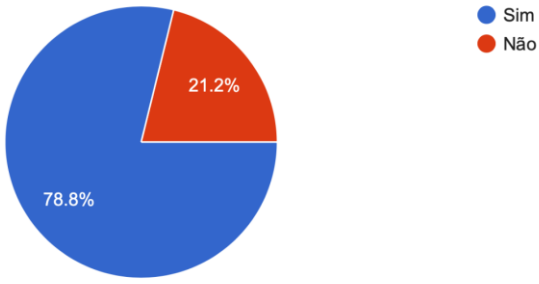
Quando era aluno/a do ensino secundário, como se deslocava para a escola na altura?

52 responses



Se as suas preocupações forem endereçadas, ponderaria deixar o(s) seu(s) filho(s) deslocar-se de bicicleta para a escola?

52 responses



Por favor adicione comentários e sugestões sobre a iniciativa "Bike Bus". Muito obrigada!
Gostei, mas teria de ser bem organizado.
É uma iniciativa interessante no contexto EUA, contudo o paradigma político e social em Portugal, concretamente não deixa que tais iniciativas decorram em segurança. De onde nos deslocamos não existem ciclovias, é quase inexistente os passeios. Outra questão prende-se com a arquitetura das cidades e bairros. A morfologia dos bairros impossibilita esta atividade (estradas que ligam a autoestradas, passeios curtos, etc) e por fim os valores das sociedades no geral, em particular em Portugal. O desrespeito pela cidadania, integração e aculturação. Vivi uma experiência perto do continente americano e por isso identifico legitimamente estas questões… não é impossível, tem é um contexto histórico/ político/social/arquitectónico/cultural que não pode ser colocado fora desse contexto. É como a Finlândia, Dinamarca e Holanda, embora na Europa estes contextos permitem tal replicabilidade. Portugal, hesito.
Otima iniciativa, mas moramos longe e tenho muito receio da estrada.
Excelente iniciativa, somente falta apoios fundamentados relativamente a estradas e apoios humanos para garantir segurança das crianças que se deslocam por esses meios até à escola
Uma das iniciativas passa pela experiência real dos alunos. Durante 1 mês, 1 dia da semana (sexta-feira), o transporte seria por bicicleta. Para isso, necessitava da participação da policia, Câmara municipal e da direcção escolar (agrupamentos de escolas) para assegurar a segurança e definir os trajectos/estradas envolventes das escolas.
Não me parece viável
desenvolver as infrastruturas adaptadas às bikes
Excelente iniciativa!! Infelizmente resido longe do colégio o que impossibilita a ida dos miúdos de bicicleta para o colégio. Mas ao fim de semana ou mesmo ao fim da tarde é uma prática lá de casa!
Se fosse viável não haver carros na estrada seria uma excelente iniciativa para uma deslocação para a escola e regresso a casa sem utilização de carro.
Gostei da ideia e acho que deveriamos tentar lançar esta iniciativa!
Numa cidade como Barcelona vemos meninos a andar de bicicleta com mochilas às costas. Em Azeitão também já se vêem crianças e há tentativas da comunidade para estudar práticas sustentáveis. Creio que falta apoio e criação de vias rodoviárias verdes.
Tinha de haver muito mais condições rodoviárias para as crianças
Boa iniciativa
É uma proposta interessante para replicar em Portugal, mas há um longo caminho a percorrer para termos vias de circulação seguras destinadas a ciclistas.
Adorei o “Bike Bus”

.
Contribui pra o meio ambiente.
..
Uma excelente ideia
As pessoas têm de estar consciecializadas para esta iniciativa. Dependendo das zonas poderão ser necessarias serem criadas infraestruturas a fim de facilitar este tipo de deslocação nesta formato que vai estar tambem dependentenda distância e tipo de estradas onde irão deslocar-se de bicicleta e esta dependente também do poder economico das familias ou apoios. A iniciativa é boa e também poderia ser feita a pé.
Deveria haver mais faixas para bicicletas
Era uma ideia muito gira de implementar caso sejam feitas as infraestruturas necessárias, nomeadamente ciclo vias.
Uma boa iniciativa. Mas as nossas escolhas teriam de ter parqueamento para os mesmos.
..
Ecológico, boa iniciativa
Teria de haver pessoas para os acompanhar e manter a segurança
Excelente iniciativa
Ao mesmo tempo que se inicia cada dia, de forma divertida, com uma atividade desportiva, contribui-se para o desenvolvimento sustentável.
Interessante mas não viável
Não consegui visualizar o vídeo
Excelente
Uma boa iníciativa quanto vários fatores se encontram alinhados, nomeadamente: segurança, infra-estruturas e mentalidades.
Boa iniciativa!
Construção de uma ciclovia
Muito giro. Mas na iniciativa “Bike Bus” as crianças vão todas juntas e têm um adulto com elas, não vão sozinhas. Dessa forma é divertido, estimula a autonomia e o espírito de grupo e estando um adulto presente os pais sentem-se mais seguros.
Em curtas distâncias seria uma boa solução
Boa iniciativa, muita preocupação com a segurança e prova que a ida para a escola pode ser divertida.
Muito interessante!

Uma iniciativa bastante interessante, que via com bom gosto, ser replicada aqui na zona. Posteriormente, ser replicada pelo país fora, seria extraordinário. Seria bom para o ambiente, para a saúde dos jovens, assim como para a socialização com os seus semelhantes, que me parece que têm perdido.
Muito interessante
É preciso construir mais ciclovias nas cidades pequenas para que as crianças possam andar de bicicleta.
Excelente iniciativa
Nada a declarar
É uma excelente iniciativa. Deviam começar por fazer as vias para as bicicletas em todas as estradas do concelho, pois para longas distâncias é difícil andar de bicicleta sem as vias.
Uma boa iniciativa
Amazing
Incentivar as crianças a andar mais de bicicleta
Quando a distância e condições de trajeto permitem é um projeto muito interessante!
N/a
Boa iniciativa
Através da associação de pais poderia ser proposto uma iniciativa semelhante.
Podíamos tentar estimular mais os nossos filhos e comunidade havendo iniciativas como estas do Bike Bus.