

1ST TRANSNATIONAL REPORT ON 13 TWO PILLARS MODAL SPLIT ON BEFORE MEASUREMENT

D.T3.1.1

Version 1
07 2017





Title	1st transnational report on two pillars modal split on before measurement
Deliverable	D.T3.1.1
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Status	final
Reviewed by	RA Sinergija
Submission	July 17



1. Introduction

The analysis of the existing situation is a crucial step in the mobility planning process. One part of this step is the assessment of the actual travel behaviour of the employees in the municipalities and institutions. In the MOVECIT project this was done by a mobility survey, which has been carried out in all 13 municipalities and institutions.

This document contains the results of the first MOVECIT mobility survey before measurements. It consists of 13 sub reports of modal split measurement and an overall summary of transnational findings.

2. Mobility Survey Methodology

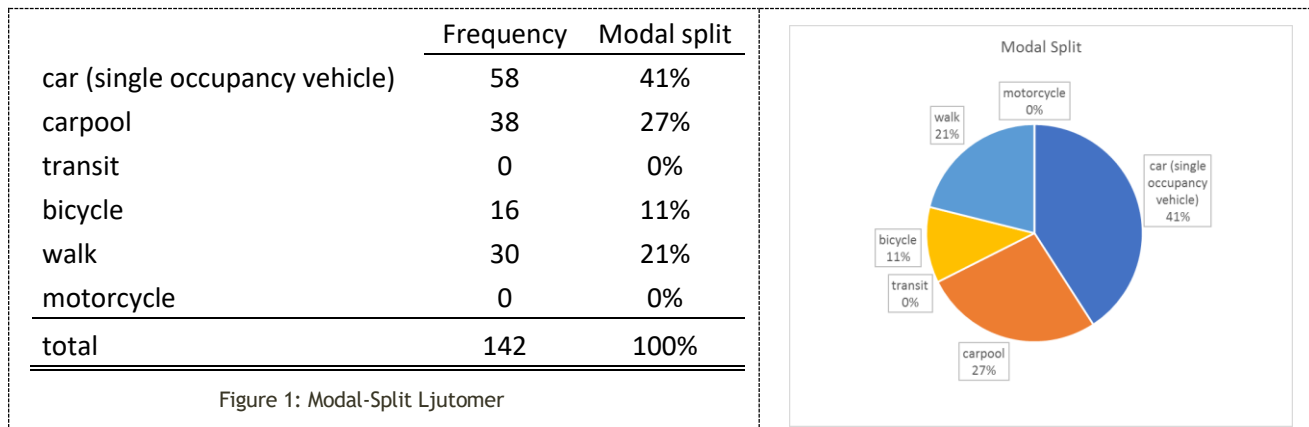
The survey was carried out in 13 workplaces across 6 countries. The master questionnaire in English language was translated in local languages. Survey utilized Google online questionnaire in the most workplaces with two exceptions. Modena (Italy) used an internal questionnaire tool due to recommendation of municipal statistical office. Hospital in Litomerice used a paper version of questionnaire due to lack of digital communication channels at the workplace. Data collection period was usually two weeks, surveys were administered from April to July (most frequently during April and beginning of May).

The key indicator for MOVECIT project is a modal split statistic, which provides an overall estimation of mobility behaviour. Modal split (or modal share) is a number or a share of trips by each transportation mode. For the purposes of this survey a trip is defined as a person's change in location with an origin and destination, which lies beyond the property on which the participating person lives. One trip may include different stages with different means of transport (e.g. by bike to tram stop and by tram to workplace). The survey does not record different trip stages. The mode of one trip with several stages is assigned to the mode of the longest stage under consideration. Data were collected for trips from 7 preceding days.



3. Results Commuting

3.1. Municipality of Ljutomer, SI



In April 2017 and May 2017, an online survey about mobility behaviour was conducted at the Municipal administration Ljutomer. The survey was promoted for the whole municipal employees. The method of dissemination was circular email to all employees. Data was collected via online questionnaire form by using Google Forms. The time frame of the data collection was 3 weeks. The number of the employees is 28, from which the 25 respondents (89,29 %) can be considered suitably representative for the evaluation of the survey.

Commuting modal split is dominated by single car trips (41%), another 27% of trips have a share of carpooling. 21% of trips is done by walk, 11% of trips by bicycle and 0% of trips are done by public transport. Trip distance statistic shows that 32 % of the trips are 1 km and less long, the high percentage goes also to longer distances such as 20 % for 2 to 5 km and 20 % for 5 to 10 km.

The best potential for partial replacement of car trips can be found at cycling and carpooling. Altogether, 40% of employees who commute at least 2 times per week by car are willing to ride (more) bicycle, mostly when conditions for cycling improve. The most sought improvements are: a better connectivity of Public transport lines (demanded by more than half of the interviewees), improvement of infrastructure for cyclists (demanded by 48 % of interviewees) and functional reservation system for searching carpooling partners (demanded by 24% interviewees).

Another promising transport mode for car trips replacement is carpooling. Altogether, 20% of employees who commute at least 2 times per week by car, are willing to share a car if there will be some functional reservation system for searching carpooling partners.

The main outcomes and findings of the questionnaires are in accordance with the main features of the city hall and the office staff itself, i.e.:

Modal split of the city hall employees is dominated by private car usage (41%), but there is also some potential basis for increase of bicycle (11%) use and walking (21%).

A high rejection of PT (0% usage) reflects the low quality of the local public bus transport.

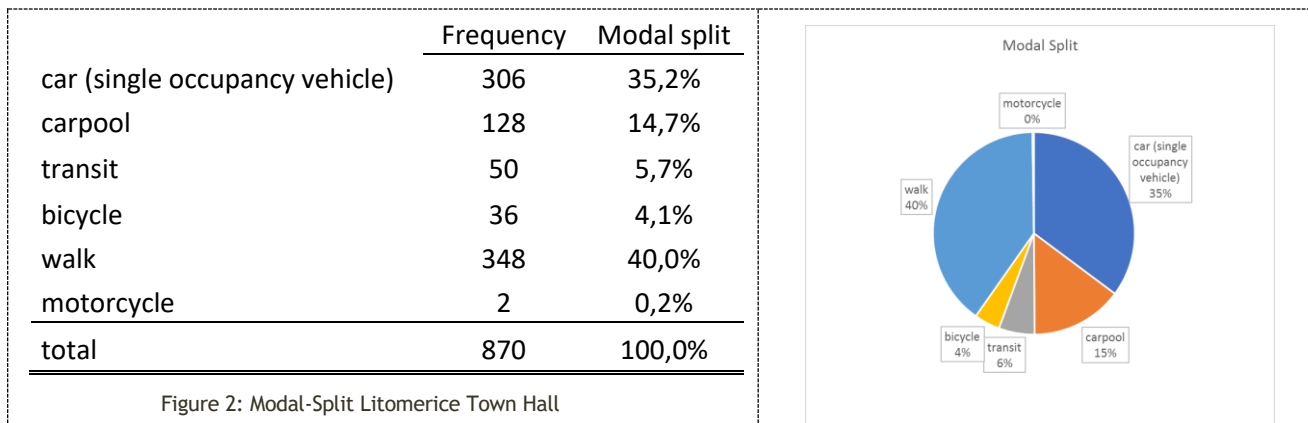
Private car usage is deeply influenced by the fact that for the city hall employees reserved parking is provided for free what attracts more car commuters.

A lacking of functional carpooling reservation system is a main barrier to the wide spread of car-pooling.

There are potentials for walking and cycling as the trip distances are short and the area is flat.



3.2. Municipality of Litomerice, CZ



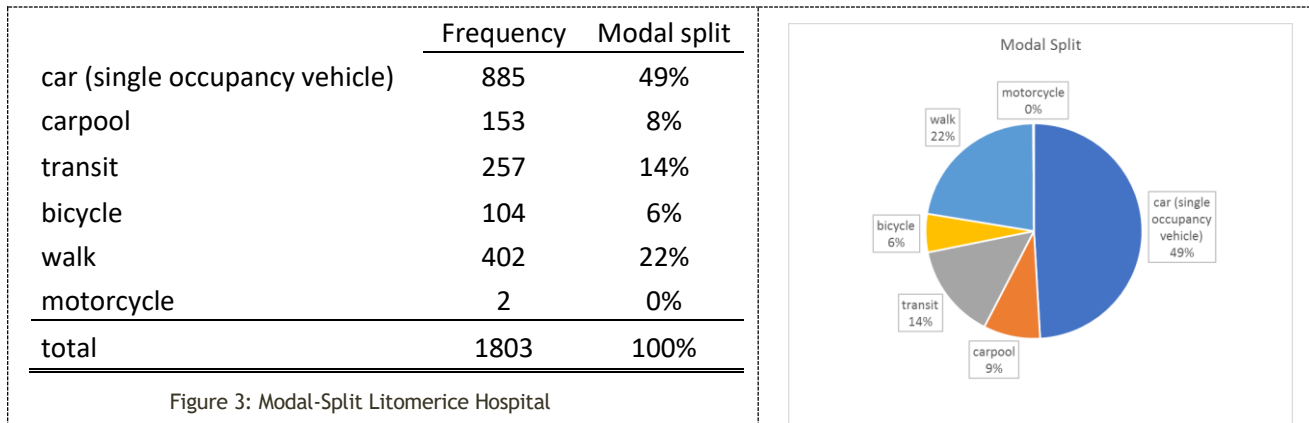
Municipality of Litomerice has 218 employees. Commuting modal split is dominated by walk (40%), another 35 % of trips are a share of car driven by a single person, and another 15% is a share of carpooling. Public transport accounts for 6% of the trips and bicycle for 4% of the trips. Two thirds of the trips (67%) are 5 km or less long, 46% of trips are 2 km or less long.

The best potential for partial replacement of car trips can be found at public transport. Altogether, 22% of employees who commute at least 2 times per week by car are willing to commute (more) by public transport, mostly when conditions for transit improve. The most sought improvement is a shorter travel time and better connectivity of transit lines.

Another promising transport mode for car trips replacement is carpooling. Altogether, 17% of employees who commute at least 2 times per week by car are willing to carpool (more), mostly when conditions for carpooling improve. The most sought improvement is an introduction of dedicated parking spots for carpoolers and financial benefits for carpooling. The potential of cycling comprises of 16% of employees who commute at least 2 times per week by car, who are willing to cycle (more). Two measures for better cycling are hugely demanded - safe storage for bicycles and better end-trip facilities.



3.3. Hospital of Litomerice, CZ



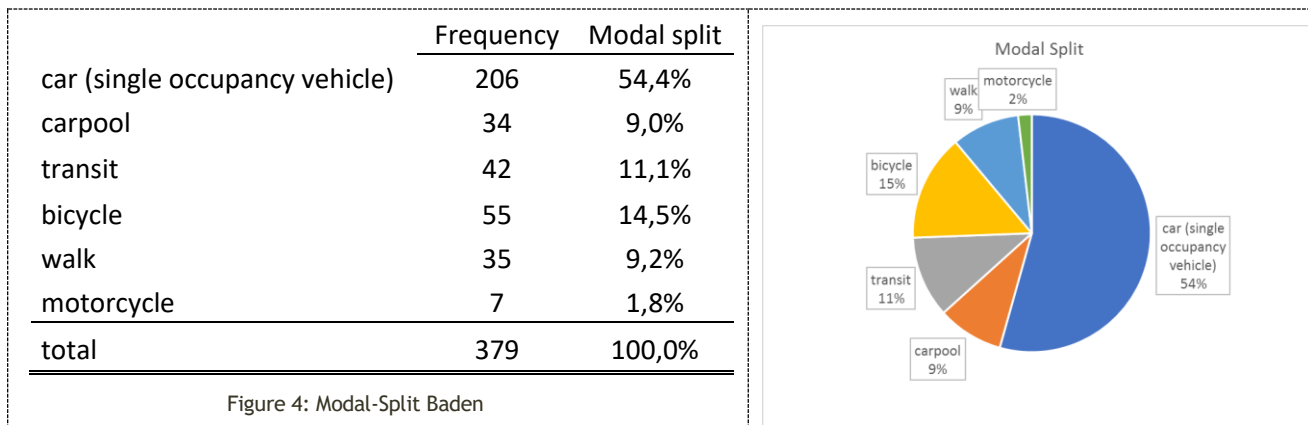
Hospital Litomerice has 933 employees. Commuting modal split is dominated by single car trips (49%), another 9% of trips are a share of carpooling. 22% of trips is done by walk, 6% of trips by bicycle and 14% of trips is done by public transport. More than half of the trips (54%) are 5 km or less long, 31% of trips are 2 km or less long.

The best potential for partial replacement of car trips can be found at cycling. Altogether, 26% of employees who commute at least 2 times per week by car, are willing to ride (more) bicycle, mostly when conditions for cycling improve. The most sought improvement is a safe storage for bicycles (demanded by 32% of all interviewees).

Another promising transport mode for car trips replacement is public transport. Altogether, 17% of employees who commute at least 2 times per week by car, are willing to use (more) transit, mostly when conditions for transit improve. The most sought improvement is a better connectivity of transit lines and alignment of transit schedule with work hours.



3.4. Municipality of Baden, AT



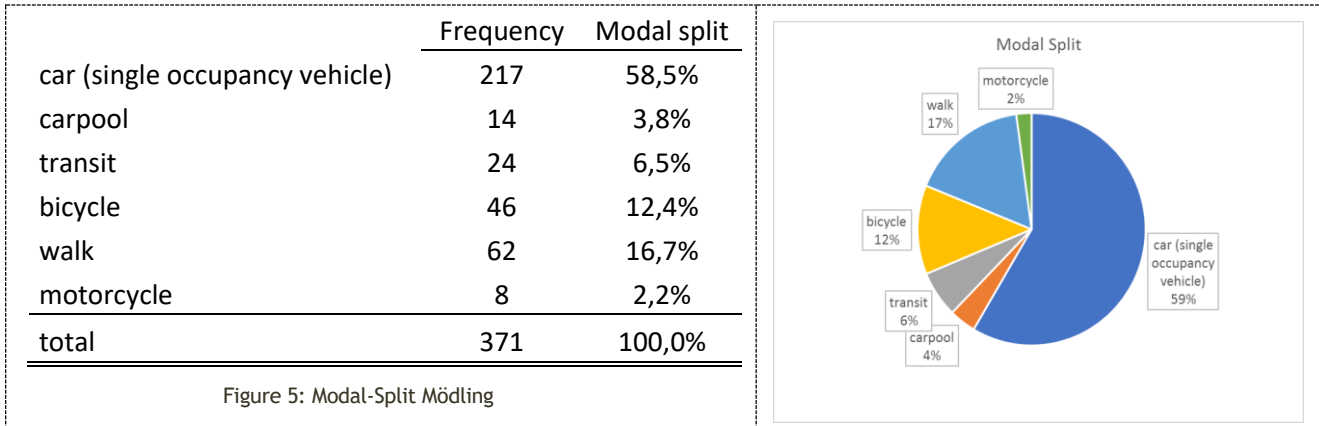
The Mobility Survey was carried out between 25th of April and 8th of May (2 weeks duration) via online questionnaire. Altogether there were 66 respondents from 11 different sites. However the most relevant results are for the main site, the Rathaus (City Hall of Baden) with 40 answers.

The modal split data gained from the survey show a high percentage of single car use (54%). Cycling share is 14,5 % which is higher than the overall modal-split for the City of Baden, which amounted to 9% in a traffic analyses from 2013/2014. Public transportation share is 11 %, Walking and Car Pooling 9% and Motorcycling 2 %.

50 % of the respondents have a trip distance to work of less than 5 km, only 15% live more than 20 km away from their workplace. The potential for Walking and Biking is therefore high, however the willingness to change the travel behaviour to more cycling is rather low (only 11%). Free bike rentals could improve the situation. The willingness to change to transit is a bit higher with 15%. Financial benefits from the employer (27 counts), shorter travel time (23 counts) and better connectivity of public transport lines (20 counts) would be the top three motivators for commuting by public transport more often.



3.5. Municipality of Mödling, AT



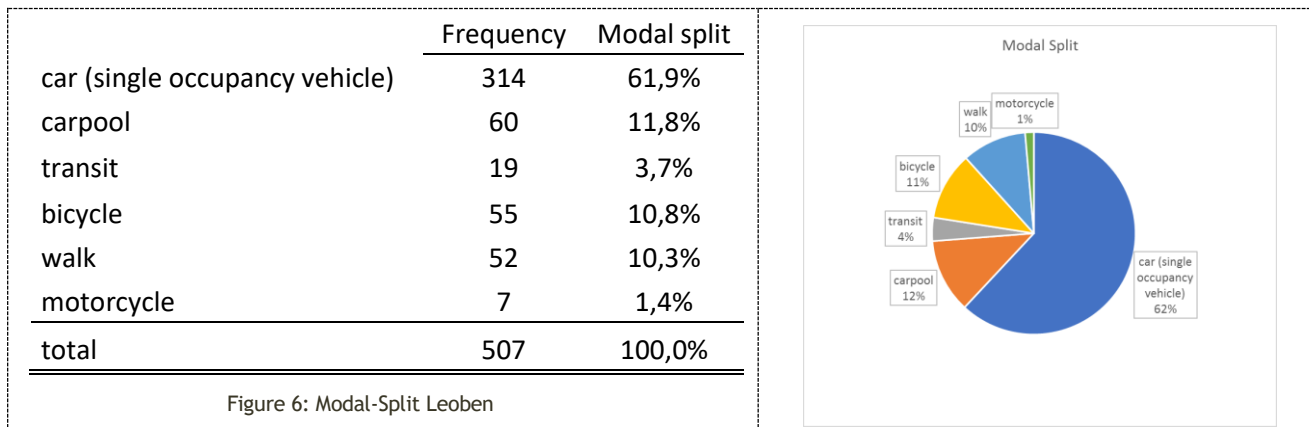
The Mobility Survey was carried out between 25th of April and 8th of May (2 weeks duration) via online questionnaire. It was sent out to 98 clerical employees. Altogether there were 63 respondents from 3 different sites. The most relevant results are for the main site, the Amtshaus Pfarrgasse with 52 of 63 answers.

The modal split data show a dominant car use with 59 %. The second largest share is walking with 16,7 %. Cycling amounts to 12,4 %. Public Transport share is rather low with only 6,5 %. Carpooling is 3,8 % and Motorcycling 2,2%. Compared to the last city-wide Modal Split Survey from 2014/2014 the car use among the respondents is much higher than the average of 36%. Also, the walking-share is below the average of 27%, although the city-structure of Mödling is very walking friendly and that 27 % of the respondents have a trip-distance to work of less than 2 kilometres. Biking share among the sampled employees is similar to that of the city wide modal split data.

The potential for walking and cycling among the respondents is very high. Almost 62 % of the interviewees have a trip-distance to work of less than 5 kilometres. The willingness to change for sustainable modes is relatively low but 12% of the respondents would commute at least 2 times a week by bike even under the current conditions. 8 % would switch to Public Transport if the travel time will be shorter or there is better connectivity or financial benefits from the employer.



3.6. Municipality of Leoben, AT



The Mobility Survey was carried out between 5th and 21st of April (2 weeks duration) via online questionnaire. It was sent out to 325 employees. Altogether there were 88 respondents from 3 different sites. The most relevant results are for the main site, the Rathaus in Erzherzog Johann-Straße with 70% of the answers.

The modal split data show a dominant car use with 62 %. The second largest share is carpooling with 12 %. Cycling amounts to 11 %. The walking share is similar to the Cycling value. Public Transport share is rather very low with only 4%.

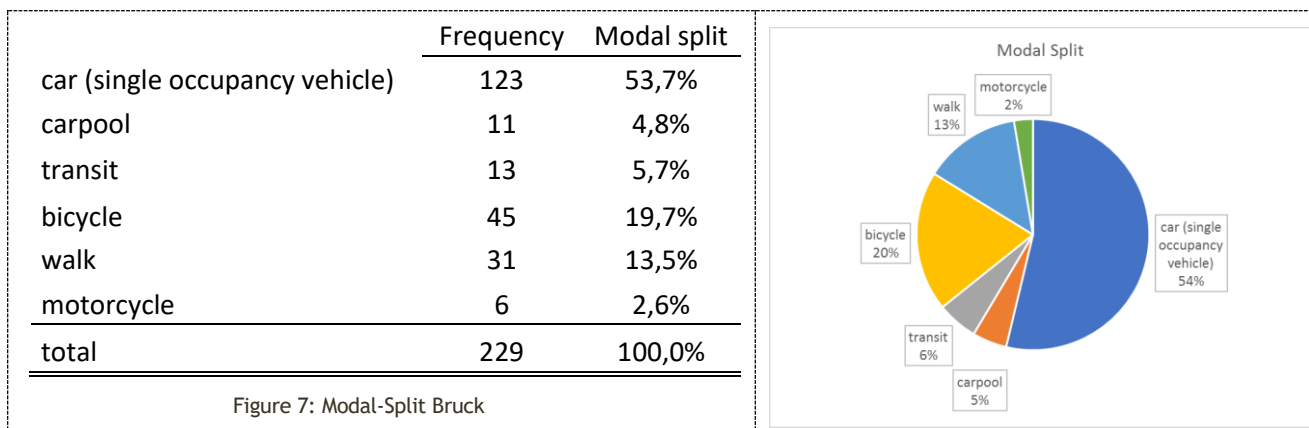
46,5% of the respondents have a trip-distance to work of less than 5 kilometres, so the potential for walking and cycling among the respondents is very high.

Also, a promising transport mode for car trips replacement is public transport. Altogether, 17% of employees who commute at least 2 times per week by car, are willing to use (more) transit, mostly when conditions for transit improve. The most sought improvement is a better connectivity of transit lines and alignment of transit schedule with work hours.

The most relevant reasons for current transport mode choice are travel time and safety.



3.7. Municipality of Bruck / Mur, AT



In April 2017, an online survey about the mobility behaviour was conducted at the Municipal Office of Bruck an der Mur. Data was collected via online questionnaire form by using Google Forms. The time frame of the data collection was 2 weeks. The numbers of the respondents were 38.

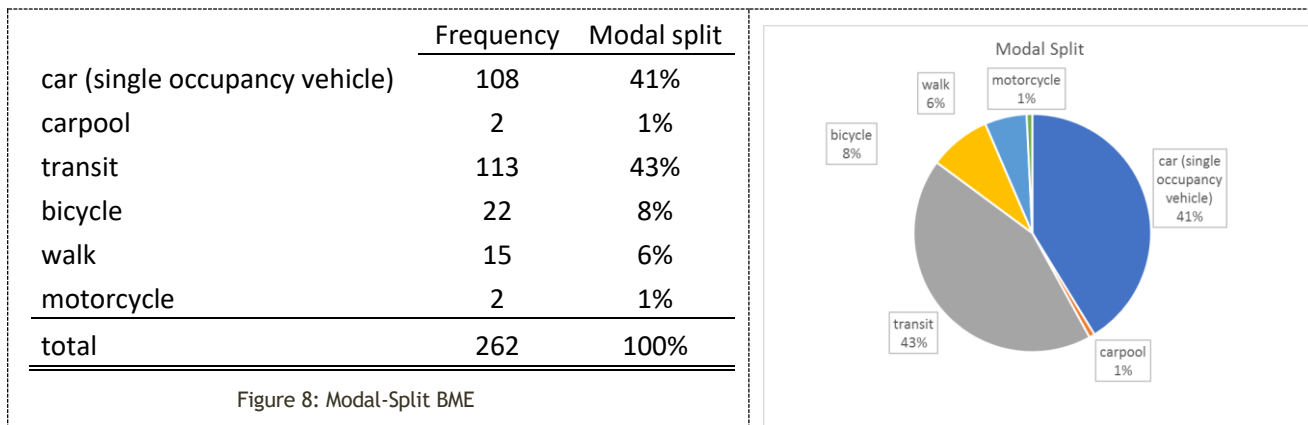
Commuting modal split is dominated by car usage (54%), another 20 % of trips are done with bicycle and 13% by walking which is relatively high. Public transport accounts for 6% of the trips and carpooling for 5% of the trips.

Modal split of the city hall employees is dominated by private car usage and cycling. Usage of public transport and car pooling is very poor, almost none, because of the mostly short distances between work- and home place. 50% of the respondents have a trip-distance to work of less than 4 kilometres. Private car usage is influenced by the fact that there are a lot of free parking spaces around the city hall.

The best potential for replacement of car is the bicycle usage and walking. The city has a quite good infrastructure for cycling. The most sought improvement is financial benefits from the employer to motivate employees to use more public transport.



3.8. Budapest University of Technology and Economics (BME), HU



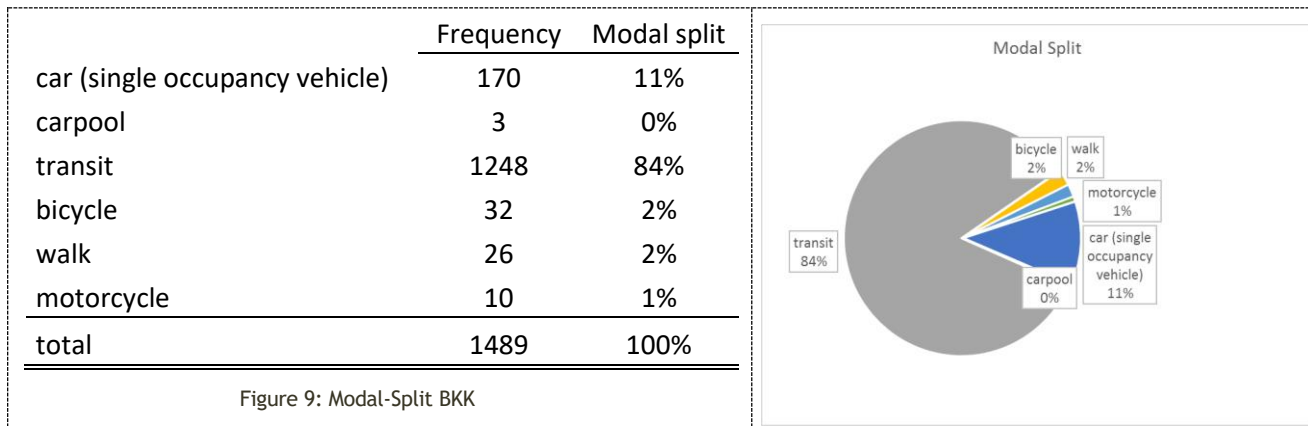
Data was collected via online questionnaire form by using Google Forms during a time frame of 2 weeks. The number of the staff is 163, from which the 51 respondents (31%) can be considered suitably representative for the evaluation of the survey. The sample size margin of error is therefore only 11.412% considering 95% confidence level.

Modal split of the faculty employees is dominated by public transport and private car usage proportionally (43% and 41%, respectively). A small portion of bicycle and walking is also represented. Car pooling and motorcycle transport are only 1%. The popularity of car usage is due to the fact that university staff can hire an inside parking place at the university for moderate yearly fee. PT is also attractive as the faculty is located at the city centre, i.e. public transport service has a good frequency in that area. It is also observable that the majority of the faculty staff (72%) is traveling from relatively far away, i.e. more than 5 km.

The best potential for partial replacement of car is public transport usage. 57.7% of employees, who commute at least 2 times per week by car, are willing to use (more) public transport. Half of them would only change if public transport service level further improves. The most sought improvement is the increased level of service quality of public transportation generally (mostly: shorter travel time and better connectivity). Besides, a potential for partial replacement of car trips can be found at cycling. Altogether, 28% of employees who commute at least 2 times a week by car, are willing to ride (more) bicycle. At the same time, less than the half of them would change only on condition that cycling infrastructure (35%) improves and related facilities is created (37%). Also, car-pooling might be a good option for employees coming from far distance (more than 5 km). However, the lack of a functional carpooling reservation system is a main barrier to the wide spread of car-pooling.



3.9. Centre of Budapest Transport (BKK), HU



Data was collected via online questionnaire form by using Google Forms during a time frame of 2 weeks. The number of the staff is 1200, from which the 265 respondents (22%) can be considered suitably representative for the evaluation of the survey. The sample size margin of error is therefore only 5.32% considering 95% confidence level.

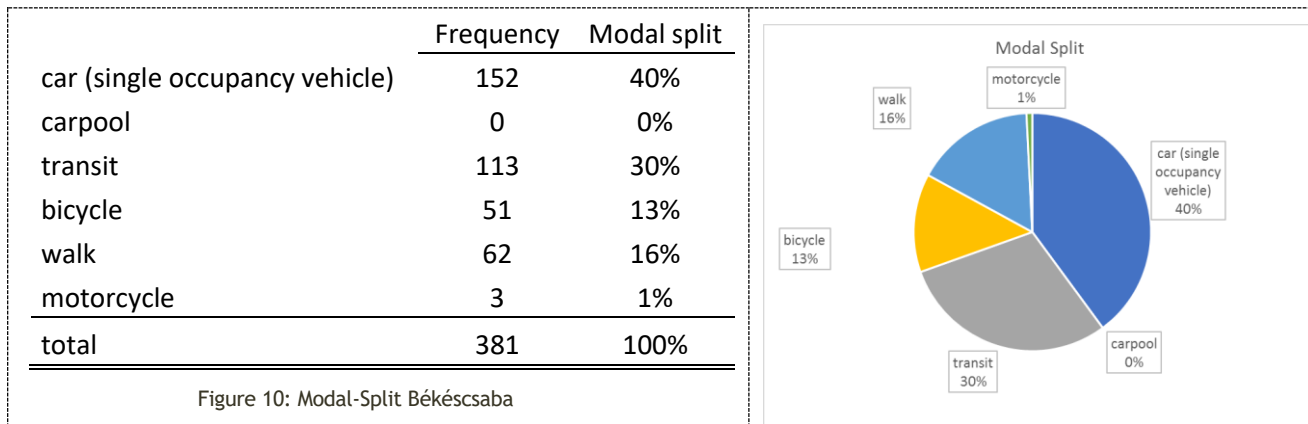
The modal split is dominated by PT (84%), which is obvious for several reasons: the employees are working at the transport manager company of Budapest (they might be more enthusiast for PT), one part of the employees (who need it for daily job) have free travel card, and the office is located in the heart of the city (PT is a perfect option for workplace travel). 10% of private car usage can be explained by the fact that managers at the institution have company car with free office parking place option. It is also observable that the majority of the staff (84%) is traveling from relatively far away, i.e. more than 5 km.

The best potential for partial replacement of car trips can be found at cycling. Altogether, 35% of employees who commute at least 2 times per week by car, are willing to ride (more) bicycle. At the same time, the half of them would change only on condition that cycling infrastructure (19%) and related facilities improve (21%). 20.5% of employees who commute at least 2 times per week by car, are willing to use (more) public transport, only if public transport service level improve. The most sought improvements are changing rooms with showers and increased level of service quality of public transportation (mostly: financial benefit from employer, shorter travel time, and higher comfort).

Carpool is not used as an everyday travel mode at the company. The lack of a functional carpooling reservation system is a main barrier to the wide spread of car-pooling.



3.10. Municipality of Békéscsaba, HU



Data was collected via online questionnaire form by using Google Forms during a time frame of 2 weeks. The number of the staff is 210, from which the 57 respondents (27%) can be considered suitably representative for the evaluation of the survey. The sample size margin of error is only 11.11% considering 95% confidence level.

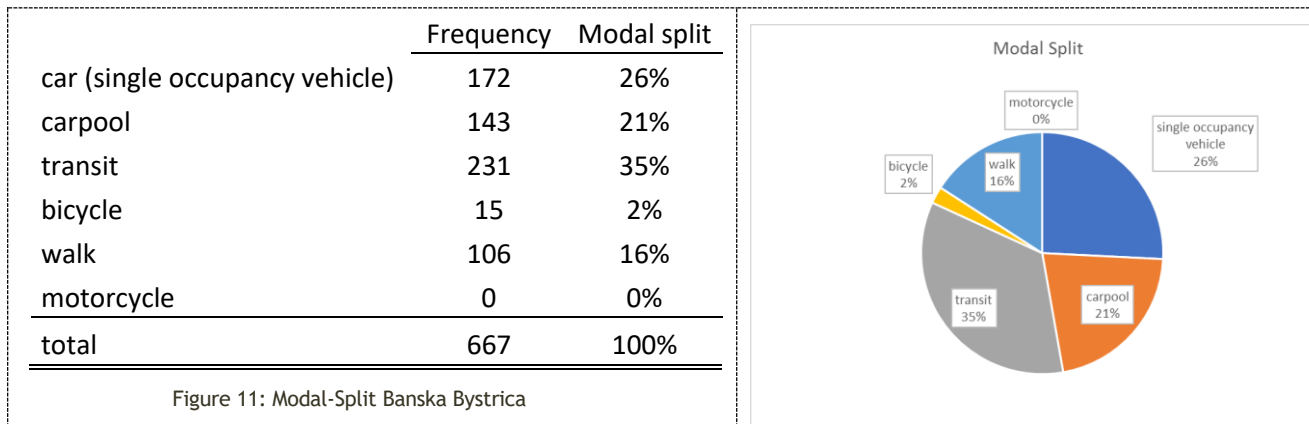
Modal split of the city hall employees is dominated by public transport and private car usage (40% and 30%). A significant ratio of bicycle use (13%) and walking (16%) is also present. This reflects the fact that commuting by bicycle and by walking is easy due to the downtown location of the city hall. Moreover, cycle/walking roads and lanes are quite developed in the city centre. The trip distances are homogenously distributed among the travellers.

A high rejection of PT reflects the known defects of local public bus transport. Moreover, private car usage is deeply influenced by the fact that for the city hall employees reserved parking is provided for free.

The best potential for partial replacement of car trips can be found at cycling as well as public transport. Altogether, 39.4% of employees who commute at least 2 times per week by car, are willing to ride (more) bicycle, but half of them only when conditions for cycling improve. 12.9% of employees, who commute at least 2 times per week by car, are willing to use (more) public transport, only if public transport service levels improve. The most sought improvements are changing rooms with showers and increased level of service quality of public transportation (mostly: shorter travel time, higher comfort, and better connectivity).



3.11. Municipality of Banska Bystrica, SK



In April 2017, an online survey about the mobility behaviour was conducted at the Municipal Office of Banská Bystrica. The survey was promoted for the whole municipal office staff. The method of dissemination was circular email to all employees. Data was collected via online questionnaire form by using Google Forms. The time frame of the data collection was 3 weeks. The number of the municipal office staff is 261, from which the 137 respondents (52%) can be considered suitably representative for the evaluation of the survey.

The main outcomes and findings of the questionnaires are in accordance with the main features of the city, municipal office and the office staff itself, i.e.

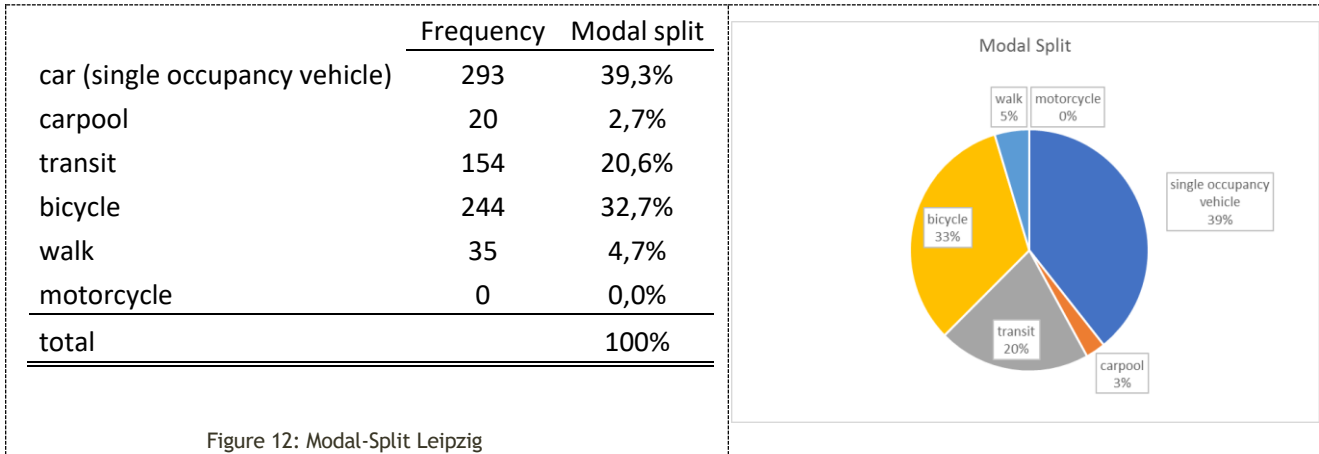
Modal split of the city hall employees is dominated by public transport and private car usage, however with significant share of carpooling. Share of bicycle usage is very poor, almost none, because of lacking cycle infrastructure in the whole city.

The most relevant reasons / motivators for current transport mode choice are safety, travel time and healthy reasons. There is no striking difference among the criteria for choosing a given transport mode.

Private car usage (either in form of single car occupancy or carpooling) is deeply influenced by the fact that for the city hall employees the reserved or free parking inside or near by the city hall is provided.



3.12. Municipality of Leipzig, DE



The city of Leipzig has over 10.000 employees. 144 employees take part in the survey from the Office for Traffic Planning and Road Construction and Office of Environmental Protection. Commuting modal split is dominated by single car trips (39%), followed by bicycle use (33%). 20% is done by public transport. Less used are walking (5%) and car pooling (3%). The most trips have a distance is between 5 to 10 km (38%).

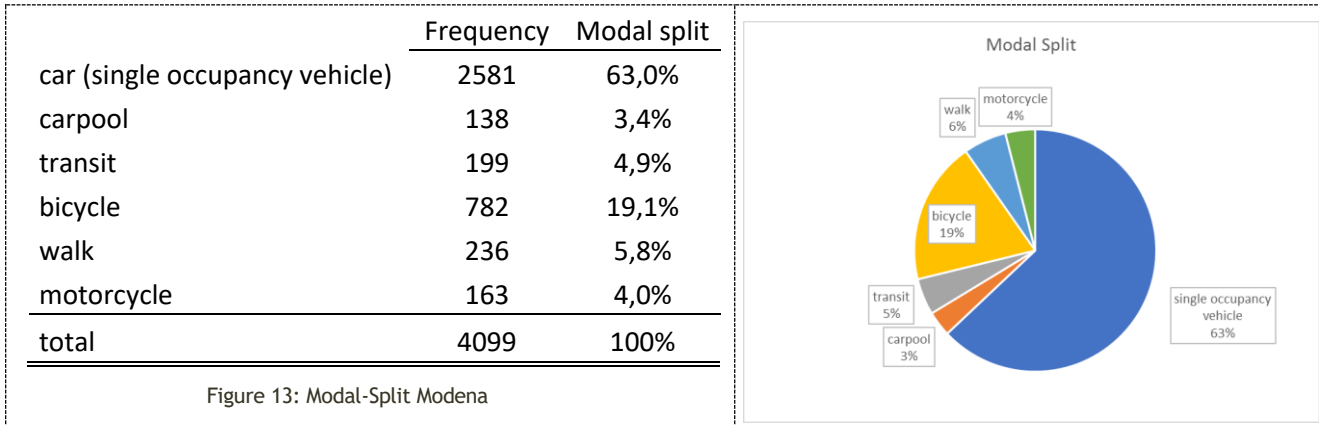
The short trip distances of 1 to 5 km are similar present with 29% as long distances of with 26% of trips.

The best potential for partial replacement of car trips can be found at public transport. Altogether, 22% of employees who commute at least 2 times per week by car are willing to use public transport, mostly when conditions for public transport improve. The most sought improvements are shorter travel time and financial benefits from the employer to motivate employees to use more public transport (demanded by around 50% of all interviews).

Also cycling is an option. This is already used by 14% of employees who commute at least 2 times per week by car, with the same number willing to use more bicycle 9% of them under current conditions. Main improvements are wished in improvement of cycling infrastructure.



3.13. Municipality of Modena, IT



The employees of the Municipality of Modena are 1761, and the 42% of them took part to the survey regarding their mobility habits for work commuting. The employees of the City Hall work in four different locations in the urban area of Modena, one in the city centre and three outside the city centre. From this survey, it resulted that private car is the most popular transportation mode for commuting to the main seats of the City Hall with a share of 63%.

The percentage of employee cycling or walking to work, though, is rather relevant (25% considering both modes). Half of the respondents live less than 5 km away from their work location, which makes them the best candidates for switching to more sustainable travel habits. For the interpretation of the reasons for the choice of private car, one of the main elements is the location of three buildings of the City Hall, i.e. outside the city centre, near highways and railway lines, thus very easy to reach by car but very difficult to reach by bike, bus or foot.

For those respondents who work in the city centre seat, results are very different as car access is limited as well as parking. The usage of public transport is limited (5%), and this seems to be given by high travel times, the low connectivity of the system and to inconvenient bus schedules. A high percentage of respondents (approx. 45%) would like to increase their use public transport for commuting, given that the service would improve significantly.

For what concerns cycling, the percentage of people already cycling to work is encouraging (19%), as well as the number of respondents willing to cycle more to work (approx. 40%); nevertheless, some improvements in safety and infrastructure should be made to convince them to cycle. The main deterrent to the use of bike, even for those employees who own a bike and enjoy cycling in their spare time, is bike steal: more bicycle storages could be a strong incentive.



3.14. Transnational Results Commuting

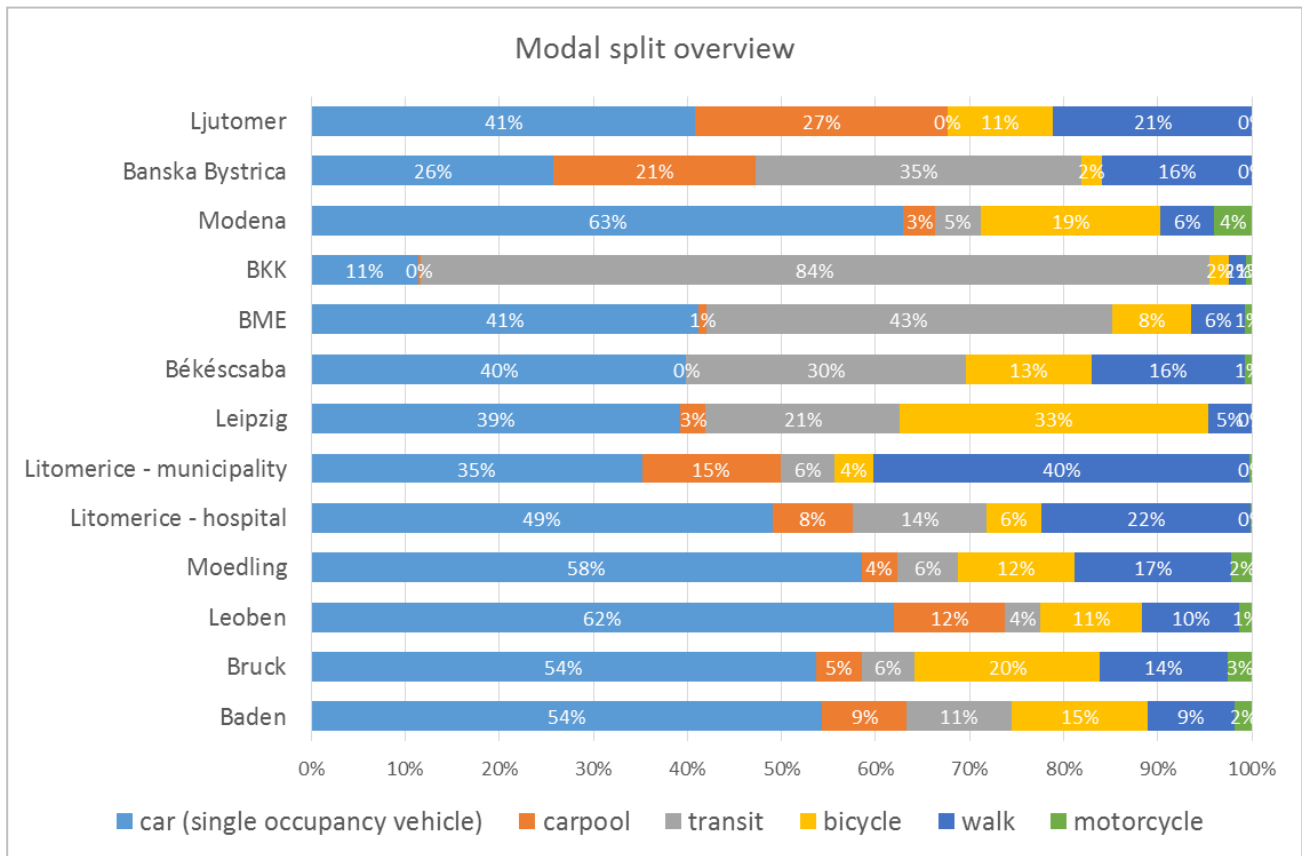


Figure 16: Modal-Split Overview

The 13 municipalities and institutions taking part in MOVECIT project differ strongly in nature and size of the city or workplaces as well as in infrastructural aspects like the extension of bike network or public transport systems.

However most of the 13 examined municipalities and institutions have one thing in common: the predominant car usage. In 6 of 13 cases the modal split shares of **car-usage** (single occupancy vehicle) is at 50 % or higher. Modena (Italy) shows the highest share of car-usage in modal split results with 63 %, followed by Leoben (Austria) with 62 % and Mödling (Austria) with 58 %.

Exceptional cases are the Budapest Centre of Transport (Hungary), which has 84% share of **public transport** whereas in Ljutomer (Slovenia) employees do not commute by public transport at all (0%).

Litomerice hospital (Czech Republic) shows the highest mode share for **walking** (40%). In Modena (Italy) and Leipzig (Germany), both densely urbanized cities, and also at the Budapest University (Hungary) walking shares are low.

Leipzig has the best share for **cycling** with 33 %. Banska Bystrica (Slovakia) and the Budapest Transport Centre have the lowest share cycling with only 2 %.

Ljutmer and Banska Bystrica have significant shares of **car-pooling** (27 % and 21 %).

Motorcycling seems not to be relevant in the 13 MOVECIT municipalities and institutions.



4. Results Business Trips

The second pillar of the modal-split survey was the mode choice of employees at business trips and service routes. In the questionnaire two types of business trips were asked:

- Business trips within the municipality
- Business trips beyond the municipality

4.1. Business trips within the municipality

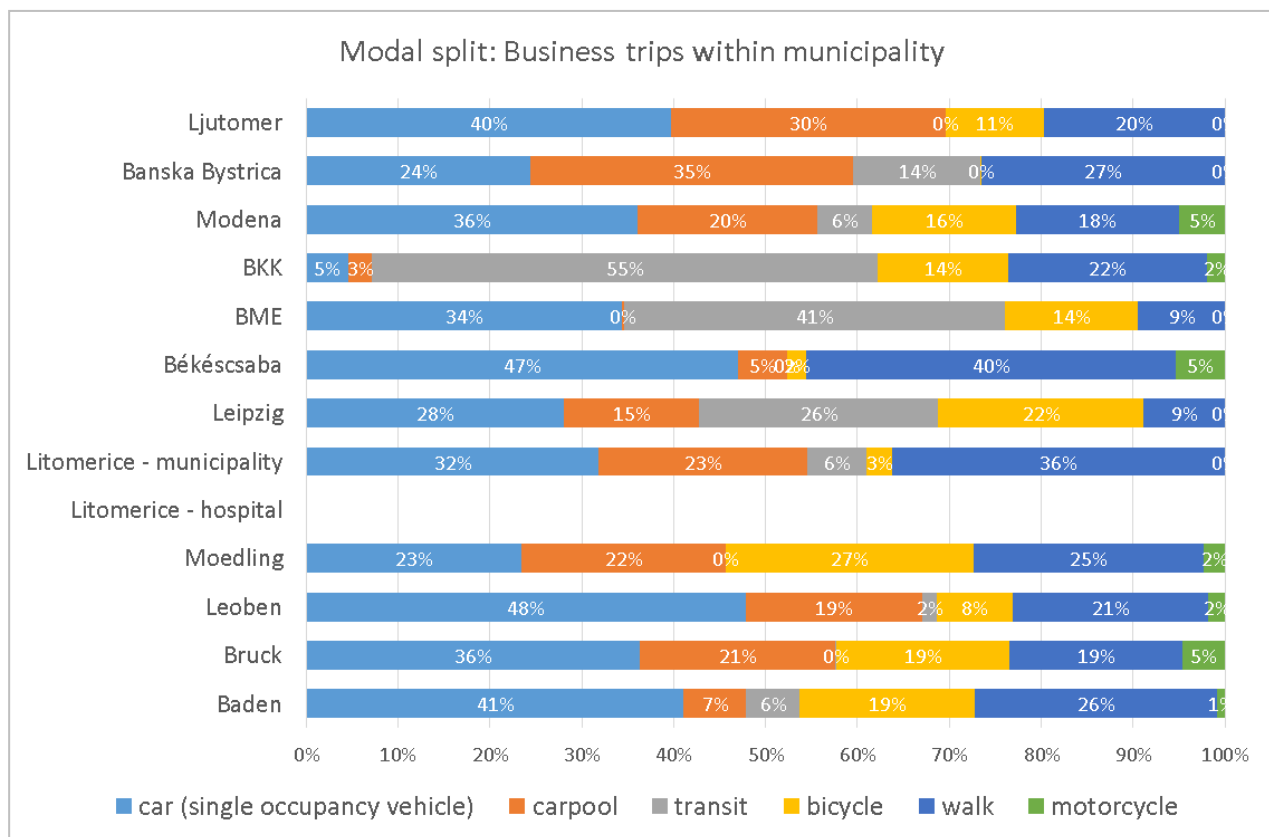


Figure 14: Modal-Split Business trips within municipality

The results for **Ljutomer** business trips within the municipality show a similar picture as those for commuting trips. The share for car pooling is a bit higher with 30% (compared to 27%).

Banska Bystrica has also a higher share of car-pooling (35 %) and walking (27%), compared to the results for commuting trips.

In **Modena**, the walking share is higher as for commuting and the single-occupancy car use is much better for business trips than for commuting (only 36% instead of 63%).

At the Budapest Centre for Transport (**BKK**) the bike-share and walking-share is higher than for commuting, but the public-transport use is less.

The employees of Budapest University (**BME**) use the bike more often for business trips than for commuting, 14% compared to 8%.



Leipzig results show a noticeable higher share for car-pooling at business trips within the municipality (15% compared to only 3%).

At the municipality of **Litomerice** the differences in mode-share between commuting and business trips within the municipality are less distinct, but a higher share for car-pooling is apparent. **Litomerice hospital** had no representative results for business trips and was therefore not included in further analyses.

The results for **Mödling, Leoben, Bruck** and **Baden** show clear mode differences with car-pooling and cycling (which are also higher than for commuting).

Summary

Concerning business trips and service routes within the border of the respective municipalities, the **single occupancy vehicle** is less dominant compared to the commuting trips (see Chapter 3). The highest share is to found in Békéscsaba (Hungary) with 47%, compared to the highest share for commuting trips, which was 63% in Modena (Italy).

Car pooling is more often used for business trips within municipalities than for commuting trips. In 6 of 12¹ cases the share is 20% or higher, which is due to the fact that meetings or service routes are often made together with colleagues.

The **cycling** share is also noticeably higher in some cases, most obviously in Mödling and Baden, where there are bikes available for service routes and business-trips at the city halls.

Also **walking** shares are higher for business-trips within municipality, which is explainable to shorter trip distances between different sites within the municipality compared to higher share of long-distances for daily commuting trips.

¹ At Litomerice Hospital no business trips are undertaken.



4.2. Business trips beyond the municipality

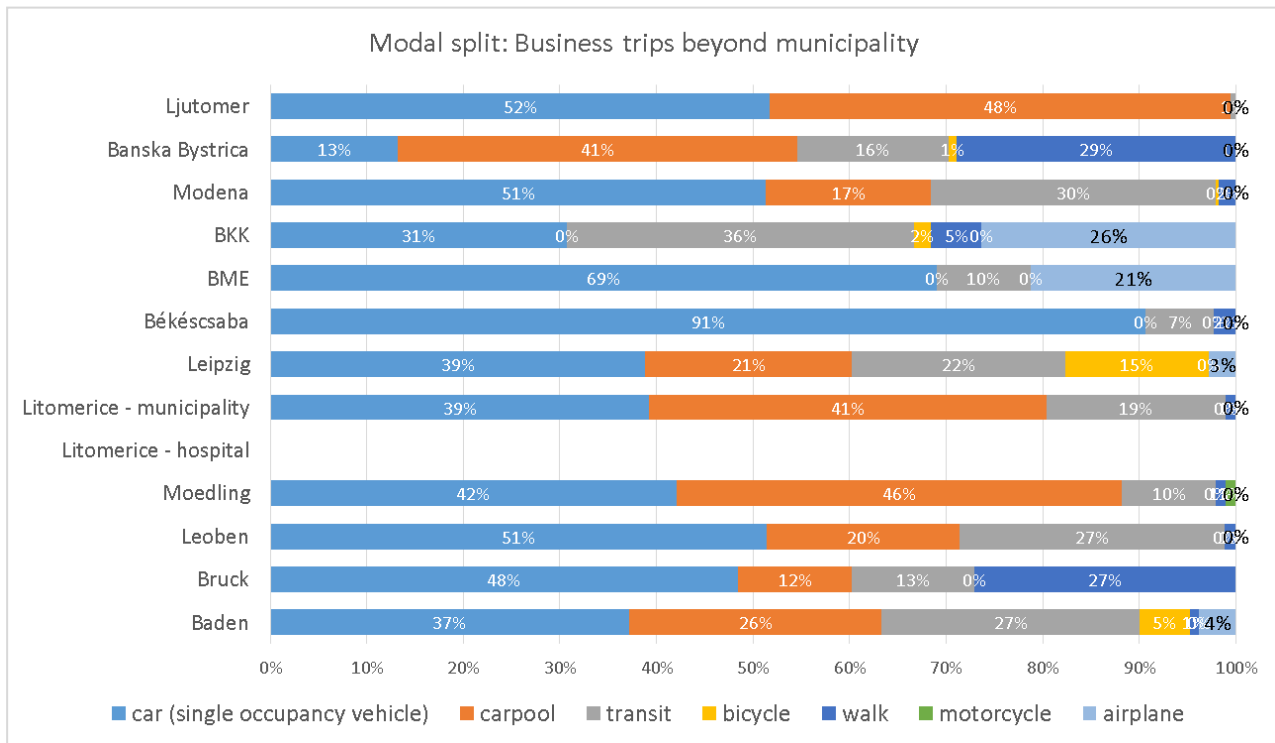


Figure 15: Modal-Split Business trips beyond municipality

The results for modal-split for business-trips beyond municipality borders show a clear picture: Single-occupancy vehicle *car-use and car-pooling* are the dominant modes with shares of up to 91 % (car) and 48% (car-pooling). Poor reachability like the lack of public transport routes and time factors were the most mentioned reasons for taking a car.

Air-planes are used as well, because of much higher trip-distances due to international meetings etc. In some cases, flights are inevitable due to time and also cost restrictions.

Public transport shares are higher in most cases compared to commuting and business-trips within the municipalities. A reason for this is e.g. that employees get the tickets for public transport refunded with their salary, when using the bus or train for meetings.

In a few cases even *walking or cycling* beyond the municipality is still an option e.g. e-bikes were mentioned to be comfortable for going to meetings to neighbouring municipalities for meetings in Baden (Austria).



5. Findings

The results of this first survey (before measurements) are the basis for evaluation of one main MOVECIT project objective: to increase sustainable transport modes by 20%. Comparing these results with the results of the next survey (scheduled for April 2018), the differences are the indicator if pilot actions and initial measurements from the mobility plans have shown some impact. Therefore the modal-split data are one key element of the evaluation and monitoring process of the 13 mobility plans.

Commuting

The potential for mode-shifts from car-usage to walking, biking or public transport is rather high, since 6 of 13 municipalities or institutions show a modal-split share for single occupancy vehicle of more than 50 percent. Concerning the trip distances to work almost all municipalities show a similar picture. In 5 of 13 cases there are high percentage shares of trip distances below 5 km, which are optimal bike and walking distances.

But, due to the rather heterogeneous circumstances among the 13 municipalities no general assertions can be made. Every case needs to be examined by the local mobility teams with their local expertise, in order to prepare and implement individual measurements which are most suitable for the local conditions.

Business trips

Since only parts of the staff in the 13 municipalities and institutions making business trips on a regular basis and not very frequently, the potential for CO₂ savings and mode shifts is less than for daily commuting trips. However, by replacing long-distance business trips (flights) by online-meetings the need for flights could be reduced. Another effective measure is the changing of the internal regulations for business-trips to an obligation to use train instead of flights for trips under a certain length (e.g. below 500 km.) Service routes within a municipality e.g. mail deliveries can also be shifted to sustainable modes e.g. cargo bikes or e-vehicles.

These possibilities need to be considered in the ongoing MOVECIT mobility planning process.