

International Conference

Mobility road planning with supporting
sustainability in Hungary

Bege András – Széchenyi István University (Hungary)

Route: from Budakeszi to Győr





University of Győr



Budakeszi (Home)

Approx. 128 km

Hungary

Available travel mods and opportunities

Factors influencing the decision



Long distance bus

Advantages	Disadvantages
- Low cost (e.g. student discount) - Convenient - Relatively fast	- Environmentally friendly - Long distance between bus stop and destination - Timetabled
- Low cost (e.g. student discount) - Low CO² emissions - Comfortable (e.g. learning on the move)	- Timetabled - Relatively slow (Many stops) - Long distance between bus stop and destination
- Mobility high - Comfortable - Fast	- Costly - High CO² emissions - Stress factor high (e.g. due to traffic)



Train



Own car



CAR SHARING



Bike

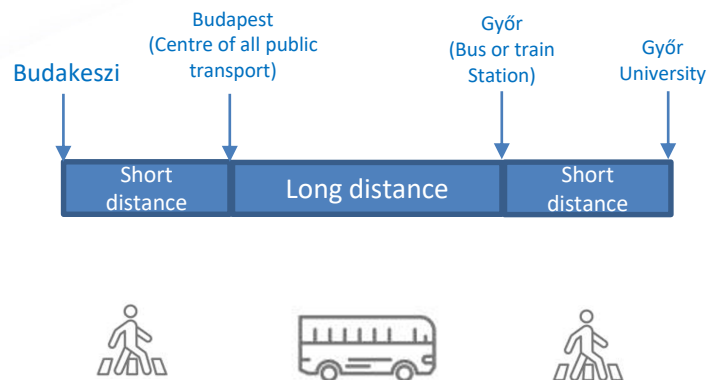


Walk

Advantages	Disadvantages
- Low cost - Fast - Opportunity to build relationships	- Unpredictable (Short term risk of trip cancellation) - Inflexible in terms of entry and exit points - Requires a lot of organisation
- Environmentally friendly (e.g. does not damage roads, air) - Healthy - Cost-effective (may incur costs for intermediate transport such as train)	- Weather dependent - Dangerous (road traffic) - Not suitable for long distances
- Environmentally friendly (e.g. does not damage roads, air) - Healthy - Cost-effective (may incur costs for intermediate transport such as train)	- Weather dependent - Slow - Not suitable for long distances

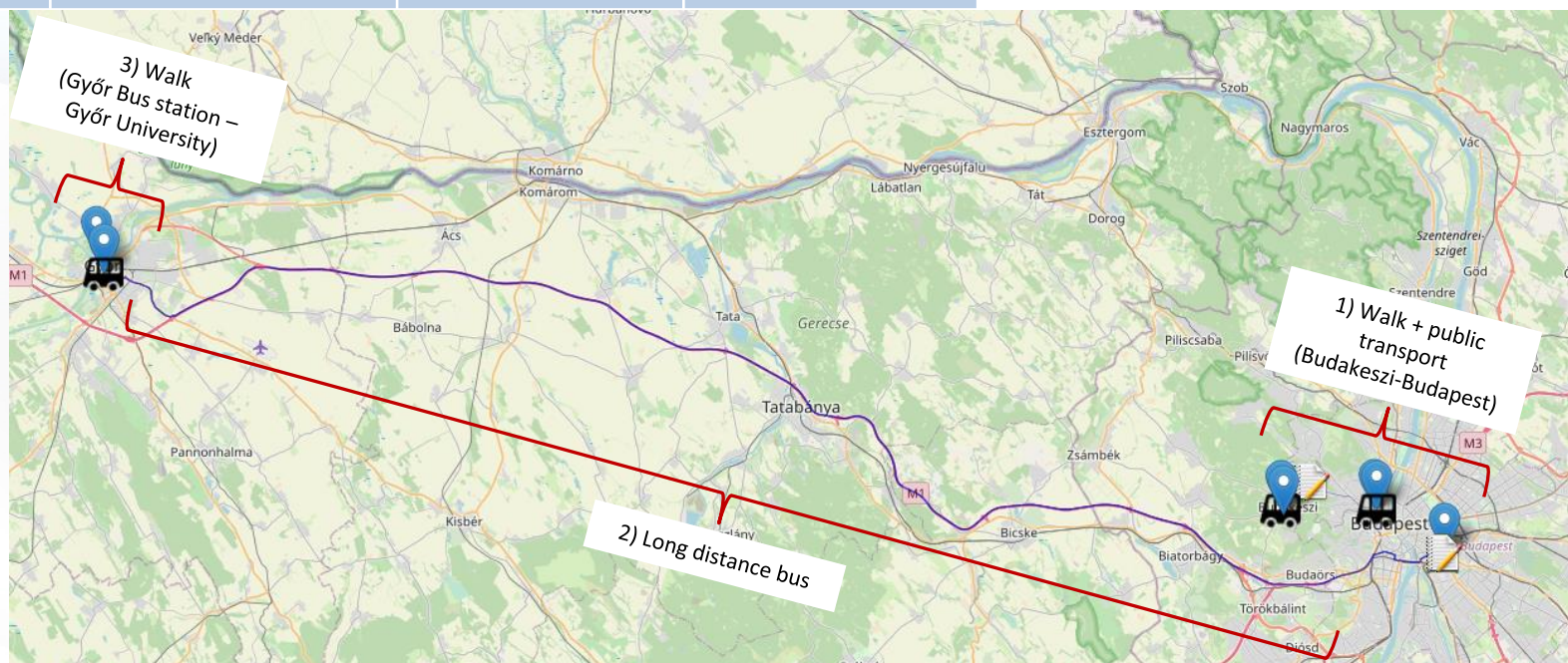
Plan of the possible route

	FOR SHORT DISTANCE	FOR LONG DISTANCE	FOR SHORT DISTANCE
Scenarios	From Budakeszi (Home) – to Budapest (Centre for public transport)	Budapest - Győr	Győr Centre – University
Route 1	1) Walk + public transport	2) Long distance bus	3) Walk



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Source: Mees

Plan of the possible route

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Scenarios	From Budakeszi (Home) – to Budapest (Centre for public transport)	Budapest - Győr	Győr Centre – University
Route 1	Walk + public transport	Long distance bus	Walk
Route 2	Bike	Long distance bus	Bike



Plan of the possible route

	FOR SHORT DISTANCE	FOR LONG DISTANCE	FOR SHORT DISTANCE
Scenarios	From Budakeszi (Home) – to Budapest (Centre for public transport)	Budapest - Győr	Győr Centre – University
Route 1	Walk + public transport	Long distance bus	Walk
Route 2	Bike	Long distance bus	Bike
Route 3	Walk+ public transport	Train	Walk



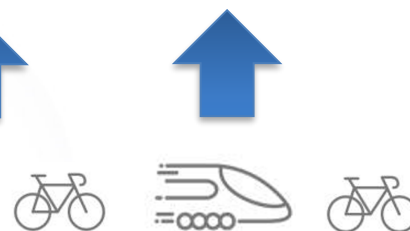
Plan of the possible route

	FOR SHORT DISTANCE	FOR LONG DISTANCE	FOR SHORT DISTANCE
Scenarios	From Budakeszi (Home) – to Budapest (Centre for public transport)	Budapest - Győr	Győr Centre – University
Route 1	Walk + public transport	Long distance bus	Walk
Route 2	Bike	Long distance bus	Bike
Route 3	Walk+ public transport	Train	Walk
Route 4	Bike	Train	Bike



Plan of the possible route

	FOR SHORT DISTANCE	FOR LONG DISTANCE	FOR SHORT DISTANCE
Scenarios	From Budakeszi (Home) – to Budapest (Centre for public transport)	Budapest - Győr	Győr Centre – University
Route 1	Walk + public transport	Long distance bus	Walk
Route 2	Bike	Long distance bus	Bike
Route 3	Walk+ public transport	Train	Walk
Route 4	Bike	Train	Bike



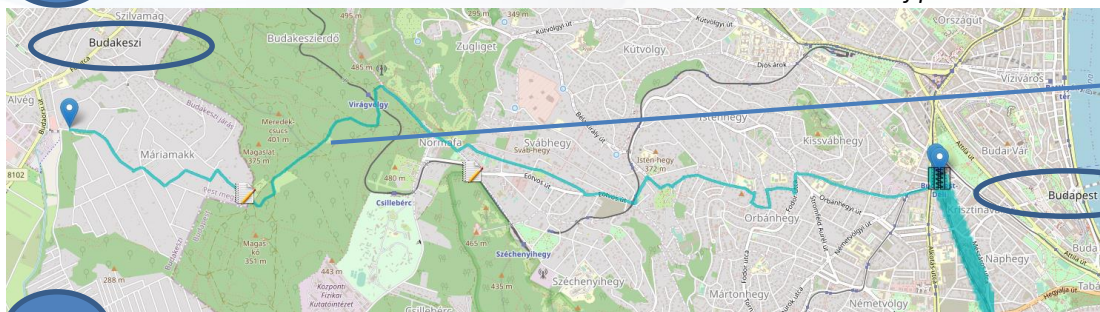
Plan of the possible route

	FOR SHORT DISTANCE	FOR LONG DISTANCE	FOR SHORT DISTANCE
Scenarios	From Budakeszi (Home) – to Budapest (Centre for public transport)	Budapest - Győr	Győr Centre – University
Route 4	1) Bike	2) Train	3) Bike

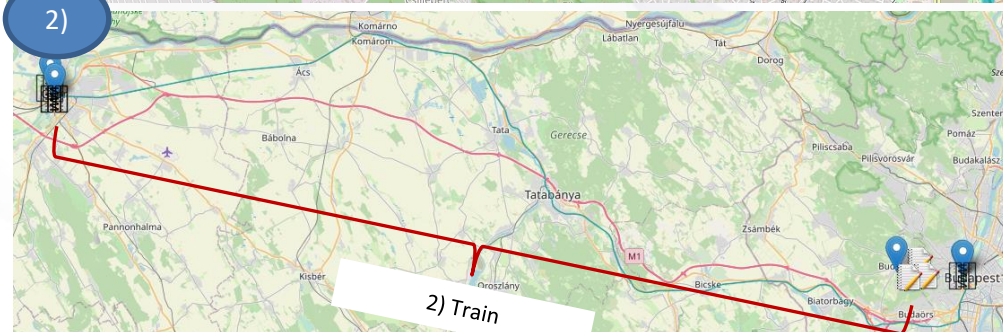


1)

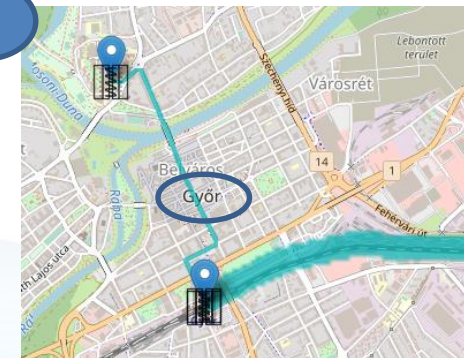
Source of pictures: Mees



2)



3)



Plan of the possible route

	FOR SHORT DISTANCE	FOR LONG DISTANCE	FOR SHORT DISTANCE
Scenarios	From Budakeszi (Home) – to Budapest (Centre for public transport)	Budapest - Győr	Győr Centre – University
Route 1	Walk + public transport	Long distance bus	Walk
Route 2	Bike		Bike
Route 3	Walk+ public transport	Train	Walk
Route 4	Bike		Bike
Route 5	-	Own passenger car (direct from Budakeszi to Győr)	-
Route 6	-	Car sharing (direct from Budakeszi to Győr)	-



CAR SHARING

Plan of the possible route

	FOR SHORT DISTANCE	FOR LONG DISTANCE	FOR SHORT DISTANCE
Scenarios	From Budakeszi (Home) – to Budapest (Centre for public transport)	Budapest - Győr	Győr Centre – University
Route 1	Walk + public transport	Long distance bus	Walk
Route 2	Bike		Bike
Route 3	Walk+ public transport	Train	Walk
Route 4	Bike		Bike
Route 5	-	Own passenger car (direct from Budakeszi to Győr)	-
Route 6	-	Car sharing (direct from Budakeszi to Győr)	-



CAR SHARING

Factors influencing the decision

Scenarios	Calc. Emissions during the whole distance [g]	Whole time [h]	Whole distance [Km]	Line density	Costs [HUF] 1€~400HUF
Long distance bus (and Walk + public transport)					
Long distance bus (and Bike)					
Train (and Walk + public transport)					
Train (and Bike)					
Own passenger car					
Car sharing					

Factors influencing the decision

With evaluation

Scenarios	Calc. Emissions during the whole distance [g]	Whole time [h]	Whole distance [Km]	Line density	Costs [HUF] 1€~400HUF
Long distance bus (and Walk + public transport)	9858,6	3:20	147,2	1/day	2900
Long distance bus (and Bike)	8625	2:45	145		3000
Train (and Walk + public transport)	6608,6	3:05	147,45	Per hours	1960
Train (and Bike)	5895	2:40	143,6		1890
Own passenger car	23200	1:14	116	-	3569,76
Car sharing	0	1,14	116	Sporadic	1900-2500 (Dependent on driver)

* The values were calculated according to the available specifications (e.g. for my own car) or according to my calculations.

Ranking:

6 - the best one

1 - the worst one

Scenarios	Calc. Emissions during the whole distance [g]	Whole time [h]	Whole distance [Km]	Line density	Costs [HUF] 1€~400HUF	Results
Long distance bus (and Walk + public transport)	9858,6 2 Point	3:20 2 Point	147,2 3 Point	1/day 4 Point	2900 3 Point	14 Point
Long distance bus (and Bike)	8625 3 Point	2:45 4 Point	145 4 Point		3000 2 Point	17 Point
Train (and Walk + public transport)	6608,6 4 Point	3:05 3 Point	147,45 2 Point	Per hours 5 Point	1960 5 Point	19 Point
Train (and Bike)	5895 5 Point	2:40 5 Point	143,6 5 Point		1890 6 Point	26 Point
Own passenger car	23200 1 Point	1:14 6 Point	116 6 Point	- 6 Point	3569,76 1 Point	20 Point
Car sharing	0 6 Point	1,14 6 Point	116 6 Point	Sporadic 3 Point	1900-2500 (Dependent on driver) 4 Point	25 Point

Scenarios	Calc. Emissions during the whole distance [g]	Whole time [h]	Whole distance [Km]	Line density	Costs [HUF] 1€~400HUF	Results
Calc. Emission with my old car: $200\text{g/km} \times 116\text{km} = 23.200\text{g}^*$ 	9858,6 3 Point	3:20 2 Point	147,2 3 Point	1/day 4 Point	2900 3 Point	14 Point
	625 1 Point	2:45 4 Point	145 4 Point		3000 2 Point	17 Point
	6608,6 4 Point	3:05 3 Point	147,45 2 Point	Per hours	1960 5 Point	19 Point
	5895 5 Point	2:40 5 Point	143,6 5 Point	5 Point	1890 6 Point	26 Point
Train (and Bike)						
Own passenger car	23200 1 Point	1:14 6 Point	116 6 Point	- 6 Point	3569,76 1 Point	20 Point
Car sharing	0 6 Point	1,14 6 Point	116 6 Point	Sporadic 3 Point	1900-2500 (Dependent on driver) 4 Point	25 Point

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Scenarios	Calc. Emissions during the whole distance [g]	Whole time [h]	Whole distance [Km]	Line density	Costs [HUF] 1€~400HUF	Results
Calc. Emission with my old car: 200g/km x 116km = 23.200g*	9858,6 3 Point	3:20 2 Point	147,2 3 Point	1/day 4 Point	2900 3 Point	14 Point
	625 3 Point	2:45 4 Point	145 4 Point		3000 2 Point	17 Point
Train (and Bike)	6608,6 4 Point	3:05 3 Point		Per hours 4 Point	1960 5 Point	19 Point
Own passenger car	5895 5 Point				1890 6 Point	26 Point
	23200 1 Point				3569,76 1 Point	20 Point
Car sharing	0 6 Point	1,2 6 Point		Sporadic 3 Point	1900-2500 (Dependent on driver) 4 Point	25 Point

Car sharing with Tesla Model? > GREAT!
It is a Lucky day ☺
(Emission:0g/116km)



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Scenarios	Calc. Emissions during the whole distance [g]	Whole time [h]	Whole distance [Km]	Line density	Costs [HUF] 1€~400HUF	Results
Long distance bus (and Walk + public transport)	9858,6 2 Point	3:20 2 Point	147,2 3 Point	1/day 4 Point	2900 3 Point	14 Point
Long distance bus (and Bike)	8625 3 Point	2:45 4 Point	145 4 Point		3000 2 Point	17 Point
Train (and Walk + public transport)	6608,6 4 Point	3:05 3 Point	147,45 2 Point	Per hours 5 Point	1960 5 Point	19 Point
Train (and Bike)	5895 5 Point	2:40 5 Point	143,6 5 Point		2000 4 Point	20 Point
Own passenger car	23200 1 Point	1:14 6 Point	116 6 Point	- 6 Point	1900-2500 (Dependent on driver) 4 Point	25 Point
Car sharing	0 6 Point	1,14 6 Point	116 6 Point	Sporadic 3 Point		

Difficult and time-consuming to plan + risk of cancellation at short term is high

Scenarios	Calc. Emissions during the whole distance [g]	Whole time [h]	Whole distance [Km]	Line density	Costs [HUF] 1€~400HUF	Results
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Independent
of the
schedule

Difficult and time-
consuming to plan +
risk of cancellation at
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Car sharing	0 6 Point	1,14 6 Point	116 6 Point	Sporadic 3 Point	1900-2500 (Dependent on driver) 4 Point	25 Point

By train, the departure
can be well planned >
hourly departure.

Independent
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schedule

Difficult and time-
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Train (and Walk + public transport)	6608,6 4 Point	3:05 3 Point	147,45 2 Point	Cheapest option: Train with Bike	1960 5 Point	19 Point
Train (and Bike)	5895 5 Point	2:40 5 Point	143,6 5 Point		1890 6 Point	26 Point
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The own car is
the most
expensive
option >
because of fuel
costs

Cheapest
option: Train
with Bike

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Nr 1. Train + Bike



Szenárió

Keresés Új Szerkesztés Törlés Mutat Vissza

Név

LAKÓHELY - GYŐR EGYETEM (gyalog+22-es busz+gyalog+S10 vonat+gyalog)

1. helyezett: LAKÓHELY - GYŐR EGYETEM Szen. 1 (kerékpár+S10 vonat+kerékpár)

LAKÓHELY - GYŐR EGYETEM Szen. 2 (kerékpár+S10 vonat+kerékpár)

LAKÓHELY - GYŐR EGYETEM (gyalog+22-es busz+M2 metró+1268-as távolsági busz+gyalog)

LAKÓHELY - GYŐR EGYETEM (kerékpár+1268-as távolsági busz+kerékpár)

LAKÓHELY - GYŐR EGYETEM (saját jármű)

Thank you for your attention!