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Analysis of pedestrian accessibility and traffic safety through innovative data collection

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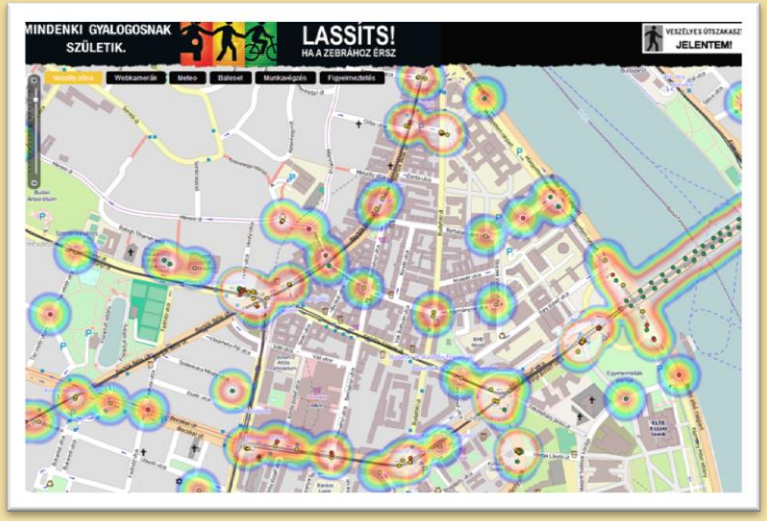
Introduction



- EU White paper:
  Vision Zero (2050)
- Vulnerable road users!
- Everyone can be considered a pedestrian
  - Conflicts – accidents
  - Accessibility
  - Enhancement of active travel modes
- 2012: Hungarian traffic safety campaign

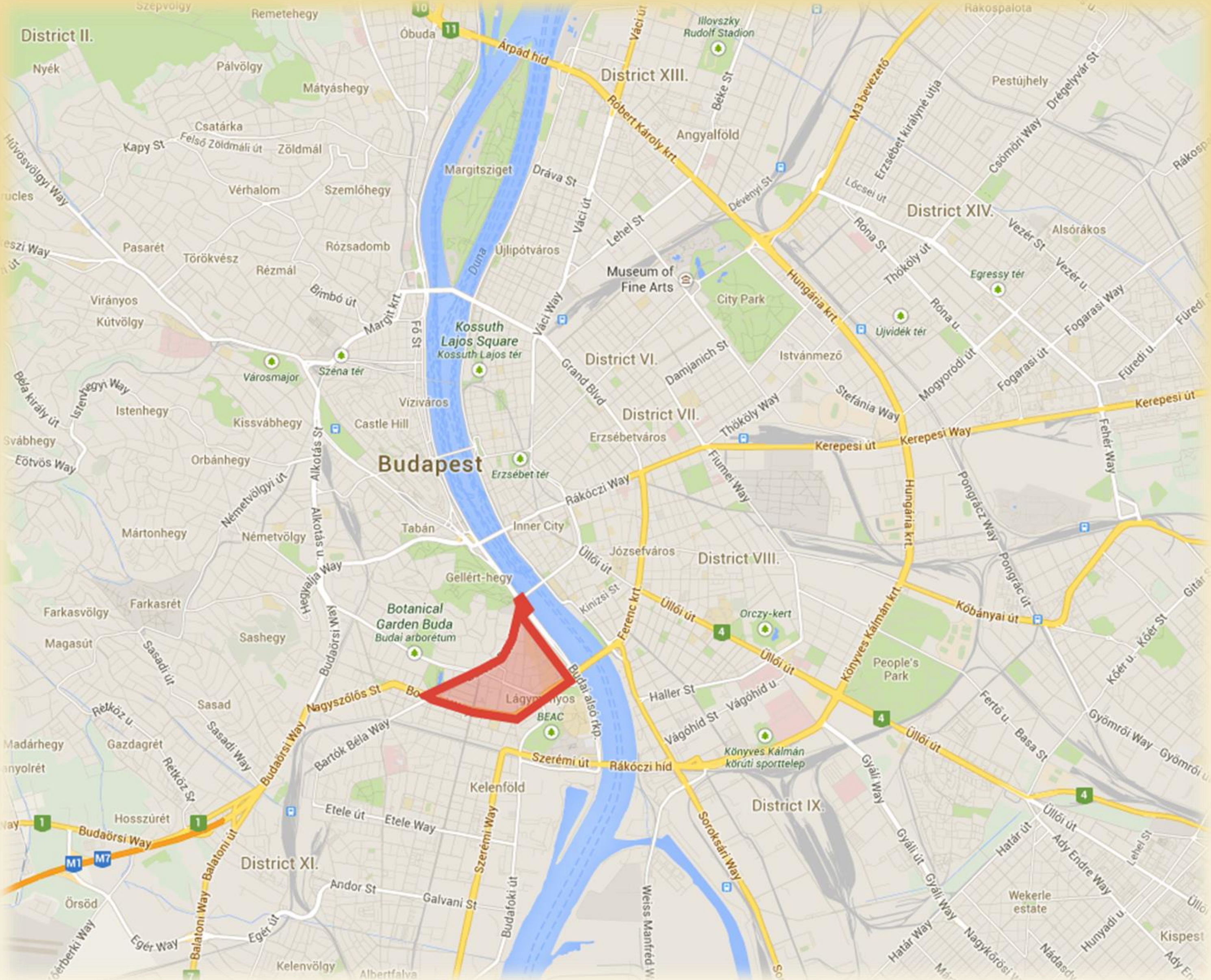
  Mindenki gyalogosnak születik / Everyone born as a pedestrian

  www.esrihu.hu/mindenkigyalogos

Aim of the research

- Innovative data collection on traffic safety problems
- Main purpose: analyse the coherence between accident statistics and claims
    - “short free signal”
    - “no pedestrian crossing”
    - “traffic signalling is needed”
- Sample area: Budapest, XI. District (Újbuda)
- Coincidences, differences and reasons?

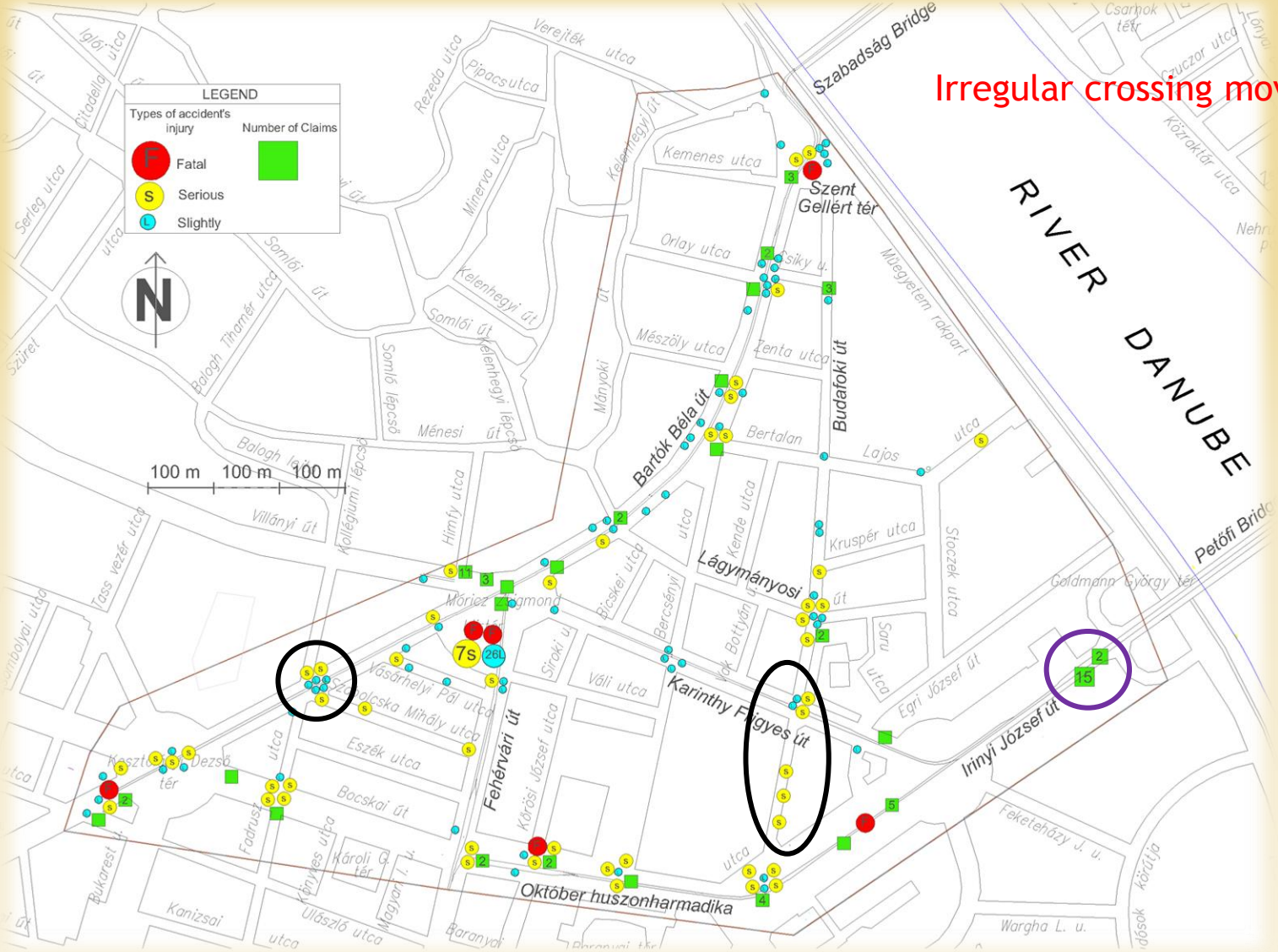
Sample area



District II.
Óbuda
Árpád híd
District XIII.
Angyalföld
Margitsziget
District XIV.
Museum of Fine Arts
City Park
Kossuth Lajos Square
District VI.
District VII.
Budapest
Castle Hill
Inner City
Józsefváros
District VIII.
Gellért-hegy
Botanical Garden Buda
Tabán
Lágymányos
BEAC
Kelenföld
District XI.
District IX.
People's Park
Orczy-kert
Erzsébetváros
Újlipótváros
Rákóczi Way
Kerepesi út
Üllői út
Hungária krt.
Szerémi út
Rákóczi híd
Budaörsi Way
Kispest
Wekerle estate

General objectivity of claims

- accidents: 2002-2011
„damage only” is excluded
- only pedestrian-related claims



Comparison of the number of accidents and claims

Revision of short free signals

- 10 out of 11 claims are justified
  - Average speed: 1.34 m/s
  - Shortest possible: 1.0 m/s, 2/3 of the distance (halfway-line, 1.2 m/s)
- Unattractive separated crossings
- Effect of tram stops

				A	B	C	D	E	
#	Location	Number of pedestrian claim	Description	Ratio of irregular crossings	Crossing distance [m]	Free signal for pedestrians [s]	Calculated average crossing speed [m/s]	Necessary speed to reach 2/3 of the distance [m/s]	Remarks
1	Bartók B. út - Karinthy F. út	1	2x2 lanes + 2 tram lanes	low	22	14	1,6	1,0	
2	Bartók B. út (Móricz Zs. körtér)	1	2x2 lanes + 2 tram lanes (separated)	medium	31	11	2,8	1,9	Interchange between tram line 6 and 61
3	Kosztolányi D. tér (Bocskai út)	1	2+3 lanes (separated)	not significant	30	18	1,7	1,1	
4	Október 23. utca - Bercsényi utca	1	4+3 lanes + 2 tram lanes	low (medium during road congestions)	35	18	1,9	1,3	
5	Bartók B. út - Csíky utca	2	2x2 lanes + 2 tram lanes	low	23	10	2,3	1,5	
6	Kosztolányi D. tér (Bartók B. út)	2	2x2 lanes + 2 tram lanes (separated)	medium (high on the tram lanes)	32	35	0,9	0,6	unjustified claim, stop of tram line 49
7	Irinyi J. utca - Budafoki út	2	2x3 lanes + 2 tram lanes (separated)	low	37	20	1,9	1,2	
8	Irinyi J. utca (Petőfi híd budai hídfő)	2	2x2 lanes + 2 tram lanes (separated)	high	24	10	2,4	1,6	2 phases, stop of tram line 4 and 6
			2 lanes + 1 tram lane		7	12	0,6	0,4	
			2 lanes + 1 tram lane		7	10	0,7	0,5	
9	Október 23. utca - Fehérvári út	2	4+3 lanes (separated)	medium	36	-	-	-	2 phases, stop of tram line 4
			3 lanes		10	13	0,7	0,5	
			4 lanes		12	20	0,6	0,4	
10	Október 23. utca - Kőrösy J. utca	2	4+3 lanes + 2 tram lanes (separated)	low	31	12	2,6	1,7	Stop of tram line 4
11	Irinyi J. utca - Karinthy F. út	10	2x3 sáv + 2 tram lanes (separated)	not significant	30	16	1,9	1,3	2 phases, stop of tram line 4
			3 lanes		11	41	0,3	0,2	
			3 lanes + 2 tram lanes		17	33	0,5	0,3	

Revision of location and signalization of crossings

- Location: 6 out of 7 claims are justified
- Signalization: 2 out of 5 claims are justified

Average distance: ~150 m
PT interchanges!!

#	Location	Existing pedestrian facility?	No. of claims	Type of claim	Distance of the next pedestrian crossing [m] (Signalized / Not Signalized)	Traffic volume of the crossed road [no. of veh. / h, peak, 2012]	Proposed facility based on the national planning standards and the pedestrian traffic volume	Remarks
1	Október 23. utca - Budafoki út	-	1	signalization needed	25 (S)	1800	signalized pedestrian crossing with separation	on the other side of the junction there is a signalized pedestrian crossing, high volume of public transport passangers
2	Budafoki út - Baranyai utca	-	3	signalization needed	200 (S)	850	pedestrian crossing	
3	Magyar Tudósok körútja (Infopark)		5	crossing needed	200 (NS)	400	no need for pedestrian crossing	high volume of students (University)
4	Bogdánfy út - Warga L. utca	-	9	crossing needed	140 (S)	1100	signalized pedestrian crossing with separation	high volume of students (University)
5	Fehérvári út - Hamzsabégi út	- (cycle crossing)	15	signalization needed	100 (S)	1200	pedestrian crossing with separation	
6	Villányi út - Himfy utca	-	22	crossing needed	40 (NS)	550	pedestrian crossing	high volume of public transport passangers
7	Irinyi J. utca (Petőfi híd)	-	28	both needed	70 (S)	1700	signalized pedestrian crossing with separation	tramline 4-6, high volume of passangers, subway and pedestrian crossing to the tram stop
8	Budafoki út - Lágymányosi utca	pedestrian crossing	2	signalization needed	130 (S)	950	signalized pedestrian crossing OR separation	high volume of students (University)
9	Budafoki út - Bogdánfy út	pedestrian crossing	3	signalization needed	150 (S)	1100	pedestrian crossing	missing road markings
10	Villányi út (Móricz Zs. körtér)	pedestrian crossing	3	signalization needed	230 (NS)	550	pedestrian crossing	high volume of public transport passangers
11	Bogdánfy út - Neumann J. utca	pedestrian crossing	8	signalization needed	150 (S)	1100	pedestrian crossing	missing road markings
12	Budafoki út - Csíky utca	pedestrian crossing	9	signalization needed	180 (S)	1000	signalized pedestrian crossing OR separation	high volume of students (University)

Analysis of “missing pedestrian crossing” and “signalization needed” claims

Critical locations

Irregular crossings on Irinyi Street near Petőfi Bridge (2x3 lanes, tram line 4-6)

Intersection of Villányi street and Himfy street [google streetview]

Intersection of Fehérvári road and Hamzsabégi road, bicycle crossing [google streetview]

Conclusions

- Users can roughly feel the problems, but…
- Innovative data collection techniques could help
  - To understand problems
  - To avoid problems in the planning phase
- Attention needs to be paid on the design of data collection
  - To minimalize the time for manual processing
  - To be able to weight different problems
- Obviously, these are preliminary results…
- Further researches need to be done regarding the:
  - Application of safety campaigns
  - Revision of the existing pedestrian planning standards

Thank you for your kind attention!

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