Preliminary study,

Evaluate pedestrian's safety and comfort using the day-dark method

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Day-Dark method?

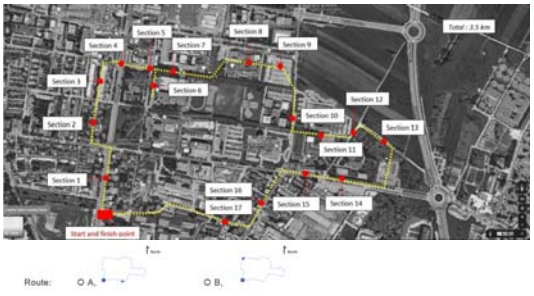
Good lighting is that which minimises the day–dark difference.

In this method, participant ratings of safety and comfort **in both daylight and dark conditions**, **the difference between these two ratings is plotted against lighting parameters** to examine the effect of changes in lighting.

Nighttime

Day time

Location of this experiment,



Route: A, B,

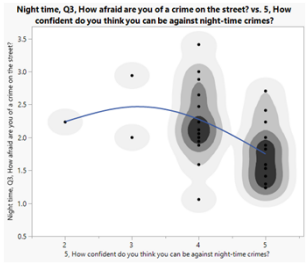
Description of the 17 road sections:

Section	Description of the road	Lamp type	CCT (K)	Ra	E_{ave} (lx)	note	L_{ave}	L_{min}	L_{max}	U0	UL (L_{ave} of middle column)
1	Main road	LED	3000	72	11.4		1.18	0.60	2.60	0.51	1.20
2	Residential area	LED	3000	73	4.5	(Max 52)	0.29	0.10	0.90	0.35	0.36
3	Residential area	LED	2770	86	1		0.29	0.10	0.40	0.34	0.29
4	Underpass	Fluorescent staining tube	2600	91	79		2.42	1.40	5.10	0.58	2.94
5	Steps	No lighting			0.1 (moon)		0.01	0.01	0.01		
6	Narrower sub road	Son	2000	15	2		0.42	0.20	1.00	0.48	0.46
7	UL Campus area	LED	3400	76	4.4		0.51	0.30	0.90	0.59	0.53
8	UL Campus area	LED	4600	96	10.1		0.01				
9	UL parking area	No road lighting			0.1	(moon)	4.04	2.80	4.60	0.69	4.16
10	Public sub main road	Son	1950	23	9.3		0.33	0.10	0.50	0.30	4.16
11	Public commercial area	LED	2550	80	0.5	(max 10)	0.29	0.10	0.90	0.34	4.16
12	Public side road	No lighting+LED from the parking	4300	93	0.2		0.01	0.01	0.01		
13	Public side road	No road lighting			0.1 (moon)		0.01	0.01	0.01		
14	Public sub main road	LED	3300	70	1.9		0.16	0.10	0.30	0.63	0.15
15	Public sub main road	LED	3000	72	11.3		0.63	0.50	1.30	0.80	0.64
16	Residential area	Son	1850	17	6.7		0.28	0.10	0.40	0.36	0.29
17	Residential area	Son	1850	11	5		0.20	0.10	0.30	0.51	0.20

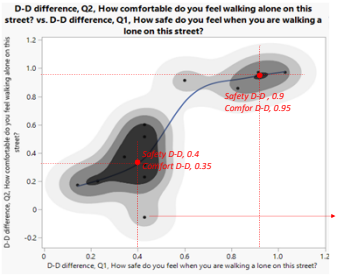
n=12,

1. *Without the section 4, underpass*
2. *Without the section 5, steps*
3. *Without the section 8, inside campus area*
4. *Without the section 9, parking area*
5. *Without the section 12, sub pedestrian path*

Relationship of **safety feeling (Q1)** and **confident against night-time crimes**



Relationship from **safety (Q1)** and **comfort (Q2) feeling**

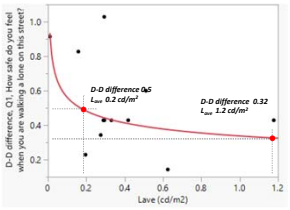


Dunajska cesta,

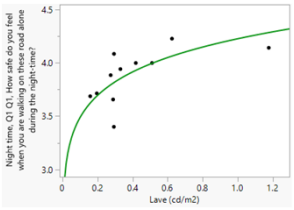
D-D with comfort is -0.06;
D-D with safety is 0.43.

Feeling **of safety (Q1)** with **average luminance**

Day–Dark method analysis:

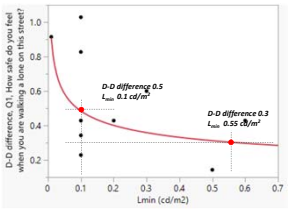


Nighttime mean rating value:

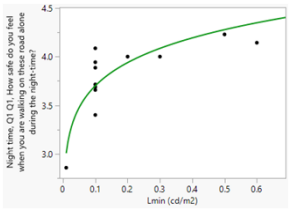


Feeling of safety (Q1) with minimum luminance

Day–Dark method analysis:

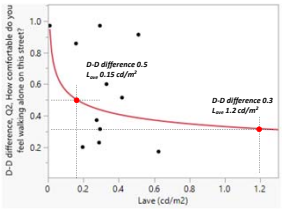


Nighttime mean rating value:

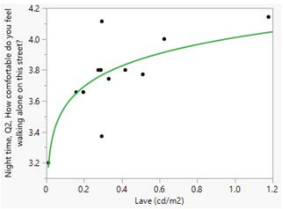


Feeling of comfort (Q2) with average luminance

Day–Dark method analysis:

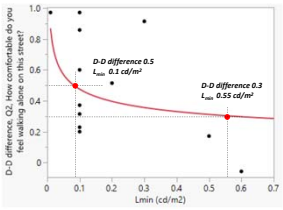


Nighttime mean rating value:

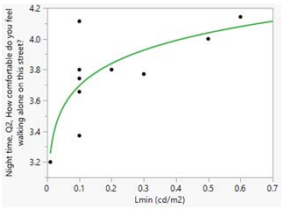


Feeling of comfort (Q2) with minimum luminance

Day–Dark method analysis:



Nighttime mean rating value:



Conclusion

Safety trend with average luminance,

- D-D difference is very flat decrease, when the L_{ave} from 0.2 cd/m^2 to 1.2 cd/m^2;
- The D-D difference will remain around 0.3, even the luminance goes higher;
- When the D-D difference around 0.3, the L_{ave} is around 1.2 cd/m^2.

Comfort trend with average luminance.

- D-D difference is flat decrease, when the L_{ave} from 0.15 cd/m^2 to 1.2 cd/m^2;
- The D-D difference will remain around 0.3, even the luminance goes higher;
- When the D-D difference around 0.3, the L_{ave} is around 1.2 cd/m^2.

Hvala vam
Thank you very much.

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