

Electronic Appendix - Driving the Extra Mile: Comprehensive Analysis of the Road and Rail Transport Distances in Europe

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1. Relationship between the standard deviation and the average estimation error

The data shows a strong correlation between the standard deviation of the circuitry and the average estimation error. This is entirely expected as standard deviation and estimation error are linked in nature. Figure 1 illustrates this relationship for both the road (left panel) and rail (right panel) networks. The figure demonstrates a clear positive linear relationship between the two variables, as indicated by the ordinary least squares (OLS) regression shown as a red line. These regressions (road: $y = 0.4085 + 54.2886 \cdot x$, rail: $y = 0.3846 + 52.6278 \cdot x$) show an excellent fit, with coefficients of determination (R^2) of 99.3% and 98.0% for the road and rail networks, respectively. For instance, standard deviations of 0.05 and 0.2 result in average estimation errors of approximately 3% and 11% in both networks. Therefore, the spread of the circuitry, as measured by its standard deviation, serves as a reliable proxy for its accuracy. The following tables include data on both the average values and the standard deviation to provide guidance on circuitry accuracy.

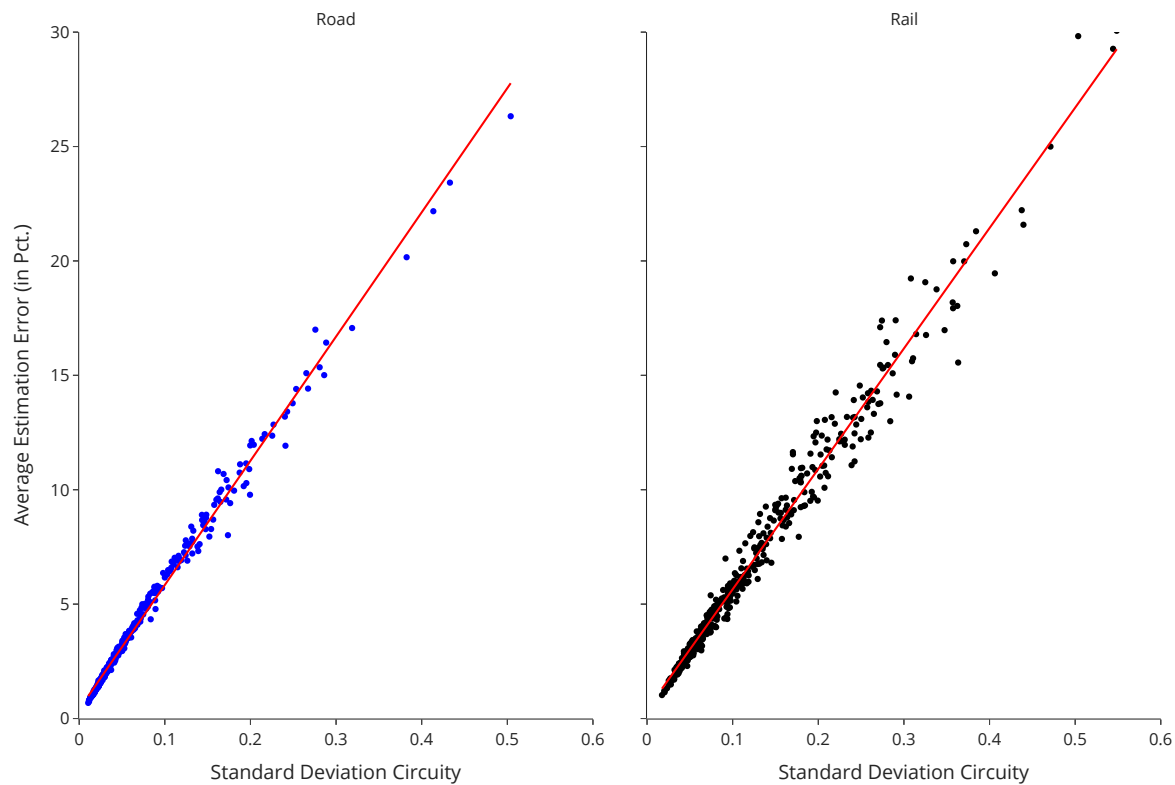


Figure 1 Relationship between the standard deviation of the circuitry and the average estimation error (in pct.) among considered country pairs.

2. Data for country Albania

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	n/a	n/a	n/a	n/a	1.4564	0.2493	13.7794	8.7923
Austria	1.6291	0.0807	3.9918	2.8927	1.2650	0.0428	2.7652	1.8844
Belgium	1.4135	0.0570	3.5141	2.0987	1.2335	0.0156	1.0345	0.7118
Bosnia-Herzegovina	1.5340	0.5035	29.8248	14.4016	1.3057	0.0807	4.9697	3.4177
Bulgaria	1.2662	0.1359	8.0956	6.6731	1.4795	0.1406	7.6217	5.9262
Croatia	1.7468	0.1772	7.9420	6.2909	1.2628	0.0489	3.0280	2.3540
Czech-Republic	1.6159	0.0595	3.0335	2.0192	1.2275	0.0310	2.0345	1.4589
Denmark	1.4351	0.0234	1.3231	0.9338	1.2155	0.0188	1.2068	0.9373
Estonia	1.6304	0.1167	6.5527	3.6995	1.2582	0.0183	1.1819	0.8309
France	1.4724	0.1559	8.7462	5.4696	1.2637	0.0511	3.2724	2.1870
Germany	1.4774	0.0505	2.6903	2.1035	1.2294	0.0235	1.5569	1.0859
Greece	1.3500	0.2743	17.3931	10.2745	1.3357	0.1602	9.5621	7.6745
Hungary	1.6750	0.1845	9.3132	6.4389	1.3117	0.0643	4.1639	2.5855
Italy	1.4103	0.2722	15.4532	11.1058	1.2557	0.1245	7.7880	6.7900
Kosovo	1.1798	0.1078	7.3329	4.6254	1.5289	0.2808	15.3518	12.6735
Latvia	1.4998	0.0601	3.3473	2.1417	1.2709	0.0166	1.0505	0.7757
Lithuania	1.4603	0.0317	1.7022	1.3205	1.2856	0.0215	1.3578	0.9590
Luxembourg	1.4487	0.0745	4.6614	2.5762	1.2432	0.0149	0.9949	0.6648
Moldova	1.6931	0.0938	4.3504	3.7500	1.3792	0.0527	3.0676	2.3075
Montenegro	1.2174	0.1703	11.6443	6.0295	1.3785	0.1717	9.5727	6.6609
Netherlands	1.4051	0.0326	1.8985	1.3609	1.2174	0.0157	1.0286	0.7589
North Macedonia	1.2074	0.1387	9.2624	6.3424	1.6472	0.2409	11.9221	9.6805
Poland	1.4931	0.0490	2.6654	1.8911	1.2778	0.0491	3.0993	2.2140
Portugal	1.5157	0.0784	4.9042	1.5768	1.3155	0.0366	2.2944	1.5393
Romania	1.7571	0.2496	12.2069	10.2411	1.4715	0.0835	4.3376	3.6022
Serbia	1.4840	0.2266	12.4454	10.8247	1.4779	0.1541	8.2814	6.3958
Slovakia	1.5769	0.1187	6.2580	4.3919	1.2745	0.0562	3.5866	2.4523
Slovenia	1.6556	0.0925	4.4248	3.3584	1.2534	0.0466	3.0292	2.0683
Spain	1.5919	0.1114	5.8832	3.6559	1.3678	0.0607	3.5440	2.6281
Switzerland	1.5198	0.1571	9.6290	5.2608	1.2828	0.0272	1.6731	1.2948

Table 1 Circuity and Estimation Error between Albania and other European countries.

3. Data for country Austria

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.6291	0.0807	3.9918	2.8927	1.2650	0.0428	2.7652	1.8844
Austria	1.4900	0.2047	11.0445	7.3450	1.3387	0.1320	7.8586	5.5045
Belgium	1.3189	0.0548	3.4409	2.2881	1.2149	0.0332	2.2577	1.5187
Bosnia-Herzegovina	1.6158	0.1829	9.2888	7.6182	1.2937	0.0862	5.5463	3.3944
Bulgaria	1.4597	0.1338	7.6759	5.2982	1.2335	0.0377	2.4988	1.7530
Croatia	1.6032	0.1575	7.8490	6.7759	1.3689	0.1224	7.2669	5.2455
Czech-Republic	1.5153	0.1361	7.1490	5.4390	1.3203	0.0935	5.7414	4.1933
Denmark	1.2959	0.0435	2.7481	1.9571	1.2336	0.0313	1.9598	1.5875
Estonia	1.5291	0.2203	14.2517	3.3960	1.2243	0.0341	2.2732	1.5526
France	1.3586	0.0811	4.9544	3.2317	1.2222	0.0468	3.0738	2.1945
Germany	1.3513	0.0770	4.6086	3.3272	1.2561	0.0581	3.6874	2.7179
Greece	1.4906	0.1014	5.6284	3.7589	1.2581	0.0396	2.5211	1.8398
Hungary	1.3851	0.1480	8.6530	5.6847	1.2236	0.0583	3.8037	2.8040
Italy	1.5428	0.1714	9.1052	6.2727	1.4059	0.1435	8.6751	4.9038
Kosovo	1.5245	0.1111	6.0671	4.0942	1.2750	0.0500	3.1773	2.2449
Latvia	1.3304	0.0484	2.9621	2.0662	1.2214	0.0410	2.7555	1.8170
Lithuania	1.3159	0.0424	2.5773	1.9526	1.2227	0.0362	2.4402	1.6176
Luxembourg	1.3850	0.0420	2.3871	1.8157	1.2321	0.0419	2.6992	1.9622
Moldova	1.3517	0.0438	2.7450	1.6653	1.1853	0.0197	1.3352	0.9705
Montenegro	1.7146	0.1292	6.0991	4.6798	1.2986	0.0574	3.5205	2.6466
Netherlands	1.2968	0.0523	3.2675	2.4055	1.2084	0.0257	1.6828	1.3063
North Macedonia	1.4696	0.1058	5.8985	4.3035	1.2673	0.0561	3.5832	2.4753
Poland	1.3712	0.0902	5.2987	3.7146	1.2722	0.0469	2.8989	2.2776
Portugal	1.3626	0.0283	1.6514	1.2273	1.1932	0.0183	1.2202	0.9352
Romania	1.3536	0.0943	5.6224	3.8357	1.1929	0.0307	2.1131	1.4659
Serbia	1.4291	0.1563	8.9869	5.8145	1.2456	0.0516	3.4013	2.4584
Slovakia	1.3559	0.0638	3.7085	2.8875	1.2394	0.0448	2.7753	2.2355
Slovenia	1.5838	0.2308	12.1882	8.6754	1.3773	0.1320	7.7187	5.3904
Spain	1.3795	0.0420	2.4154	1.8003	1.2256	0.0216	1.3832	1.0948
Switzerland	1.4282	0.1142	6.2776	4.4905	1.2560	0.0500	3.1186	2.3704

Table 2 Circuity and Estimation Error between Austria and other European countries.

4. Data for country Belgium

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.4135	0.0570	3.5141	2.0987	1.2335	0.0156	1.0345	0.7118
Austria	1.3189	0.0548	3.4409	2.2881	1.2149	0.0332	2.2577	1.5187
Belgium	1.3653	0.1801	10.6032	6.9653	1.2520	0.0980	6.3612	4.3173
Bosnia-Herzegovina	1.3839	0.0635	3.8800	2.4803	1.2187	0.0115	0.7405	0.5857
Bulgaria	1.3416	0.0698	4.4947	2.5408	1.1992	0.0244	1.6640	1.1790
Croatia	1.3705	0.0698	4.2416	2.6512	1.2370	0.0183	1.1835	0.8711
Czech-Republic	1.3506	0.0601	3.5595	2.5797	1.2156	0.0292	1.9410	1.3730
Denmark	1.3312	0.1497	9.3406	8.0223	1.3067	0.0741	4.5402	3.5194
Estonia	1.5368	0.2077	13.0532	4.1841	1.2506	0.0390	2.5475	1.7918
France	1.3317	0.1101	6.5651	4.8767	1.1939	0.0505	3.4024	2.4103
Germany	1.3266	0.0828	5.1345	3.4221	1.2104	0.0425	2.7915	2.0551
Greece	1.3723	0.0459	2.7583	1.8724	1.2347	0.0179	1.1485	0.8820
Hungary	1.2824	0.0477	3.0651	2.0405	1.1812	0.0239	1.7023	1.0761
Italy	1.3259	0.0659	3.9833	2.8385	1.2407	0.0334	2.1606	1.5657
Kosovo	1.3650	0.0342	2.0224	1.4568	1.2369	0.0222	1.4202	1.0498
Latvia	1.2960	0.0620	3.8465	2.8447	1.1979	0.0393	2.5685	1.9503
Lithuania	1.2193	0.0373	2.3896	1.8072	1.1497	0.0183	1.2403	0.9629
Luxembourg	1.3875	0.1323	7.5808	5.5001	1.2154	0.0771	5.0205	3.5229
Moldova	1.2591	0.0345	2.2493	1.5174	1.1783	0.0146	1.0146	0.7113
Montenegro	1.4482	0.0538	3.0852	2.0579	1.2305	0.0233	1.5557	1.0492
Netherlands	1.3748	0.1275	7.2338	5.9728	1.2262	0.0623	3.9522	2.9385
North Macedonia	1.3489	0.0448	2.7089	1.9258	1.2344	0.0214	1.4057	0.9839
Poland	1.2023	0.0321	2.1272	1.5949	1.1734	0.0262	1.7804	1.3502
Portugal	1.2793	0.0439	2.7856	1.9208	1.1658	0.0278	1.9229	1.3305
Romania	1.2788	0.0374	2.3641	1.7210	1.1701	0.0135	0.9463	0.6556
Serbia	1.3004	0.0364	2.2873	1.5486	1.2046	0.0197	1.3274	0.9690
Slovakia	1.2928	0.0354	2.2106	1.6208	1.1982	0.0204	1.3744	0.9824
Slovenia	1.3385	0.0428	2.4880	1.9063	1.2444	0.0307	1.9625	1.4899
Spain	1.2918	0.0566	3.4462	2.5963	1.1817	0.0341	2.2715	1.7164
Switzerland	1.4001	0.0598	3.4305	2.5170	1.2606	0.0398	2.5581	1.7656

Table 3 Circuity and Estimation Error between Belgium and other European countries.

5. Data for country Bosnia-Herzegovina

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.5340	0.5035	29.8248	14.4016	1.3057	0.0807	4.9697	3.4177
Austria	1.6158	0.1829	9.2888	7.6182	1.2937	0.0862	5.5463	3.3944
Belgium	1.3839	0.0635	3.8800	2.4803	1.2187	0.0115	0.7405	0.5857
Bosnia-Herzegovina	1.5920	0.3842	21.2962	12.5455	1.3528	0.1577	9.3387	6.2443
Bulgaria	1.6555	0.2724	13.7789	9.8341	1.3510	0.0802	4.8868	3.1622
Croatia	1.6134	0.3575	19.9850	14.5680	1.3003	0.1025	6.2841	4.4674
Czech-Republic	1.6558	0.1043	5.1150	3.9847	1.2450	0.0501	3.2631	2.2754
Denmark	1.3841	0.0475	2.7220	2.1612	1.2183	0.0261	1.6887	1.3058
Estonia	1.6434	0.1789	10.4466	4.5997	1.2254	0.0174	1.1553	0.8097
France	1.4784	0.1041	5.6430	4.2073	1.2150	0.0301	2.0602	1.3576
Germany	1.4383	0.0962	5.4004	3.8758	1.2280	0.0291	1.9051	1.3980
Greece	1.7039	0.2585	12.2788	11.5248	1.2844	0.0521	3.2234	2.4253
Hungary	1.7287	0.2702	13.7477	9.2346	1.2679	0.0629	3.9687	2.8925
Italy	1.7109	0.4396	21.5812	17.9884	1.5918	0.5039	26.3239	12.0907
Kosovo	1.8524	0.4062	19.4567	19.5914	1.4122	0.1321	7.2127	5.3545
Latvia	1.5077	0.0643	3.4531	2.7078	1.2441	0.0223	1.4404	1.0319
Lithuania	1.5075	0.0650	3.4754	2.6954	1.2551	0.0218	1.4083	1.0018
Luxembourg	1.4183	0.0752	4.7302	2.4147	1.2302	0.0105	0.6829	0.5094
Moldova	1.5713	0.0737	3.7573	2.6421	1.3009	0.0421	2.5353	1.9794
Montenegro	1.6239	0.5485	30.0595	16.5563	1.4334	0.1950	11.1502	6.3423
Netherlands	1.3502	0.0626	3.8561	2.6308	1.2130	0.0167	1.1408	0.7695
North Macedonia	1.7555	0.2840	12.9947	13.2627	1.3710	0.1168	6.8728	4.6122
Poland	1.5772	0.1057	5.3620	4.0635	1.2592	0.0447	2.8531	2.0408
Portugal	1.4811	0.0662	3.8430	2.2321	1.2213	0.0206	1.3579	0.9791
Romania	1.5893	0.1311	6.7650	4.4896	1.3239	0.0680	4.0994	2.9926
Serbia	1.5287	0.2502	13.0939	9.2037	1.3783	0.1288	7.5269	5.3301
Slovakia	1.7543	0.1906	9.5152	7.2172	1.2652	0.0514	3.2829	2.3970
Slovenia	1.6067	0.2443	12.8500	10.1823	1.2553	0.0852	5.5089	3.5603
Spain	1.5222	0.0821	4.4678	2.9540	1.2546	0.0374	2.4310	1.6789
Switzerland	1.5443	0.1234	6.6261	4.5684	1.2468	0.0266	1.7048	1.2715

Table 4 Circuity and Estimation Error between Bosnia-Herzegovina and other European countries.

6. Data for country Bulgaria

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.2662	0.1359	8.0956	6.6731	1.4795	0.1406	7.6217	5.9262
Austria	1.4597	0.1338	7.6759	5.2982	1.2335	0.0377	2.4988	1.7530
Belgium	1.3416	0.0698	4.4947	2.5408	1.1992	0.0244	1.6640	1.1790
Bosnia-Herzegovina	1.6555	0.2724	13.7789	9.8341	1.3510	0.0802	4.8868	3.1622
Bulgaria	1.5496	0.2686	14.2980	10.2513	1.3712	0.1879	11.1114	7.5133
Croatia	1.5363	0.2406	13.1526	8.5912	1.2769	0.0680	4.2933	2.8835
Czech-Republic	1.5096	0.1056	5.8879	3.6684	1.2267	0.0445	2.9779	1.9969
Denmark	1.3968	0.0633	3.6215	2.8769	1.2369	0.0350	2.3288	1.5476
Estonia	1.6815	0.1634	9.3134	4.1335	1.2374	0.0355	2.3785	1.5737
France	1.3960	0.0873	5.2451	3.3036	1.2207	0.0281	1.8443	1.3788
Germany	1.3888	0.0938	5.6516	3.6012	1.2071	0.0256	1.6963	1.2748
Greece	1.3910	0.2903	17.4055	11.2318	1.4343	0.2269	12.8459	10.1854
Hungary	1.6371	0.1660	8.5415	6.1352	1.2867	0.0718	4.3683	3.3172
Italy	1.6859	0.3475	16.9746	11.9931	1.3549	0.1565	8.6938	5.8547
Kosovo	1.2913	0.1041	6.2722	5.4051	1.3301	0.1068	6.5021	4.2731
Latvia	1.5318	0.0580	3.0624	2.2677	1.2421	0.0329	2.1604	1.4860
Lithuania	1.5264	0.0598	3.1263	2.3558	1.2577	0.0433	2.7560	2.0056
Luxembourg	1.3557	0.0785	4.7478	3.1196	1.2055	0.0277	1.9097	1.3054
Moldova	1.5215	0.1075	5.7952	4.6882	1.2541	0.0588	3.7161	2.8596
Montenegro	1.7667	0.4711	24.9973	18.0714	1.3669	0.0968	5.6999	4.0722
Netherlands	1.3327	0.0731	4.6467	2.8471	1.1938	0.0198	1.3368	0.9969
North Macedonia	1.3574	0.1967	12.0687	9.8187	1.4892	0.2402	13.1955	9.3016
Poland	1.5108	0.1090	6.0307	4.2315	1.2822	0.0427	2.6303	1.9791
Portugal	1.4319	0.0540	3.1476	1.9144	1.2348	0.0224	1.4548	1.0717
Romania	1.6189	0.2114	10.5874	8.9943	1.3331	0.1481	8.7682	6.0290
Serbia	1.4642	0.2751	15.3001	9.6138	1.3482	0.1243	7.1342	5.6825
Slovakia	1.6150	0.1165	5.9099	4.4736	1.2868	0.0636	3.8857	2.9234
Slovenia	1.3956	0.1535	9.0019	6.0230	1.2394	0.0387	2.5084	1.8246
Spain	1.4586	0.0574	3.1475	2.2517	1.2684	0.0373	2.3753	1.7230
Switzerland	1.4038	0.0970	5.9063	3.5013	1.2300	0.0212	1.3666	1.0492

Table 5 Circuity and Estimation Error between Bulgaria and other European countries.

7. Data for country Croatia

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.7468	0.1772	7.9420	6.2909	1.2628	0.0489	3.0280	2.3540
Austria	1.6032	0.1575	7.8490	6.7759	1.3689	0.1224	7.2669	5.2455
Belgium	1.3705	0.0698	4.2416	2.6512	1.2370	0.0183	1.1835	0.8711
Bosnia-Herzegovina	1.6134	0.3575	19.9850	14.5680	1.3003	0.1025	6.2841	4.4674
Bulgaria	1.5363	0.2406	13.1526	8.5912	1.2769	0.0680	4.2933	2.8835
Croatia	1.6224	0.2915	14.1550	11.0542	1.3320	0.1619	9.6181	6.7502
Czech-Republic	1.5769	0.0794	4.0072	2.9655	1.3112	0.0714	4.3953	3.3549
Denmark	1.3576	0.0376	2.2039	1.6807	1.2373	0.0289	1.8781	1.3908
Estonia	1.5620	0.1909	11.5770	4.0544	1.2306	0.0202	1.3006	0.9804
France	1.4517	0.1353	7.5078	4.8376	1.2262	0.0378	2.4507	1.7927
Germany	1.4152	0.0806	4.5842	3.2021	1.2586	0.0457	2.9482	2.1021
Greece	1.5848	0.2401	11.8900	9.6895	1.2660	0.0453	2.8982	2.0289
Hungary	1.5109	0.2896	15.8964	10.1505	1.2803	0.0789	4.8922	3.6238
Italy	1.7149	0.4376	22.2171	14.9147	1.6091	0.4330	23.4215	11.7510
Kosovo	1.6605	0.2424	11.2392	9.9751	1.3159	0.0820	5.1076	3.2254
Latvia	1.4344	0.0797	4.5405	2.9386	1.2402	0.0239	1.5181	1.1602
Lithuania	1.4168	0.0608	3.3526	2.5423	1.2596	0.0261	1.7024	1.1626
Luxembourg	1.4229	0.0743	4.6924	2.2193	1.2580	0.0285	1.8174	1.2914
Moldova	1.5042	0.1106	6.1858	3.8815	1.2556	0.0440	2.8009	2.0959
Montenegro	1.7784	0.3574	17.9322	20.0021	1.2919	0.0884	5.5445	4.0404
Netherlands	1.3444	0.0524	3.2579	2.1203	1.2227	0.0208	1.3773	0.9642
North Macedonia	1.5437	0.2614	12.5005	11.2433	1.3274	0.0807	5.3263	2.8150
Poland	1.4634	0.0814	4.3156	3.4340	1.2882	0.0492	3.0505	2.3209
Portugal	1.4321	0.0830	5.0847	2.3896	1.2197	0.0375	2.5741	1.5548
Romania	1.5282	0.1683	8.9216	5.9528	1.2495	0.0504	3.3457	2.1682
Serbia	1.5069	0.2580	14.2167	9.1297	1.2741	0.0915	5.6252	4.5328
Slovakia	1.5527	0.2022	10.5763	7.9452	1.3063	0.0617	3.8484	2.7348
Slovenia	1.5450	0.2520	14.0325	9.7587	1.3416	0.1659	10.0053	6.7040
Spain	1.4756	0.1045	5.9949	3.2336	1.2462	0.0461	2.8744	2.1576
Switzerland	1.5159	0.1717	9.5501	5.5139	1.2721	0.0476	2.9367	2.2038

Table 6 Circuity and Estimation Error between Croatia and other European countries.

8. Data for country Czech-Republic

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.6159	0.0595	3.0335	2.0192	1.2275	0.0310	2.0345	1.4589
Austria	1.5153	0.1361	7.1490	5.4390	1.3203	0.0935	5.7414	4.1933
Belgium	1.3506	0.0601	3.5595	2.5797	1.2156	0.0292	1.9410	1.3730
Bosnia-Herzegovina	1.6558	0.1043	5.1150	3.9847	1.2450	0.0501	3.2631	2.2754
Bulgaria	1.5096	0.1056	5.8879	3.6684	1.2267	0.0445	2.9779	1.9969
Croatia	1.5769	0.0794	4.0072	2.9655	1.3112	0.0714	4.3953	3.3549
Czech-Republic	1.4894	0.1837	9.8929	7.0829	1.3229	0.1465	8.5731	6.1634
Denmark	1.2861	0.0401	2.4525	1.9785	1.2441	0.0434	2.7762	2.0645
Estonia	1.5491	0.2723	17.1029	3.6817	1.2344	0.0333	2.2369	1.5167
France	1.3585	0.0600	3.6211	2.5500	1.1983	0.0376	2.5641	1.7793
Germany	1.3764	0.0953	5.5414	3.9713	1.2381	0.0503	3.2341	2.3894
Greece	1.5134	0.0740	3.9212	2.8280	1.2314	0.0304	1.9357	1.5176
Hungary	1.4203	0.1445	8.1175	5.2792	1.2493	0.0805	5.1881	3.5402
Italy	1.5079	0.1096	5.8603	4.3675	1.3704	0.1039	6.4883	3.5372
Kosovo	1.5875	0.0540	2.7621	1.9740	1.2127	0.0365	2.4052	1.7332
Latvia	1.3231	0.0542	3.3431	2.2552	1.2296	0.0408	2.6650	1.9632
Lithuania	1.3005	0.0521	3.2626	2.2844	1.2354	0.0383	2.4351	1.9155
Luxembourg	1.4407	0.0473	2.6830	1.9062	1.2261	0.0312	2.0470	1.4617
Moldova	1.3490	0.0375	2.2508	1.6339	1.2280	0.0259	1.7065	1.2292
Montenegro	1.7047	0.0634	2.9796	2.2867	1.2476	0.0346	2.2441	1.6159
Netherlands	1.3079	0.0715	4.4408	3.0345	1.2165	0.0359	2.4407	1.6026
North Macedonia	1.5265	0.0511	2.7247	1.9808	1.2228	0.0445	3.0814	1.8339
Poland	1.3757	0.0961	5.7077	4.0166	1.2784	0.0664	4.1956	2.9950
Portugal	1.3359	0.0276	1.6890	1.1648	1.1747	0.0170	1.2126	0.7689
Romania	1.3789	0.0668	3.8431	2.9358	1.2249	0.0526	3.5384	2.3214
Serbia	1.4940	0.1438	7.8777	6.2762	1.1921	0.0404	2.8114	1.8314
Slovakia	1.4691	0.1248	6.7155	5.0572	1.2685	0.0800	4.9932	3.6221
Slovenia	1.5315	0.0977	5.1518	3.7531	1.3344	0.0748	4.5542	3.1580
Spain	1.3532	0.0402	2.3408	1.7965	1.2080	0.0221	1.4791	1.0898
Switzerland	1.4205	0.0707	3.9046	3.0348	1.2401	0.0349	2.2950	1.5867

Table 7 Circuity and Estimation Error between Czech-Republic and other European countries.

9. Data for country Denmark

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.4351	0.0234	1.3231	0.9338	1.2155	0.0188	1.2068	0.9373
Austria	1.2959	0.0435	2.7481	1.9571	1.2336	0.0313	1.9598	1.5875
Belgium	1.3312	0.1497	9.3406	8.0223	1.3067	0.0741	4.5402	3.5194
Bosnia-Herzegovina	1.3841	0.0475	2.7220	2.1612	1.2183	0.0261	1.6887	1.3058
Bulgaria	1.3968	0.0633	3.6215	2.8769	1.2369	0.0350	2.3288	1.5476
Croatia	1.3576	0.0376	2.2039	1.6807	1.2373	0.0289	1.8781	1.3908
Czech-Republic	1.2861	0.0401	2.4525	1.9785	1.2441	0.0434	2.7762	2.0645
Denmark	1.1279	0.0743	5.3852	3.5382	1.2297	0.1622	10.8091	6.4819
Estonia	2.0702	0.3634	15.5582	12.2282	1.7565	0.1737	8.0132	5.7992
France	1.3130	0.0721	4.3997	3.1500	1.2438	0.0435	2.7440	2.0967
Germany	1.2375	0.1239	8.1440	6.3462	1.2229	0.0708	4.3245	3.9281
Greece	1.3882	0.0367	2.0559	1.6017	1.2222	0.0264	1.7393	1.2576
Hungary	1.2987	0.0351	2.0941	1.6665	1.2205	0.0357	2.3181	1.7152
Italy	1.2800	0.0400	2.4011	1.9571	1.2383	0.0274	1.7468	1.3419
Kosovo	1.4039	0.0252	1.4603	1.0266	1.2107	0.0302	1.9882	1.4254
Latvia	1.7163	0.1994	9.5251	7.2365	1.6521	0.1995	9.7794	6.8416
Lithuania	1.5374	0.1292	6.7541	4.8403	1.5409	0.1763	9.4139	6.1245
Luxembourg	1.3465	0.0552	3.3158	2.4197	1.2381	0.0407	2.6031	2.0189
Moldova	1.2833	0.0273	1.7545	1.1815	1.2385	0.0459	3.1041	1.9278
Montenegro	1.4519	0.0369	1.9820	1.6335	1.2187	0.0201	1.2866	1.0124
Netherlands	1.4134	0.3081	19.2330	11.4358	1.4301	0.1391	7.3193	6.6233
North Macedonia	1.3795	0.0297	1.7477	1.2334	1.2192	0.0363	2.4114	1.6427
Poland	1.3271	0.1309	7.9678	6.5419	1.3371	0.1276	7.6383	5.5434
Portugal	1.3011	0.0463	2.8247	2.1053	1.2144	0.0320	2.0873	1.5681
Romania	1.3260	0.0527	3.3864	2.1794	1.2341	0.0362	2.3594	1.6966
Serbia	1.3723	0.0394	2.2351	1.8918	1.2034	0.0303	1.9995	1.4741
Slovakia	1.2749	0.0375	2.4126	1.7174	1.2515	0.0442	2.8571	1.9759
Slovenia	1.3060	0.0378	2.3727	1.5988	1.2480	0.0227	1.4044	1.1432
Spain	1.2947	0.0451	2.6777	2.2438	1.2119	0.0239	1.5520	1.2096
Switzerland	1.2613	0.0360	2.2976	1.7070	1.2017	0.0243	1.6042	1.1980

Table 8 Circuity and Estimation Error between Denmark and other European countries.

10. Data for country Estonia

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.6304	0.1167	6.5527	3.6995	1.2582	0.0183	1.1819	0.8309
Austria	1.5291	0.2203	14.2517	3.3960	1.2243	0.0341	2.2732	1.5526
Belgium	1.5368	0.2077	13.0532	4.1841	1.2506	0.0390	2.5475	1.7918
Bosnia-Herzegovina	1.6434	0.1789	10.4466	4.5997	1.2254	0.0174	1.1553	0.8097
Bulgaria	1.6815	0.1634	9.3134	4.1335	1.2374	0.0355	2.3785	1.5737
Croatia	1.5620	0.1909	11.5770	4.0544	1.2306	0.0202	1.3006	0.9804
Czech-Republic	1.5491	0.2723	17.1029	3.6817	1.2344	0.0333	2.2369	1.5167
Denmark	2.0702	0.3634	15.5582	12.2282	1.7565	0.1737	8.0132	5.7992
Estonia	1.5034	0.3143	16.8008	10.9751	1.4574	0.2673	14.4199	11.3150
France	1.4404	0.1691	10.9123	3.5377	1.2140	0.0269	1.7683	1.3188
Germany	1.5671	0.2797	16.4524	6.4749	1.2519	0.0574	3.5277	2.6768
Greece	1.6164	0.1350	7.4077	4.5353	1.2728	0.0222	1.3858	1.0708
Hungary	1.6617	0.2193	12.8841	6.4071	1.2303	0.0231	1.4984	1.1373
Italy	1.5471	0.1730	10.3777	5.1775	1.2927	0.0677	4.5770	2.3744
Kosovo	1.6138	0.1503	9.1684	3.0138	1.2625	0.0175	1.1284	0.7881
Latvia	1.4807	0.2814	15.4505	10.1958	1.3438	0.1743	10.1004	7.5134
Lithuania	1.5035	0.3249	19.0697	12.9305	1.2504	0.0763	4.8570	3.5786
Luxembourg	1.4958	0.2040	12.3665	4.2295	1.2420	0.0317	2.0036	1.5535
Moldova	1.8667	0.2310	11.9625	5.5915	1.2505	0.0349	2.2280	1.6943
Montenegro	1.6168	0.1531	9.3878	3.1926	1.2467	0.0199	1.3026	0.9108
Netherlands	1.5641	0.2334	13.1812	5.6150	1.2958	0.0626	3.9086	2.7223
North Macedonia	1.6070	0.1497	9.1044	3.2202	1.2773	0.0230	1.4755	1.0042
Poland	1.7204	0.3728	20.7316	10.3945	1.2315	0.0459	2.9765	2.1625
Portugal	1.3928	0.1147	7.6579	2.8039	1.1953	0.0232	1.5590	1.1160
Romania	1.7135	0.2097	11.7623	4.5386	1.2392	0.0320	2.0820	1.5476
Serbia	1.6325	0.1813	10.9601	4.1482	1.2521	0.0242	1.5277	1.1716
Slovakia	1.6766	0.2414	13.9196	7.7264	1.2174	0.0267	1.7572	1.2778
Slovenia	1.5011	0.1983	12.9999	2.4669	1.2148	0.0219	1.4307	1.0781
Spain	1.3948	0.1206	7.9789	2.9067	1.2042	0.0244	1.6250	1.1887
Switzerland	1.4296	0.1945	12.3358	3.5037	1.2027	0.0226	1.5354	1.0681

Table 9 Circuity and Estimation Error between Estonia and other European countries.

11. Data for country France

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.4724	0.1559	8.7462	5.4696	1.2637	0.0511	3.2724	2.1870
Austria	1.3586	0.0811	4.9544	3.2317	1.2222	0.0468	3.0738	2.1945
Belgium	1.3317	0.1101	6.5651	4.8767	1.1939	0.0505	3.4024	2.4103
Bosnia-Herzegovina	1.4784	0.1041	5.6430	4.2073	1.2150	0.0301	2.0602	1.3576
Bulgaria	1.3960	0.0873	5.2451	3.3036	1.2207	0.0281	1.8443	1.3788
Croatia	1.4517	0.1353	7.5078	4.8376	1.2262	0.0378	2.4507	1.7927
Czech-Republic	1.3585	0.0600	3.6211	2.5500	1.1983	0.0376	2.5641	1.7793
Denmark	1.3130	0.0721	4.3997	3.1500	1.2438	0.0435	2.7440	2.0967
Estonia	1.4404	0.1691	10.9123	3.5377	1.2140	0.0269	1.7683	1.3188
France	1.4037	0.2027	11.5385	8.0771	1.2032	0.0556	3.6894	2.7130
Germany	1.3155	0.0757	4.7632	3.1015	1.2010	0.0367	2.4129	1.8512
Greece	1.4775	0.1109	6.1009	4.5113	1.2689	0.0458	2.9034	1.9935
Hungary	1.3354	0.0759	4.7279	3.0610	1.1961	0.0378	2.5598	1.7606
Italy	1.3714	0.1252	7.4315	5.3462	1.2338	0.0606	3.7926	3.0853
Kosovo	1.4615	0.0885	5.1176	3.1226	1.2559	0.0432	2.8614	1.8435
Latvia	1.2801	0.0533	3.4290	2.3088	1.1862	0.0258	1.6972	1.3138
Lithuania	1.2349	0.0431	2.8408	1.9282	1.1713	0.0209	1.4183	1.0520
Luxembourg	1.3433	0.1026	6.3514	3.9554	1.1925	0.0584	3.8359	2.8912
Moldova	1.3216	0.0535	3.3049	2.2991	1.1785	0.0217	1.5122	1.0245
Montenegro	1.5786	0.1116	5.6699	4.0500	1.2418	0.0380	2.5261	1.6708
Netherlands	1.3057	0.0888	5.6183	3.7454	1.1835	0.0450	3.0794	2.1379
North Macedonia	1.4495	0.1026	5.9771	3.5593	1.2577	0.0459	2.9651	2.0400
Poland	1.2809	0.0630	4.0181	2.7727	1.1942	0.0248	1.6838	1.1892
Portugal	1.3888	0.0973	5.5423	3.9462	1.1962	0.0461	3.1378	2.0452
Romania	1.3306	0.0668	4.0256	2.8864	1.1837	0.0267	1.8902	1.2104
Serbia	1.3547	0.0766	4.6245	2.9343	1.2064	0.0276	1.8030	1.3938
Slovakia	1.3191	0.0509	3.0603	2.3466	1.1962	0.0348	2.4069	1.5876
Slovenia	1.3759	0.0587	3.4036	2.5493	1.2135	0.0304	2.0199	1.4594
Spain	1.4533	0.1391	7.6215	5.3661	1.2257	0.0526	3.4574	2.3915
Switzerland	1.4222	0.1329	7.5377	5.1395	1.2437	0.0791	5.0214	3.6351

Table 10 Circuity and Estimation Error between France and other European countries.

12. Data for country Germany

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.4774	0.0505	2.6903	2.1035	1.2294	0.0235	1.5569	1.0859
Austria	1.3513	0.0770	4.6086	3.3272	1.2561	0.0581	3.6874	2.7179
Belgium	1.3266	0.0828	5.1345	3.4221	1.2104	0.0425	2.7915	2.0551
Bosnia-Herzegovina	1.4383	0.0962	5.4004	3.8758	1.2280	0.0291	1.9051	1.3980
Bulgaria	1.3888	0.0938	5.6516	3.6012	1.2071	0.0256	1.6963	1.2748
Croatia	1.4152	0.0806	4.5842	3.2021	1.2586	0.0457	2.9482	2.1021
Czech-Republic	1.3764	0.0953	5.5414	3.9713	1.2381	0.0503	3.2341	2.3894
Denmark	1.2375	0.1239	8.1440	6.3462	1.2229	0.0708	4.3245	3.9281
Estonia	1.5671	0.2797	16.4524	6.4749	1.2519	0.0574	3.5277	2.6768
France	1.3155	0.0757	4.7632	3.1015	1.2010	0.0367	2.4129	1.8512
Germany	1.3430	0.1017	6.0180	4.5795	1.2582	0.0621	3.8986	2.8577
Greece	1.4099	0.0663	3.7851	2.6965	1.2271	0.0254	1.5957	1.2922
Hungary	1.3081	0.0630	3.8660	2.7657	1.1933	0.0288	1.9997	1.3169
Italy	1.3498	0.0826	4.9339	3.3601	1.2766	0.0457	2.7598	2.1826
Kosovo	1.4199	0.0573	3.2615	2.2539	1.2265	0.0375	2.4704	1.7251
Latvia	1.3100	0.0851	5.1349	3.7953	1.2091	0.0547	3.6045	2.5309
Lithuania	1.2352	0.0581	3.8079	2.6333	1.1829	0.0403	2.7294	1.8965
Luxembourg	1.4176	0.0956	5.3804	3.8020	1.2514	0.0514	3.2322	2.3955
Moldova	1.2698	0.0510	3.3061	2.2409	1.1759	0.0197	1.3696	0.9521
Montenegro	1.5076	0.0718	3.8283	2.8732	1.2374	0.0324	2.0970	1.4929
Netherlands	1.3059	0.0945	5.7936	3.9312	1.2141	0.0451	3.0575	2.0506
North Macedonia	1.3882	0.0589	3.4277	2.4785	1.2337	0.0404	2.6019	1.9658
Poland	1.2392	0.0805	5.1917	3.6094	1.2098	0.0466	3.0733	2.1896
Portugal	1.2915	0.0498	3.2477	2.0559	1.1685	0.0216	1.5078	1.0286
Romania	1.3184	0.0638	3.9407	2.8421	1.1850	0.0269	1.8365	1.2954
Serbia	1.3582	0.0704	4.3981	2.6628	1.1988	0.0303	2.0679	1.4152
Slovakia	1.2945	0.0644	4.0406	2.9374	1.2052	0.0318	2.1260	1.5410
Slovenia	1.3746	0.0778	4.4163	3.2603	1.2802	0.0506	3.1025	2.2958
Spain	1.3137	0.0665	4.1526	2.6870	1.1968	0.0246	1.6671	1.2135
Switzerland	1.3374	0.0786	4.7891	3.4255	1.2348	0.0425	2.8055	1.8981

Table 11 Circuity and Estimation Error between Germany and other European countries.

13. Data for country Greece

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.3500	0.2743	17.3931	10.2745	1.3357	0.1602	9.5621	7.6745
Austria	1.4906	0.1014	5.6284	3.7589	1.2581	0.0396	2.5211	1.8398
Belgium	1.3723	0.0459	2.7583	1.8724	1.2347	0.0179	1.1485	0.8820
Bosnia-Herzegovina	1.7039	0.2585	12.2788	11.5248	1.2844	0.0521	3.2234	2.4253
Bulgaria	1.3910	0.2903	17.4055	11.2318	1.4343	0.2269	12.8459	10.1854
Croatia	1.5848	0.2401	11.8900	9.6895	1.2660	0.0453	2.8982	2.0289
Czech-Republic	1.5134	0.0740	3.9212	2.8280	1.2314	0.0304	1.9357	1.5176
Denmark	1.3882	0.0367	2.0559	1.6017	1.2222	0.0264	1.7393	1.2576
Estonia	1.6164	0.1350	7.4077	4.5353	1.2728	0.0222	1.3858	1.0708
France	1.4775	0.1109	6.1009	4.5113	1.2689	0.0458	2.9034	1.9935
Germany	1.4099	0.0663	3.7851	2.6965	1.2271	0.0254	1.5957	1.2922
Greece	1.2057	0.1319	8.9409	5.8347	1.2597	0.1686	10.6893	7.2495
Hungary	1.5460	0.1621	8.3917	5.6267	1.3030	0.0649	4.0203	2.7129
Italy	1.6039	0.3570	18.1867	14.0277	1.3367	0.1986	10.9019	8.2467
Kosovo	1.3287	0.1620	9.6518	8.5293	1.3571	0.1721	10.4221	7.4733
Latvia	1.4782	0.0524	2.7796	2.1137	1.2869	0.0220	1.3622	1.0410
Lithuania	1.4752	0.0526	2.8707	2.0194	1.3010	0.0330	2.0354	1.5312
Luxembourg	1.3923	0.0503	2.9222	2.1616	1.2403	0.0149	0.9787	0.7035
Moldova	1.6806	0.1924	9.9069	5.2178	1.2978	0.0482	3.0163	2.1170
Montenegro	1.4558	0.3381	18.7578	13.6005	1.3114	0.1433	8.9015	7.5236
Netherlands	1.3571	0.0493	2.9492	2.0685	1.2174	0.0150	0.9983	0.7245
North Macedonia	1.3095	0.2156	13.1720	9.3812	1.4071	0.2166	12.4302	8.5859
Poland	1.4651	0.0579	3.1843	2.2462	1.2859	0.0534	3.4131	2.3418
Portugal	1.5547	0.0698	3.6910	2.6075	1.3318	0.0410	2.4445	1.8805
Romania	1.6853	0.2389	11.0730	9.0891	1.3902	0.0887	5.1637	3.5829
Serbia	1.3948	0.1397	7.9014	7.0027	1.3523	0.1149	6.6123	5.2104
Slovakia	1.5121	0.0928	4.8849	3.5389	1.3078	0.0609	3.8112	2.6343
Slovenia	1.4572	0.1001	5.4647	3.8029	1.2494	0.0377	2.4218	1.7696
Spain	1.6091	0.0951	4.8231	3.4214	1.3835	0.0713	4.2324	2.8836
Switzerland	1.4593	0.0948	5.1529	4.1026	1.2718	0.0290	1.8064	1.3665

Table 12 Circuity and Estimation Error between Greece and other European countries.

14. Data for country Hungary

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.6750	0.1845	9.3132	6.4389	1.3117	0.0643	4.1639	2.5855
Austria	1.3851	0.1480	8.6530	5.6847	1.2236	0.0583	3.8037	2.8040
Belgium	1.2824	0.0477	3.0651	2.0405	1.1812	0.0239	1.7023	1.0761
Bosnia-Herzegovina	1.7287	0.2702	13.7477	9.2346	1.2679	0.0629	3.9687	2.8925
Bulgaria	1.6371	0.1660	8.5415	6.1352	1.2867	0.0718	4.3683	3.3172
Croatia	1.5109	0.2896	15.8964	10.1505	1.2803	0.0789	4.8922	3.6238
Czech-Republic	1.4203	0.1445	8.1175	5.2792	1.2493	0.0805	5.1881	3.5402
Denmark	1.2987	0.0351	2.0941	1.6665	1.2205	0.0357	2.3181	1.7152
Estonia	1.6617	0.2193	12.8841	6.4071	1.2303	0.0231	1.4984	1.1373
France	1.3354	0.0759	4.7279	3.0610	1.1961	0.0378	2.5598	1.7606
Germany	1.3081	0.0630	3.8660	2.7657	1.1933	0.0288	1.9997	1.3169
Greece	1.5460	0.1621	8.3917	5.6267	1.3030	0.0649	4.0203	2.7129
Hungary	1.3879	0.1791	10.3405	7.1789	1.2787	0.1237	7.5519	5.1011
Italy	1.6245	0.3107	15.7457	7.8157	1.4735	0.2884	16.4294	7.6220
Kosovo	1.6346	0.1795	9.2379	6.6410	1.3039	0.0667	4.1681	2.8831
Latvia	1.4335	0.0671	3.7320	2.9527	1.2528	0.0333	2.1173	1.6144
Lithuania	1.4431	0.0736	4.1020	3.1821	1.2703	0.0387	2.5075	1.7600
Luxembourg	1.3238	0.0490	3.0747	1.9795	1.1825	0.0224	1.6587	0.9053
Moldova	1.4675	0.1049	5.9514	3.6858	1.2160	0.0360	2.3856	1.7162
Montenegro	1.7411	0.2649	13.3163	8.7253	1.3047	0.0620	3.9826	2.6041
Netherlands	1.2907	0.0505	3.2161	2.1524	1.1924	0.0226	1.5743	1.0625
North Macedonia	1.5430	0.1664	9.0191	6.2344	1.3081	0.0814	5.1157	3.3605
Poland	1.4640	0.1281	6.9931	5.0573	1.3082	0.0691	4.2183	3.0509
Portugal	1.3570	0.0277	1.6651	1.1573	1.1899	0.0134	0.9256	0.6353
Romania	1.4842	0.1596	8.6733	6.8219	1.2367	0.0597	3.8346	2.8064
Serbia	1.5684	0.2635	13.9271	10.6041	1.3055	0.0802	4.9538	3.5553
Slovakia	1.5158	0.2245	12.2081	8.5011	1.3594	0.1161	7.1119	4.8580
Slovenia	1.3814	0.1437	8.7579	4.9688	1.2779	0.0884	5.4835	4.0556
Spain	1.3802	0.0370	2.1987	1.4924	1.2166	0.0190	1.2498	0.9329
Switzerland	1.3568	0.0794	4.9040	3.0559	1.2248	0.0360	2.3697	1.7056

Table 13 Circuity and Estimation Error between Hungary and other European countries.

15. Data for country Italy

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.4103	0.2722	15.4532	11.1058	1.2557	0.1245	7.7880	6.7900
Austria	1.5428	0.1714	9.1052	6.2727	1.4059	0.1435	8.6751	4.9038
Belgium	1.3259	0.0659	3.9833	2.8385	1.2407	0.0334	2.1606	1.5657
Bosnia-Herzegovina	1.7109	0.4396	21.5812	17.9884	1.5918	0.5039	26.3239	12.0907
Bulgaria	1.6859	0.3475	16.9746	11.9931	1.3549	0.1565	8.6938	5.8547
Croatia	1.7149	0.4376	22.2171	14.9147	1.6091	0.4330	23.4215	11.7510
Czech-Republic	1.5079	0.1096	5.8603	4.3675	1.3704	0.1039	6.4883	3.5372
Denmark	1.2800	0.0400	2.4011	1.9571	1.2383	0.0274	1.7468	1.3419
Estonia	1.5471	0.1730	10.3777	5.1775	1.2927	0.0677	4.5770	2.3744
France	1.3714	0.1252	7.4315	5.3462	1.2338	0.0606	3.7926	3.0853
Germany	1.3498	0.0826	4.9339	3.3601	1.2766	0.0457	2.7598	2.1826
Greece	1.6039	0.3570	18.1867	14.0277	1.3367	0.1986	10.9019	8.2467
Hungary	1.6245	0.3107	15.7457	7.8157	1.4735	0.2884	16.4294	7.6220
Italy	1.3028	0.1797	10.9443	8.1201	1.2521	0.1309	8.3874	6.4272
Kosovo	1.5652	0.3095	15.6155	13.4978	1.3760	0.1952	10.2901	7.7250
Latvia	1.3698	0.0675	3.8369	2.7763	1.2874	0.0878	5.7590	3.1389
Lithuania	1.3890	0.0944	5.4673	3.4344	1.2963	0.0880	5.7247	3.2209
Luxembourg	1.3497	0.0871	5.1010	3.5082	1.2608	0.0485	3.0841	2.1760
Moldova	1.5316	0.1950	9.6672	6.1533	1.3659	0.2138	12.2264	6.6876
Montenegro	1.6049	0.3704	19.9819	18.0000	1.3138	0.1809	9.9602	8.3081
Netherlands	1.3226	0.0536	3.2489	2.2802	1.2417	0.0235	1.4914	1.1681
North Macedonia	1.4731	0.2571	13.6036	11.9856	1.3846	0.2254	12.3614	8.0615
Poland	1.4157	0.0970	5.3421	3.7946	1.3383	0.1075	6.5915	3.9264
Portugal	1.4459	0.0672	4.0696	2.2276	1.2769	0.0737	4.9957	2.7002
Romania	1.5171	0.2086	10.7357	6.9399	1.4176	0.2534	14.4032	7.4069
Serbia	1.5786	0.3623	18.0328	12.3879	1.5174	0.4136	22.1726	10.1601
Slovakia	1.5337	0.2158	11.4194	5.9361	1.4051	0.1997	11.9361	5.4726
Slovenia	1.6255	0.3258	16.7617	11.9542	1.4865	0.2758	16.9959	7.7836
Spain	1.5110	0.1129	6.2090	4.1141	1.3326	0.1080	6.8592	3.8578
Switzerland	1.3318	0.1408	8.3855	5.8953	1.3178	0.1108	6.8601	4.5496

Table 14 Circuity and Estimation Error between Italy and other European countries.

16. Data for country Kosovo

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.1798	0.1078	7.3329	4.6254	1.5289	0.2808	15.3518	12.6735
Austria	1.5245	0.1111	6.0671	4.0942	1.2750	0.0500	3.1773	2.2449
Belgium	1.3650	0.0342	2.0224	1.4568	1.2369	0.0222	1.4202	1.0498
Bosnia-Herzegovina	1.8524	0.4062	19.4567	19.5914	1.4122	0.1321	7.2127	5.3545
Bulgaria	1.2913	0.1041	6.2722	5.4051	1.3301	0.1068	6.5021	4.2731
Croatia	1.6605	0.2424	11.2392	9.9751	1.3159	0.0820	5.1076	3.2254
Czech-Republic	1.5875	0.0540	2.7621	1.9740	1.2127	0.0365	2.4052	1.7332
Denmark	1.4039	0.0252	1.4603	1.0266	1.2107	0.0302	1.9882	1.4254
Estonia	1.6138	0.1503	9.1684	3.0138	1.2625	0.0175	1.1284	0.7881
France	1.4615	0.0885	5.1176	3.1226	1.2559	0.0432	2.8614	1.8435
Germany	1.4199	0.0573	3.2615	2.2539	1.2265	0.0375	2.4704	1.7251
Greece	1.3287	0.1620	9.6518	8.5293	1.3571	0.1721	10.4221	7.4733
Hungary	1.6346	0.1795	9.2379	6.6410	1.3039	0.0667	4.1681	2.8831
Italy	1.5652	0.3095	15.6155	13.4978	1.3760	0.1952	10.2901	7.7250
Kosovo	1.1594	0.0916	6.9912	3.5706	1.4499	0.2653	15.0943	9.9609
Latvia	1.4696	0.0460	2.5650	1.7566	1.2753	0.0203	1.2930	0.9177
Lithuania	1.4686	0.0278	1.4883	1.1664	1.2927	0.0230	1.4275	1.0548
Luxembourg	1.4000	0.0393	2.3800	1.4572	1.2460	0.0228	1.4756	1.0254
Moldova	1.6868	0.1185	5.9766	4.4759	1.3580	0.0502	2.9489	2.1490
Montenegro	1.1835	0.1300	8.5790	5.5422	1.5896	0.2861	15.0081	12.0370
Netherlands	1.3496	0.0357	2.1772	1.4821	1.2253	0.0196	1.2516	0.9618
North Macedonia	1.3572	0.1932	10.9891	8.0437	1.3772	0.2039	11.9661	8.5125
Poland	1.5084	0.0482	2.6337	1.7774	1.2830	0.0490	3.0923	2.2902
Portugal	1.4885	0.0346	1.9332	1.2617	1.2683	0.0247	1.6154	1.0526
Romania	1.7956	0.3061	14.0688	10.3799	1.4787	0.1381	7.5161	5.1728
Serbia	1.5373	0.2585	13.8402	10.3922	1.4272	0.1649	9.4702	6.0674
Slovakia	1.5791	0.1128	6.0917	4.1512	1.2854	0.0632	4.0661	2.7516
Slovenia	1.4959	0.1044	5.6565	3.9913	1.2893	0.0622	3.9009	2.6829
Spain	1.5474	0.0545	2.8627	2.0073	1.3122	0.0444	2.8042	1.9097
Switzerland	1.4837	0.0649	3.5196	2.5058	1.2750	0.0341	2.1151	1.5761

Table 15 Circuity and Estimation Error between Kosovo and other European countries.

17. Data for country Latvia

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.4998	0.0601	3.3473	2.1417	1.2709	0.0166	1.0505	0.7757
Austria	1.3304	0.0484	2.9621	2.0662	1.2214	0.0410	2.7555	1.8170
Belgium	1.2960	0.0620	3.8465	2.8447	1.1979	0.0393	2.5685	1.9503
Bosnia-Herzegovina	1.5077	0.0643	3.4531	2.7078	1.2441	0.0223	1.4404	1.0319
Bulgaria	1.5318	0.0580	3.0624	2.2677	1.2421	0.0329	2.1604	1.4860
Croatia	1.4344	0.0797	4.5405	2.9386	1.2402	0.0239	1.5181	1.1602
Czech-Republic	1.3231	0.0542	3.3431	2.2552	1.2296	0.0408	2.6650	1.9632
Denmark	1.7163	0.1994	9.5251	7.2365	1.6521	0.1995	9.7794	6.8416
Estonia	1.4807	0.2814	15.4505	10.1958	1.3438	0.1743	10.1004	7.5134
France	1.2801	0.0533	3.4290	2.3088	1.1862	0.0258	1.6972	1.3138
Germany	1.3100	0.0851	5.1349	3.7953	1.2091	0.0547	3.6045	2.5309
Greece	1.4782	0.0524	2.7796	2.1137	1.2869	0.0220	1.3622	1.0410
Hungary	1.4335	0.0671	3.7320	2.9527	1.2528	0.0333	2.1173	1.6144
Italy	1.3698	0.0675	3.8369	2.7763	1.2874	0.0878	5.7590	3.1389
Kosovo	1.4696	0.0460	2.5650	1.7566	1.2753	0.0203	1.2930	0.9177
Latvia	1.3072	0.1783	10.4396	7.0802	1.2492	0.1115	7.0253	5.0118
Lithuania	1.3937	0.2762	15.3369	10.1906	1.2711	0.0912	5.7993	4.0859
Luxembourg	1.3096	0.0669	4.1677	2.8915	1.2098	0.0397	2.5821	1.8994
Moldova	1.6586	0.0939	4.5624	3.6854	1.2655	0.0316	2.0148	1.4679
Montenegro	1.4557	0.0349	1.9946	1.2799	1.2612	0.0179	1.1223	0.8665
Netherlands	1.3416	0.0964	5.7770	3.9859	1.2209	0.0510	3.2945	2.4185
North Macedonia	1.4613	0.0356	1.9272	1.5061	1.2918	0.0251	1.5605	1.1341
Poland	1.3654	0.1296	7.4484	5.7001	1.2449	0.0565	3.6776	2.6491
Portugal	1.2747	0.0369	2.2890	1.7285	1.1754	0.0225	1.5273	1.1260
Romania	1.5272	0.0651	3.4988	2.4872	1.2498	0.0350	2.3036	1.5740
Serbia	1.4486	0.0461	2.5570	1.8835	1.2594	0.0251	1.5915	1.1864
Slovakia	1.4054	0.0893	5.1792	3.4898	1.2381	0.0436	2.9836	1.8635
Slovenia	1.3368	0.0377	2.3022	1.5849	1.2186	0.0372	2.5078	1.6219
Spain	1.2870	0.0401	2.4815	1.8693	1.1865	0.0232	1.5719	1.1416
Switzerland	1.2716	0.0357	2.2620	1.6718	1.1880	0.0261	1.7845	1.2323

Table 16 Circuity and Estimation Error between Latvia and other European countries.

18. Data for country Lithuania

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.4603	0.0317	1.7022	1.3205	1.2856	0.0215	1.3578	0.9590
Austria	1.3159	0.0424	2.5773	1.9526	1.2227	0.0362	2.4402	1.6176
Belgium	1.2193	0.0373	2.3896	1.8072	1.1497	0.0183	1.2403	0.9629
Bosnia-Herzegovina	1.5075	0.0650	3.4754	2.6954	1.2551	0.0218	1.4083	1.0018
Bulgaria	1.5264	0.0598	3.1263	2.3558	1.2577	0.0433	2.7560	2.0056
Croatia	1.4168	0.0608	3.3526	2.5423	1.2596	0.0261	1.7024	1.1626
Czech-Republic	1.3005	0.0521	3.2626	2.2844	1.2354	0.0383	2.4351	1.9155
Denmark	1.5374	0.1292	6.7541	4.8403	1.5409	0.1763	9.4139	6.1245
Estonia	1.5035	0.3249	19.0697	12.9305	1.2504	0.0763	4.8570	3.5786
France	1.2349	0.0431	2.8408	1.9282	1.1713	0.0209	1.4183	1.0520
Germany	1.2352	0.0581	3.8079	2.6333	1.1829	0.0403	2.7294	1.8965
Greece	1.4752	0.0526	2.8707	2.0194	1.3010	0.0330	2.0354	1.5312
Hungary	1.4431	0.0736	4.1020	3.1821	1.2703	0.0387	2.5075	1.7600
Italy	1.3890	0.0944	5.4673	3.4344	1.2963	0.0880	5.7247	3.2209
Kosovo	1.4686	0.0278	1.4883	1.1664	1.2927	0.0230	1.4275	1.0548
Latvia	1.3937	0.2762	15.3369	10.1906	1.2711	0.0912	5.7993	4.0859
Lithuania	1.3503	0.2485	14.5519	9.3212	1.2871	0.1333	8.2086	5.7888
Luxembourg	1.2439	0.0369	2.3240	1.7441	1.1744	0.0146	0.9949	0.7189
Moldova	1.6280	0.0967	4.8557	3.4363	1.2781	0.0248	1.5637	1.1334
Montenegro	1.4696	0.0205	1.1462	0.7919	1.2750	0.0241	1.5374	1.0733
Netherlands	1.2540	0.0697	4.5172	2.9320	1.1714	0.0293	2.0147	1.4117
North Macedonia	1.4672	0.0317	1.7368	1.2864	1.3062	0.0298	1.8091	1.3674
Poland	1.3216	0.1121	6.8848	4.6147	1.2579	0.0829	5.4549	3.7163
Portugal	1.2426	0.0253	1.6584	1.1694	1.1641	0.0180	1.2804	0.8442
Romania	1.5385	0.0744	3.7887	3.2035	1.2713	0.0406	2.6310	1.8233
Serbia	1.4661	0.0406	2.2067	1.6643	1.2816	0.0297	1.8393	1.4040
Slovakia	1.3892	0.0851	5.0190	3.2959	1.2559	0.0491	3.1848	2.2195
Slovenia	1.3257	0.0331	2.0131	1.4605	1.2276	0.0354	2.3514	1.6061
Spain	1.2584	0.0346	2.2141	1.6026	1.1795	0.0184	1.2432	0.9300
Switzerland	1.2539	0.0339	2.1827	1.5594	1.1805	0.0224	1.5130	1.1099

Table 17 Circuity and Estimation Error between Lithuania and other European countries.

19. Data for country Luxembourg

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.4487	0.0745	4.6614	2.5762	1.2432	0.0149	0.9949	0.6648
Austria	1.3850	0.0420	2.3871	1.8157	1.2321	0.0419	2.6992	1.9622
Belgium	1.3875	0.1323	7.5808	5.5001	1.2154	0.0771	5.0205	3.5229
Bosnia-Herzegovina	1.4183	0.0752	4.7302	2.4147	1.2302	0.0105	0.6829	0.5094
Bulgaria	1.3557	0.0785	4.7478	3.1196	1.2055	0.0277	1.9097	1.3054
Croatia	1.4229	0.0743	4.6924	2.2193	1.2580	0.0285	1.8174	1.2914
Czech-Republic	1.4407	0.0473	2.6830	1.9062	1.2261	0.0312	2.0470	1.4617
Denmark	1.3465	0.0552	3.3158	2.4197	1.2381	0.0407	2.6031	2.0189
Estonia	1.4958	0.2040	12.3665	4.2295	1.2420	0.0317	2.0036	1.5535
France	1.3433	0.1026	6.3514	3.9554	1.1925	0.0584	3.8359	2.8912
Germany	1.4176	0.0956	5.3804	3.8020	1.2514	0.0514	3.2322	2.3955
Greece	1.3923	0.0503	2.9222	2.1616	1.2403	0.0149	0.9787	0.7035
Hungary	1.3238	0.0490	3.0747	1.9795	1.1825	0.0224	1.6587	0.9053
Italy	1.3497	0.0871	5.1010	3.5082	1.2608	0.0485	3.0841	2.1760
Kosovo	1.4000	0.0393	2.3800	1.4572	1.2460	0.0228	1.4756	1.0254
Latvia	1.3096	0.0669	4.1677	2.8915	1.2098	0.0397	2.5821	1.8994
Lithuania	1.2439	0.0369	2.3240	1.7441	1.1744	0.0146	0.9949	0.7189
Luxembourg	1.3631	0.2108	12.1918	7.8501	1.4000	0.2014	12.1315	8.0717
Moldova	1.3134	0.0203	1.2118	0.9619	1.1828	0.0115	0.8035	0.5501
Montenegro	1.4935	0.0569	3.1650	2.1548	1.2442	0.0224	1.5533	0.8800
Netherlands	1.4591	0.1180	6.4428	5.0220	1.2121	0.0345	2.2870	1.6356
North Macedonia	1.3739	0.0480	2.7475	2.1908	1.2433	0.0237	1.5477	1.0600
Poland	1.2753	0.0379	2.3330	1.8262	1.2051	0.0231	1.5695	1.0803
Portugal	1.3111	0.0408	2.6421	1.5312	1.1644	0.0292	2.0977	1.2992
Romania	1.3120	0.0378	2.3752	1.5779	1.1723	0.0134	0.9406	0.6504
Serbia	1.3237	0.0365	2.2262	1.5261	1.2156	0.0192	1.2566	0.9643
Slovakia	1.3588	0.0389	2.3728	1.6098	1.2046	0.0203	1.3417	1.0280
Slovenia	1.3996	0.0382	2.0848	1.6470	1.2645	0.0351	2.1287	1.7490
Spain	1.3311	0.0654	3.9565	2.8437	1.1892	0.0289	1.9124	1.4862
Switzerland	1.4241	0.0619	3.5457	2.4448	1.3006	0.0413	2.6189	1.7801

Table 18 Circuity and Estimation Error between Luxembourg and other European countries.

20. Data for country Moldova

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.6931	0.0938	4.3504	3.7500	1.3792	0.0527	3.0676	2.3075
Austria	1.3517	0.0438	2.7450	1.6653	1.1853	0.0197	1.3352	0.9705
Belgium	1.2591	0.0345	2.2493	1.5174	1.1783	0.0146	1.0146	0.7113
Bosnia-Herzegovina	1.5713	0.0737	3.7573	2.6421	1.3009	0.0421	2.5353	1.9794
Bulgaria	1.5215	0.1075	5.7952	4.6882	1.2541	0.0588	3.7161	2.8596
Croatia	1.5042	0.1106	6.1858	3.8815	1.2556	0.0440	2.8009	2.0959
Czech-Republic	1.3490	0.0375	2.2508	1.6339	1.2280	0.0259	1.7065	1.2292
Denmark	1.2833	0.0273	1.7545	1.1815	1.2385	0.0459	3.1041	1.9278
Estonia	1.8667	0.2310	11.9625	5.5915	1.2505	0.0349	2.2280	1.6943
France	1.3216	0.0535	3.3049	2.2991	1.1785	0.0217	1.5122	1.0245
Germany	1.2698	0.0510	3.3061	2.2409	1.1759	0.0197	1.3696	0.9521
Greece	1.6806	0.1924	9.9069	5.2178	1.2978	0.0482	3.0163	2.1170
Hungary	1.4675	0.1049	5.9514	3.6858	1.2160	0.0360	2.3856	1.7162
Italy	1.5316	0.1950	9.6672	6.1533	1.3659	0.2138	12.2264	6.6876
Kosovo	1.6868	0.1185	5.9766	4.4759	1.3580	0.0502	2.9489	2.1490
Latvia	1.6586	0.0939	4.5624	3.6854	1.2655	0.0316	2.0148	1.4679
Lithuania	1.6280	0.0967	4.8557	3.4363	1.2781	0.0248	1.5637	1.1334
Luxembourg	1.3134	0.0203	1.2118	0.9619	1.1828	0.0115	0.8035	0.5501
Moldova	1.5503	0.2869	15.0875	11.5826	1.2994	0.1640	9.8945	6.8834
Montenegro	1.6226	0.0470	2.2969	1.7801	1.4029	0.0373	2.1235	1.5917
Netherlands	1.2144	0.0273	1.7431	1.4099	1.1569	0.0131	0.9214	0.6548
North Macedonia	1.5853	0.1339	6.8275	4.2026	1.3124	0.0728	4.8503	2.8183
Poland	1.3478	0.0799	4.6991	3.3705	1.2196	0.0425	2.7380	2.0187
Portugal	1.3515	0.0204	1.2002	0.8926	1.1853	0.0114	0.7854	0.5493
Romania	1.5543	0.2069	11.0578	7.5389	1.3085	0.0922	5.5523	4.1419
Serbia	1.5422	0.1259	6.4868	5.5353	1.3363	0.0687	4.2256	2.8048
Slovakia	1.4818	0.0713	3.8080	3.0082	1.2452	0.0439	2.8713	1.9689
Slovenia	1.3628	0.0405	2.4588	1.6231	1.2136	0.0258	1.7389	1.2115
Spain	1.3781	0.0267	1.5751	1.1070	1.2049	0.0157	1.0202	0.8145
Switzerland	1.3454	0.0446	2.7417	1.7909	1.1918	0.0170	1.1413	0.8466

Table 19 Circuity and Estimation Error between Moldova and other European countries.

21. Data for country Montenegro

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.2174	0.1703	11.6443	6.0295	1.3785	0.1717	9.5727	6.6609
Austria	1.7146	0.1292	6.0991	4.6798	1.2986	0.0574	3.5205	2.6466
Belgium	1.4482	0.0538	3.0852	2.0579	1.2305	0.0233	1.5557	1.0492
Bosnia-Herzegovina	1.6239	0.5485	30.0595	16.5563	1.4334	0.1950	11.1502	6.3423
Bulgaria	1.7667	0.4711	24.9973	18.0714	1.3669	0.0968	5.6999	4.0722
Croatia	1.7784	0.3574	17.9322	20.0021	1.2919	0.0884	5.5445	4.0404
Czech-Republic	1.7047	0.0634	2.9796	2.2867	1.2476	0.0346	2.2441	1.6159
Denmark	1.4519	0.0369	1.9820	1.6335	1.2187	0.0201	1.2866	1.0124
Estonia	1.6168	0.1531	9.3878	3.1926	1.2467	0.0199	1.3026	0.9108
France	1.5786	0.1116	5.6699	4.0500	1.2418	0.0380	2.5261	1.6708
Germany	1.5076	0.0718	3.8283	2.8732	1.2374	0.0324	2.0970	1.4929
Greece	1.4558	0.3381	18.7578	13.6005	1.3114	0.1433	8.9015	7.5236
Hungary	1.7411	0.2649	13.3163	8.7253	1.3047	0.0620	3.9826	2.6041
Italy	1.6049	0.3704	19.9819	18.0000	1.3138	0.1809	9.9602	8.3081
Kosovo	1.1835	0.1300	8.5790	5.5422	1.5896	0.2861	15.0081	12.0370
Latvia	1.4557	0.0349	1.9946	1.2799	1.2612	0.0179	1.1223	0.8665
Lithuania	1.4696	0.0205	1.1462	0.7919	1.2750	0.0241	1.5374	1.0733
Luxembourg	1.4935	0.0569	3.1650	2.1548	1.2442	0.0224	1.5533	0.8800
Moldova	1.6226	0.0470	2.2969	1.7801	1.4029	0.0373	2.1235	1.5917
Montenegro	1.3430	0.1975	12.4977	7.7685	1.5545	0.3187	17.0675	12.3424
Netherlands	1.4231	0.0454	2.5235	2.0268	1.2174	0.0206	1.3473	0.9872
North Macedonia	1.6957	0.5443	29.2702	12.3505	1.5441	0.1921	10.1569	7.1530
Poland	1.5381	0.0630	3.2302	2.4493	1.2715	0.0479	3.0763	2.1399
Portugal	1.5639	0.0475	2.5351	1.6618	1.2655	0.0227	1.4458	1.0665
Romania	1.6733	0.1939	9.7057	6.1005	1.4575	0.0891	4.7848	3.6703
Serbia	1.5957	0.2072	10.0862	9.8536	1.5335	0.1520	7.9515	6.0760
Slovakia	1.6683	0.1582	8.4428	5.3476	1.2882	0.0546	3.3840	2.5073
Slovenia	1.7414	0.1452	6.8086	5.1493	1.2707	0.0709	4.7315	2.9163
Spain	1.6273	0.0642	3.1738	2.2940	1.3136	0.0462	2.8819	2.0233
Switzerland	1.6371	0.0902	4.3711	3.3660	1.2661	0.0351	2.2225	1.6272

Table 20 Circuity and Estimation Error between Montenegro and other European countries.

22. Data for country Netherlands

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.4051	0.0326	1.8985	1.3609	1.2174	0.0157	1.0286	0.7589
Austria	1.2968	0.0523	3.2675	2.4055	1.2084	0.0257	1.6828	1.3063
Belgium	1.3748	0.1275	7.2338	5.9728	1.2262	0.0623	3.9522	2.9385
Bosnia-Herzegovina	1.3502	0.0626	3.8561	2.6308	1.2130	0.0167	1.1408	0.7695
Bulgaria	1.3327	0.0731	4.6467	2.8471	1.1938	0.0198	1.3368	0.9969
Croatia	1.3444	0.0524	3.2579	2.1203	1.2227	0.0208	1.3773	0.9642
Czech-Republic	1.3079	0.0715	4.4408	3.0345	1.2165	0.0359	2.4407	1.6026
Denmark	1.4134	0.3081	19.2330	11.4358	1.4301	0.1391	7.3193	6.6233
Estonia	1.5641	0.2334	13.1812	5.6150	1.2958	0.0626	3.9086	2.7223
France	1.3057	0.0888	5.6183	3.7454	1.1835	0.0450	3.0794	2.1379
Germany	1.3059	0.0945	5.7936	3.9312	1.2141	0.0451	3.0575	2.0506
Greece	1.3571	0.0493	2.9492	2.0685	1.2174	0.0150	0.9983	0.7245
Hungary	1.2907	0.0505	3.2161	2.1524	1.1924	0.0226	1.5743	1.0625
Italy	1.3226	0.0536	3.2489	2.2802	1.2417	0.0235	1.4914	1.1681
Kosovo	1.3496	0.0357	2.1772	1.4821	1.2253	0.0196	1.2516	0.9618
Latvia	1.3416	0.0964	5.7770	3.9859	1.2209	0.0510	3.2945	2.4185
Lithuania	1.2540	0.0697	4.5172	2.9320	1.1714	0.0293	2.0147	1.4117
Luxembourg	1.4591	0.1180	6.4428	5.0220	1.2121	0.0345	2.2870	1.6356
Moldova	1.2144	0.0273	1.7431	1.4099	1.1569	0.0131	0.9214	0.6548
Montenegro	1.4231	0.0454	2.5235	2.0268	1.2174	0.0206	1.3473	0.9872
Netherlands	1.3845	0.1803	10.6053	7.3250	1.2431	0.0772	4.9190	3.6772
North Macedonia	1.3377	0.0426	2.6203	1.8818	1.2256	0.0221	1.4718	1.0110
Poland	1.1757	0.0430	2.9377	2.1185	1.1591	0.0263	1.8148	1.3407
Portugal	1.2694	0.0373	2.3879	1.6255	1.1702	0.0321	2.2340	1.4907
Romania	1.2851	0.0504	3.2637	2.1370	1.1788	0.0170	1.1827	0.8309
Serbia	1.2988	0.0425	2.6578	1.8185	1.1950	0.0177	1.2162	0.8475
Slovakia	1.2621	0.0462	2.9644	2.0252	1.1893	0.0190	1.2529	0.9942
Slovenia	1.2995	0.0418	2.6275	1.7896	1.2250	0.0241	1.5433	1.2105
Spain	1.2849	0.0520	3.2267	2.3735	1.1679	0.0255	1.7309	1.2980
Switzerland	1.3355	0.0371	2.2259	1.6232	1.2365	0.0273	1.7669	1.2815

Table 21 Circuity and Estimation Error between Netherlands and other European countries.

23. Data for country North Macedonia

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.2074	0.1387	9.2624	6.3424	1.6472	0.2409	11.9221	9.6805
Austria	1.4696	0.1058	5.8985	4.3035	1.2673	0.0561	3.5832	2.4753
Belgium	1.3489	0.0448	2.7089	1.9258	1.2344	0.0214	1.4057	0.9839
Bosnia-Herzegovina	1.7555	0.2840	12.9947	13.2627	1.3710	0.1168	6.8728	4.6122
Bulgaria	1.3574	0.1967	12.0687	9.8187	1.4892	0.2402	13.1955	9.3016
Croatia	1.5437	0.2614	12.5005	11.2433	1.3274	0.0807	5.3263	2.8150
Czech-Republic	1.5265	0.0511	2.7247	1.9808	1.2228	0.0445	3.0814	1.8339
Denmark	1.3795	0.0297	1.7477	1.2334	1.2192	0.0363	2.4114	1.6427
Estonia	1.6070	0.1497	9.1044	3.2202	1.2773	0.0230	1.4755	1.0042
France	1.4495	0.1026	5.9771	3.5593	1.2577	0.0459	2.9651	2.0400
Germany	1.3882	0.0589	3.4277	2.4785	1.2337	0.0404	2.6019	1.9658
Greece	1.3095	0.2156	13.1720	9.3812	1.4071	0.2166	12.4302	8.5859
Hungary	1.5430	0.1664	9.0191	6.2344	1.3081	0.0814	5.1157	3.3605
Italy	1.4731	0.2571	13.6036	11.9856	1.3846	0.2254	12.3614	8.0615
Kosovo	1.3572	0.1932	10.9891	8.0437	1.3772	0.2039	11.9661	8.5125
Latvia	1.4613	0.0356	1.9272	1.5061	1.2918	0.0251	1.5605	1.1341
Lithuania	1.4672	0.0317	1.7368	1.2864	1.3062	0.0298	1.8091	1.3674
Luxembourg	1.3739	0.0480	2.7475	2.1908	1.2433	0.0237	1.5477	1.0600
Moldova	1.5853	0.1339	6.8275	4.2026	1.3124	0.0728	4.8503	2.8183
Montenegro	1.6957	0.5443	29.2702	12.3505	1.5441	0.1921	10.1569	7.1530
Netherlands	1.3377	0.0426	2.6203	1.8818	1.2256	0.0221	1.4718	1.0110
North Macedonia	1.2260	0.1704	11.5471	6.7929	1.5983	0.3824	20.1615	12.9148
Poland	1.4726	0.0417	2.2840	1.6744	1.2939	0.0535	3.2776	2.5043
Portugal	1.4961	0.0445	2.3656	1.7840	1.2871	0.0283	1.8011	1.2347
Romania	1.6173	0.1397	6.9135	5.2306	1.4484	0.1263	6.9001	5.6268
Serbia	1.4151	0.1796	10.3209	8.0781	1.3647	0.1484	8.9076	5.2690
Slovakia	1.5401	0.0938	5.0210	3.5501	1.3038	0.0650	4.0842	2.8871
Slovenia	1.4201	0.1087	6.1861	4.5358	1.2753	0.0585	3.6854	2.5338
Spain	1.5664	0.0619	3.1516	2.3431	1.3351	0.0547	3.4185	2.2071
Switzerland	1.4513	0.0756	4.0968	3.1789	1.2768	0.0306	1.9246	1.4012

Table 22 Circuity and Estimation Error between North Macedonia and other European countries.

24. Data for country Poland

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.4931	0.0490	2.6654	1.8911	1.2778	0.0491	3.0993	2.2140
Austria	1.3712	0.0902	5.2987	3.7146	1.2722	0.0469	2.8989	2.2776
Belgium	1.2023	0.0321	2.1272	1.5949	1.1734	0.0262	1.7804	1.3502
Bosnia-Herzegovina	1.5772	0.1057	5.3620	4.0635	1.2592	0.0447	2.8531	2.0408
Bulgaria	1.5108	0.1090	6.0307	4.2315	1.2822	0.0427	2.6303	1.9791
Croatia	1.4634	0.0814	4.3156	3.4340	1.2882	0.0492	3.0505	2.3209
Czech-Republic	1.3757	0.0961	5.7077	4.0166	1.2784	0.0664	4.1956	2.9950
Denmark	1.3271	0.1309	7.9678	6.5419	1.3371	0.1276	7.6383	5.5434
Estonia	1.7204	0.3728	20.7316	10.3945	1.2315	0.0459	2.9765	2.1625
France	1.2809	0.0630	4.0181	2.7727	1.1942	0.0248	1.6838	1.1892
Germany	1.2392	0.0805	5.1917	3.6094	1.2098	0.0466	3.0733	2.1896
Greece	1.4651	0.0579	3.1843	2.2462	1.2859	0.0534	3.4131	2.3418
Hungary	1.4640	0.1281	6.9931	5.0573	1.3082	0.0691	4.2183	3.0509
Italy	1.4157	0.0970	5.3421	3.7946	1.3383	0.1075	6.5915	3.9264
Kosovo	1.5084	0.0482	2.6337	1.7774	1.2830	0.0490	3.0923	2.2902
Latvia	1.3654	0.1296	7.4484	5.7001	1.2449	0.0565	3.6776	2.6491
Lithuania	1.3216	0.1121	6.8848	4.6147	1.2579	0.0829	5.4549	3.7163
Luxembourg	1.2753	0.0379	2.3330	1.8262	1.2051	0.0231	1.5695	1.0803
Moldova	1.3478	0.0799	4.6991	3.3705	1.2196	0.0425	2.7380	2.0187
Montenegro	1.5381	0.0630	3.2302	2.4493	1.2715	0.0479	3.0763	2.1399
Netherlands	1.1757	0.0430	2.9377	2.1185	1.1591	0.0263	1.8148	1.3407
North Macedonia	1.4726	0.0417	2.2840	1.6744	1.2939	0.0535	3.2776	2.5043
Poland	1.3217	0.1254	7.4829	5.5875	1.3092	0.1163	7.0321	4.8531
Portugal	1.2731	0.0360	2.2796	1.6167	1.1738	0.0134	0.9276	0.6463
Romania	1.4806	0.1345	7.4945	5.4653	1.2818	0.0676	4.1112	3.3087
Serbia	1.4869	0.0793	4.0405	3.6287	1.2921	0.0537	3.2981	2.5247
Slovakia	1.4087	0.1619	9.1238	6.3724	1.3137	0.0783	4.7951	3.4362
Slovenia	1.3772	0.0511	2.9630	2.2257	1.2827	0.0460	2.8868	2.0996
Spain	1.2957	0.0423	2.6212	1.9620	1.2021	0.0200	1.3275	1.0068
Switzerland	1.3299	0.0645	3.8506	2.9335	1.2183	0.0273	1.7980	1.3177

Table 23 Circuity and Estimation Error between Poland and other European countries.

25. Data for country Portugal

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.5157	0.0784	4.9042	1.5768	1.3155	0.0366	2.2944	1.5393
Austria	1.3626	0.0283	1.6514	1.2273	1.1932	0.0183	1.2202	0.9352
Belgium	1.2793	0.0439	2.7856	1.9208	1.1658	0.0278	1.9229	1.3305
Bosnia-Herzegovina	1.4811	0.0662	3.8430	2.2321	1.2213	0.0206	1.3579	0.9791
Bulgaria	1.4319	0.0540	3.1476	1.9144	1.2348	0.0224	1.4548	1.0717
Croatia	1.4321	0.0830	5.0847	2.3896	1.2197	0.0375	2.5741	1.5548
Czech-Republic	1.3359	0.0276	1.6890	1.1648	1.1747	0.0170	1.2126	0.7689
Denmark	1.3011	0.0463	2.8247	2.1053	1.2144	0.0320	2.0873	1.5681
Estonia	1.3928	0.1147	7.6579	2.8039	1.1953	0.0232	1.5590	1.1160
France	1.3888	0.0973	5.5423	3.9462	1.1962	0.0461	3.1378	2.0452
Germany	1.2915	0.0498	3.2477	2.0559	1.1685	0.0216	1.5078	1.0286
Greece	1.5547	0.0698	3.6910	2.6075	1.3318	0.0410	2.4445	1.8805
Hungary	1.3570	0.0277	1.6651	1.1573	1.1899	0.0134	0.9256	0.6353
Italy	1.4459	0.0672	4.0696	2.2276	1.2769	0.0737	4.9957	2.7002
Kosovo	1.4885	0.0346	1.9332	1.2617	1.2683	0.0247	1.6154	1.0526
Latvia	1.2747	0.0369	2.2890	1.7285	1.1754	0.0225	1.5273	1.1260
Lithuania	1.2426	0.0253	1.6584	1.1694	1.1641	0.0180	1.2804	0.8442
Luxembourg	1.3111	0.0408	2.6421	1.5312	1.1644	0.0292	2.0977	1.2992
Moldova	1.3515	0.0204	1.2002	0.8926	1.1853	0.0114	0.7854	0.5493
Montenegro	1.5639	0.0475	2.5351	1.6618	1.2655	0.0227	1.4458	1.0665
Netherlands	1.2694	0.0373	2.3879	1.6255	1.1702	0.0321	2.2340	1.4907
North Macedonia	1.4961	0.0445	2.3656	1.7840	1.2871	0.0283	1.8011	1.2347
Poland	1.2731	0.0360	2.2796	1.6167	1.1738	0.0134	0.9276	0.6463
Portugal	1.3597	0.1870	10.7114	8.6008	1.2754	0.1102	6.7432	5.0796
Romania	1.3688	0.0310	1.8473	1.2894	1.1930	0.0134	0.9028	0.6669
Serbia	1.3962	0.0421	2.3705	1.7522	1.2146	0.0245	1.6369	1.1480
Slovakia	1.3396	0.0175	1.0253	0.7916	1.1770	0.0119	0.8214	0.5782
Slovenia	1.3645	0.0297	1.6975	1.3585	1.1885	0.0144	1.0018	0.6753
Spain	1.4375	0.2250	12.1141	10.1839	1.2714	0.0885	5.4869	4.1455
Switzerland	1.3932	0.0433	2.4892	1.8100	1.1968	0.0251	1.7312	1.1845

Table 24 Circuity and Estimation Error between Portugal and other European countries.

26. Data for country Romania

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.7571	0.2496	12.2069	10.2411	1.4715	0.0835	4.3376	3.6022
Austria	1.3536	0.0943	5.6224	3.8357	1.1929	0.0307	2.1131	1.4659
Belgium	1.2788	0.0374	2.3641	1.7210	1.1701	0.0135	0.9463	0.6556
Bosnia-Herzegovina	1.5893	0.1311	6.7650	4.4896	1.3239	0.0680	4.0994	2.9926
Bulgaria	1.6189	0.2114	10.5874	8.9943	1.3331	0.1481	8.7682	6.0290
Croatia	1.5282	0.1683	8.9216	5.9528	1.2495	0.0504	3.3457	2.1682
Czech-Republic	1.3789	0.0668	3.8431	2.9358	1.2249	0.0526	3.5384	2.3214
Denmark	1.3260	0.0527	3.3864	2.1794	1.2341	0.0362	2.3594	1.6966
Estonia	1.7135	0.2097	11.7623	4.5386	1.2392	0.0320	2.0820	1.5476
France	1.3306	0.0668	4.0256	2.8864	1.1837	0.0267	1.8902	1.2104
Germany	1.3184	0.0638	3.9407	2.8421	1.1850	0.0269	1.8365	1.2954
Greece	1.6853	0.2389	11.0730	9.0891	1.3902	0.0887	5.1637	3.5829
Hungary	1.4842	0.1596	8.6733	6.8219	1.2367	0.0597	3.8346	2.8064
Italy	1.5171	0.2086	10.7357	6.9399	1.4176	0.2534	14.4032	7.4069
Kosovo	1.7956	0.3061	14.0688	10.3799	1.4787	0.1381	7.5161	5.1728
Latvia	1.5272	0.0651	3.4988	2.4872	1.2498	0.0350	2.3036	1.5740
Lithuania	1.5385	0.0744	3.7887	3.2035	1.2713	0.0406	2.6310	1.8233
Luxembourg	1.3120	0.0378	2.3752	1.5779	1.1723	0.0134	0.9406	0.6504
Moldova	1.5543	0.2069	11.0578	7.5389	1.3085	0.0922	5.5523	4.1419
Montenegro	1.6733	0.1939	9.7057	6.1005	1.4575	0.0891	4.7848	3.6703
Netherlands	1.2851	0.0504	3.2637	2.1370	1.1788	0.0170	1.1827	0.8309
North Macedonia	1.6173	0.1397	6.9135	5.2306	1.4484	0.1263	6.9001	5.6268
Poland	1.4806	0.1345	7.4945	5.4653	1.2818	0.0676	4.1112	3.3087
Portugal	1.3688	0.0310	1.8473	1.2894	1.1930	0.0134	0.9028	0.6669
Romania	1.5008	0.2286	12.1114	9.2207	1.3027	0.1000	6.1629	4.3003
Serbia	1.5912	0.2423	12.4624	9.2775	1.3804	0.1193	6.9226	4.8653
Slovakia	1.5361	0.1150	5.9624	4.7228	1.2787	0.0626	3.8874	2.9073
Slovenia	1.3663	0.0763	4.3658	3.2929	1.2166	0.0336	2.2165	1.6274
Spain	1.3903	0.0324	1.8831	1.3787	1.2168	0.0205	1.3514	0.9941
Switzerland	1.3413	0.0522	3.1361	2.3260	1.2064	0.0262	1.8161	1.1763

Table 25 Circuity and Estimation Error between Romania and other European countries.

27. Data for country Serbia

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.4840	0.2266	12.4454	10.8247	1.4779	0.1541	8.2814	6.3958
Austria	1.4291	0.1563	8.9869	5.8145	1.2456	0.0516	3.4013	2.4584
Belgium	1.3004	0.0364	2.2873	1.5486	1.2046	0.0197	1.3274	0.9690
Bosnia-Herzegovina	1.5287	0.2502	13.0939	9.2037	1.3783	0.1288	7.5269	5.3301
Bulgaria	1.4642	0.2751	15.3001	9.6138	1.3482	0.1243	7.1342	5.6825
Croatia	1.5069	0.2580	14.2167	9.1297	1.2741	0.0915	5.6252	4.5328
Czech-Republic	1.4940	0.1438	7.8777	6.2762	1.1921	0.0404	2.8114	1.8314
Denmark	1.3723	0.0394	2.2351	1.8918	1.2034	0.0303	1.9995	1.4741
Estonia	1.6325	0.1813	10.9601	4.1482	1.2521	0.0242	1.5277	1.1716
France	1.3547	0.0766	4.6245	2.9343	1.2064	0.0276	1.8030	1.3938
Germany	1.3582	0.0704	4.3981	2.6628	1.1988	0.0303	2.0679	1.4152
Greece	1.3948	0.1397	7.9014	7.0027	1.3523	0.1149	6.6123	5.2104
Hungary	1.5684	0.2635	13.9271	10.6041	1.3055	0.0802	4.9538	3.5553
Italy	1.5786	0.3623	18.0328	12.3879	1.5174	0.4136	22.1726	10.1601
Kosovo	1.5373	0.2585	13.8402	10.3922	1.4272	0.1649	9.4702	6.0674
Latvia	1.4486	0.0461	2.5570	1.8835	1.2594	0.0251	1.5915	1.1864
Lithuania	1.4661	0.0406	2.2067	1.6643	1.2816	0.0297	1.8393	1.4040
Luxembourg	1.3237	0.0365	2.2262	1.5261	1.2156	0.0192	1.2566	0.9643
Moldova	1.5422	0.1259	6.4868	5.5353	1.3363	0.0687	4.2256	2.8048
Montenegro	1.5957	0.2072	10.0862	9.8536	1.5335	0.1520	7.9515	6.0760
Netherlands	1.2988	0.0425	2.6578	1.8185	1.1950	0.0177	1.2162	0.8475
North Macedonia	1.4151	0.1796	10.3209	8.0781	1.3647	0.1484	8.9076	5.2690
Poland	1.4869	0.0793	4.0405	3.6287	1.2921	0.0537	3.2981	2.5247
Portugal	1.3962	0.0421	2.3705	1.7522	1.2146	0.0245	1.6369	1.1480
Romania	1.5912	0.2423	12.4624	9.2775	1.3804	0.1193	6.9226	4.8653
Serbia	1.3691	0.1781	10.5039	6.5347	1.4050	0.1874	10.7471	7.2616
Slovakia	1.5539	0.1636	8.7917	7.2181	1.2917	0.0763	4.8406	3.4845
Slovenia	1.3474	0.1514	9.3064	5.6173	1.2239	0.0542	3.6923	2.4642
Spain	1.4211	0.0527	2.9832	2.0677	1.2421	0.0355	2.3369	1.6129
Switzerland	1.3611	0.0782	4.5727	3.1492	1.2255	0.0311	2.0504	1.4992

Table 26 Circuity and Estimation Error between Serbia and other European countries.

28. Data for country Slovakia

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.5769	0.1187	6.2580	4.3919	1.2745	0.0562	3.5866	2.4523
Austria	1.3559	0.0638	3.7085	2.8875	1.2394	0.0448	2.7753	2.2355
Belgium	1.2928	0.0354	2.2106	1.6208	1.1982	0.0204	1.3744	0.9824
Bosnia-Herzegovina	1.7543	0.1906	9.5152	7.2172	1.2652	0.0514	3.2829	2.3970
Bulgaria	1.6150	0.1165	5.9099	4.4736	1.2868	0.0636	3.8857	2.9234
Croatia	1.5527	0.2022	10.5763	7.9452	1.3063	0.0617	3.8484	2.7348
Czech-Republic	1.4691	0.1248	6.7155	5.0572	1.2685	0.0800	4.9932	3.6221
Denmark	1.2749	0.0375	2.4126	1.7174	1.2515	0.0442	2.8571	1.9759
Estonia	1.6766	0.2414	13.9196	7.7264	1.2174	0.0267	1.7572	1.2778
France	1.3191	0.0509	3.0603	2.3466	1.1962	0.0348	2.4069	1.5876
Germany	1.2945	0.0644	4.0406	2.9374	1.2052	0.0318	2.1260	1.5410
Greece	1.5121	0.0928	4.8849	3.5389	1.3078	0.0609	3.8112	2.6343
Hungary	1.5158	0.2245	12.2081	8.5011	1.3594	0.1161	7.1119	4.8580
Italy	1.5337	0.2158	11.4194	5.9361	1.4051	0.1997	11.9361	5.4726
Kosovo	1.5791	0.1128	6.0917	4.1512	1.2854	0.0632	4.0661	2.7516
Latvia	1.4054	0.0893	5.1792	3.4898	1.2381	0.0436	2.9836	1.8635
Lithuania	1.3892	0.0851	5.0190	3.2959	1.2559	0.0491	3.1848	2.2195
Luxembourg	1.3588	0.0389	2.3728	1.6098	1.2046	0.0203	1.3417	1.0280
Moldova	1.4818	0.0713	3.8080	3.0082	1.2452	0.0439	2.8713	1.9689
Montenegro	1.6683	0.1582	8.4428	5.3476	1.2882	0.0546	3.3840	2.5073
Netherlands	1.2621	0.0462	2.9644	2.0252	1.1893	0.0190	1.2529	0.9942
North Macedonia	1.5401	0.0938	5.0210	3.5501	1.3038	0.0650	4.0842	2.8871
Poland	1.4087	0.1619	9.1238	6.3724	1.3137	0.0783	4.7951	3.4362
Portugal	1.3396	0.0175	1.0253	0.7916	1.1770	0.0119	0.8214	0.5782
Romania	1.5361	0.1150	5.9624	4.7228	1.2787	0.0626	3.8874	2.9073
Serbia	1.5539	0.1636	8.7917	7.2181	1.2917	0.0763	4.8406	3.4845
Slovakia	1.4392	0.1964	10.8617	8.3596	1.3663	0.1448	8.4508	5.8098
Slovenia	1.4111	0.0999	5.8202	4.1756	1.3205	0.0653	3.9503	2.9327
Spain	1.3562	0.0350	2.0918	1.4637	1.2114	0.0196	1.3283	0.9407
Switzerland	1.3413	0.0520	3.1690	2.1817	1.2221	0.0281	1.8273	1.3807

Table 27 Circuity and Estimation Error between Slovakia and other European countries.

29. Data for country Slovenia

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.6556	0.0925	4.4248	3.3584	1.2534	0.0466	3.0292	2.0683
Austria	1.5838	0.2308	12.1882	8.6754	1.3773	0.1320	7.7187	5.3904
Belgium	1.3385	0.0428	2.4880	1.9063	1.2444	0.0307	1.9625	1.4899
Bosnia-Herzegovina	1.6067	0.2443	12.8500	10.1823	1.2553	0.0852	5.5089	3.5603
Bulgaria	1.3956	0.1535	9.0019	6.0230	1.2394	0.0387	2.5084	1.8246
Croatia	1.5450	0.2520	14.0325	9.7587	1.3416	0.1659	10.0053	6.7040
Czech-Republic	1.5315	0.0977	5.1518	3.7531	1.3344	0.0748	4.5542	3.1580
Denmark	1.3060	0.0378	2.3727	1.5988	1.2480	0.0227	1.4044	1.1432
Estonia	1.5011	0.1983	12.9999	2.4669	1.2148	0.0219	1.4307	1.0781
France	1.3759	0.0587	3.4036	2.5493	1.2135	0.0304	2.0199	1.4594
Germany	1.3746	0.0778	4.4163	3.2603	1.2802	0.0506	3.1025	2.2958
Greece	1.4572	0.1001	5.4647	3.8029	1.2494	0.0377	2.4218	1.7696
Hungary	1.3814	0.1437	8.7579	4.9688	1.2779	0.0884	5.4835	4.0556
Italy	1.6255	0.3258	16.7617	11.9542	1.4865	0.2758	16.9959	7.7836
Kosovo	1.4959	0.1044	5.6565	3.9913	1.2893	0.0622	3.9009	2.6829
Latvia	1.3368	0.0377	2.3022	1.5849	1.2186	0.0372	2.5078	1.6219
Lithuania	1.3257	0.0331	2.0131	1.4605	1.2276	0.0354	2.3514	1.6061
Luxembourg	1.3996	0.0382	2.0848	1.6470	1.2645	0.0351	2.1287	1.7490
Moldova	1.3628	0.0405	2.4588	1.6231	1.2136	0.0258	1.7389	1.2115
Montenegro	1.7414	0.1452	6.8086	5.1493	1.2707	0.0709	4.7315	2.9163
Netherlands	1.2995	0.0418	2.6275	1.7896	1.2250	0.0241	1.5433	1.2105
North Macedonia	1.4201	0.1087	6.1861	4.5358	1.2753	0.0585	3.6854	2.5338
Poland	1.3772	0.0511	2.9630	2.2257	1.2827	0.0460	2.8868	2.0996
Portugal	1.3645	0.0297	1.6975	1.3585	1.1885	0.0144	1.0018	0.6753
Romania	1.3663	0.0763	4.3658	3.2929	1.2166	0.0336	2.2165	1.6274
Serbia	1.3474	0.1514	9.3064	5.6173	1.2239	0.0542	3.6923	2.4642
Slovakia	1.4111	0.0999	5.8202	4.1756	1.3205	0.0653	3.9503	2.9327
Slovenia	1.4981	0.2424	13.1770	10.0308	1.4581	0.2428	13.4138	9.4428
Spain	1.3857	0.0460	2.7180	1.8651	1.2123	0.0210	1.4244	0.9795
Switzerland	1.4466	0.0967	5.3195	4.2729	1.2839	0.0512	3.1541	2.3541

Table 28 Circuity and Estimation Error between Slovenia and other European countries.

30. Data for country Spain

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.5919	0.1114	5.8832	3.6559	1.3678	0.0607	3.5440	2.6281
Austria	1.3795	0.0420	2.4154	1.8003	1.2256	0.0216	1.3832	1.0948
Belgium	1.2918	0.0566	3.4462	2.5963	1.1817	0.0341	2.2715	1.7164
Bosnia-Herzegovina	1.5222	0.0821	4.4678	2.9540	1.2546	0.0374	2.4310	1.6789
Bulgaria	1.4586	0.0574	3.1475	2.2517	1.2684	0.0373	2.3753	1.7230
Croatia	1.4756	0.1045	5.9949	3.2336	1.2462	0.0461	2.8744	2.1576
Czech-Republic	1.3532	0.0402	2.3408	1.7965	1.2080	0.0221	1.4791	1.0898
Denmark	1.2947	0.0451	2.6777	2.2438	1.2119	0.0239	1.5520	1.2096
Estonia	1.3948	0.1206	7.9789	2.9067	1.2042	0.0244	1.6250	1.1887
France	1.4533	0.1391	7.6215	5.3661	1.2257	0.0526	3.4574	2.3915
Germany	1.3137	0.0665	4.1526	2.6870	1.1968	0.0246	1.6671	1.2135
Greece	1.6091	0.0951	4.8231	3.4214	1.3835	0.0713	4.2324	2.8836
Hungary	1.3802	0.0370	2.1987	1.4924	1.2166	0.0190	1.2498	0.9329
Italy	1.5110	0.1129	6.2090	4.1141	1.3326	0.1080	6.8592	3.8578
Kosovo	1.5474	0.0545	2.8627	2.0073	1.3122	0.0444	2.8042	1.9097
Latvia	1.2870	0.0401	2.4815	1.8693	1.1865	0.0232	1.5719	1.1416
Lithuania	1.2584	0.0346	2.2141	1.6026	1.1795	0.0184	1.2432	0.9300
Luxembourg	1.3311	0.0654	3.9565	2.8437	1.1892	0.0289	1.9124	1.4862
Moldova	1.3781	0.0267	1.5751	1.1070	1.2049	0.0157	1.0202	0.8145
Montenegro	1.6273	0.0642	3.1738	2.2940	1.3136	0.0462	2.8819	2.0233
Netherlands	1.2849	0.0520	3.2267	2.3735	1.1679	0.0255	1.7309	1.2980
North Macedonia	1.5664	0.0619	3.1516	2.3431	1.3351	0.0547	3.4185	2.2071
Poland	1.2957	0.0423	2.6212	1.9620	1.2021	0.0200	1.3275	1.0068
Portugal	1.4375	0.2250	12.1141	10.1839	1.2714	0.0885	5.4869	4.1455
Romania	1.3903	0.0324	1.8831	1.3787	1.2168	0.0205	1.3514	0.9941
Serbia	1.4211	0.0527	2.9832	2.0677	1.2421	0.0355	2.3369	1.6129
Slovakia	1.3562	0.0350	2.0918	1.4637	1.2114	0.0196	1.3283	0.9407
Slovenia	1.3857	0.0460	2.7180	1.8651	1.2123	0.0210	1.4244	0.9795
Spain	1.4506	0.2130	11.7184	8.1435	1.2891	0.1053	6.4252	4.5295
Switzerland	1.4190	0.0843	4.7784	3.4847	1.2274	0.0321	2.1339	1.4950

Table 29 Circuity and Estimation Error between Spain and other European countries.

31. Data for country Switzerland

Destination	Rail				Road			
	Detour Index		Estimation Error		Detour Index		Estimation Error	
	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.	Avg.	Std. Dev.
Albania	1.5198	0.1571	9.6290	5.2608	1.2828	0.0272	1.6731	1.2948
Austria	1.4282	0.1142	6.2776	4.4905	1.2560	0.0500	3.1186	2.3704
Belgium	1.4001	0.0598	3.4305	2.5170	1.2606	0.0398	2.5581	1.7656
Bosnia-Herzegovina	1.5443	0.1234	6.6261	4.5684	1.2468	0.0266	1.7048	1.2715
Bulgaria	1.4038	0.0970	5.9063	3.5013	1.2300	0.0212	1.3666	1.0492
Croatia	1.5159	0.1717	9.5501	5.5139	1.2721	0.0476	2.9367	2.2038
Czech-Republic	1.4205	0.0707	3.9046	3.0348	1.2401	0.0349	2.2950	1.5867
Denmark	1.2613	0.0360	2.2976	1.7070	1.2017	0.0243	1.6042	1.1980
Estonia	1.4296	0.1945	12.3358	3.5037	1.2027	0.0226	1.5354	1.0681
France	1.4222	0.1329	7.5377	5.1395	1.2437	0.0791	5.0214	3.6351
Germany	1.3374	0.0786	4.7891	3.4255	1.2348	0.0425	2.8055	1.8981
Greece	1.4593	0.0948	5.1529	4.1026	1.2718	0.0290	1.8064	1.3665
Hungary	1.3568	0.0794	4.9040	3.0559	1.2248	0.0360	2.3697	1.7056
Italy	1.3318	0.1408	8.3855	5.8953	1.3178	0.1108	6.8601	4.5496
Kosovo	1.4837	0.0649	3.5196	2.5058	1.2750	0.0341	2.1151	1.5761
Latvia	1.2716	0.0357	2.2620	1.6718	1.1880	0.0261	1.7845	1.2323
Lithuania	1.2539	0.0339	2.1827	1.5594	1.1805	0.0224	1.5130	1.1099
Luxembourg	1.4241	0.0619	3.5457	2.4448	1.3006	0.0413	2.6189	1.7801
Moldova	1.3454	0.0446	2.7417	1.7909	1.1918	0.0170	1.1413	0.8466
Montenegro	1.6371	0.0902	4.3711	3.3660	1.2661	0.0351	2.2225	1.6272
Netherlands	1.3355	0.0371	2.2259	1.6232	1.2365	0.0273	1.7669	1.2815
North Macedonia	1.4513	0.0756	4.0968	3.1789	1.2768	0.0306	1.9246	1.4012
Poland	1.3299	0.0645	3.8506	2.9335	1.2183	0.0273	1.7980	1.3177
Portugal	1.3932	0.0433	2.4892	1.8100	1.1968	0.0251	1.7312	1.1845
Romania	1.3413	0.0522	3.1361	2.3260	1.2064	0.0262	1.8161	1.1763
Serbia	1.3611	0.0782	4.5727	3.1492	1.2255	0.0311	2.0504	1.4992
Slovakia	1.3413	0.0520	3.1690	2.1817	1.2221	0.0281	1.8273	1.3807
Slovenia	1.4466	0.0967	5.3195	4.2729	1.2839	0.0512	3.1541	2.3541
Spain	1.4190	0.0843	4.7784	3.4847	1.2274	0.0321	2.1339	1.4950
Switzerland	1.4928	0.2618	14.3266	9.4715	1.3830	0.1477	8.2765	6.3301

Table 30 Circuity and Estimation Error between Switzerland and other European countries.