

Full numerical results for the article

*A Priori Optimization vs. Re-Optimization:  
A Comparison for Vehicle Routing*

The relative solution costs and the relative computational times of the re-optimization approach starting from random solutions with respect to the state-of-the-art method for the PTSPD

size	instances		relative solution costs	relative computational time
	penalty	deadline		
40	5	early	0.857182	0.096411
40	5	late	0.863058	0.091897
40	50	early	0.858160	0.089528
40	50	late	0.861976	0.076084
60	5	early	0.910845	0.145587
60	5	late	0.898628	0.146009
60	50	early	0.927030	0.123335
60	50	late	0.900437	0.124652
100	5	early	0.896397	0.278177
100	5	late	0.896598	0.277802
100	50	early	0.938488	0.252007
100	50	late	0.878668	0.238449
150	5	early	0.930277	0.370063
150	5	late	0.929000	0.366922
150	50	early	0.991191	0.349129
150	50	late	0.928404	0.323475
200	5	early	0.922734	0.372538
200	5	late	0.914936	0.429274
200	50	early	0.827020	0.389072
200	50	late	0.918382	0.372314

Table 1: The relative solution costs and the relative computational times of the re-optimization approach starting from random solutions with respect to the state-of-the-art method for the PTSPD for instances with probability *range*.

size	instances		relative solution costs	relative computational time
	penalty	deadline		
40	5	early	0.881496	0.064978
40	5	late	0.885680	0.066617
40	50	early	0.940975	0.054020
40	50	late	0.873369	0.056698
60	5	early	0.919415	0.131406
60	5	late	0.881827	0.142211
60	50	early	0.961460	0.118435
60	50	late	0.881064	0.121679
100	5	early	0.932474	0.286478
100	5	late	0.918538	0.301739
100	50	early	0.986631	0.266798
100	50	late	0.913785	0.259468
150	5	early	0.954657	0.423155
150	5	late	0.946491	0.419760
150	50	early	0.938037	0.393182
150	50	late	0.944643	0.374131
200	5	early	0.949206	0.466075
200	5	late	0.973798	0.495376
200	50	early	0.976904	0.451099
200	50	late	0.954518	0.396470

Table 2: The relative solution costs and the relative computational times of the re-optimization approach starting from random solutions with respect to the state-of-the-art method for the PTSPD for instances with probability *mixed*.

size	instances		relative solution costs	relative computational time
	penalty	deadline		
40	5	early	0.708404	0.009257
40	5	late	0.697124	0.009005
40	50	early	0.707822	0.006310
40	50	late	0.707279	0.006878
60	5	early	0.698875	0.015207
60	5	late	0.695981	0.017109
60	50	early	0.776855	0.011881
60	50	late	0.678664	0.011981
100	5	early	0.794127	0.027139
100	5	late	0.771575	0.028681
100	50	early	0.821423	0.019023
100	50	late	0.757214	0.022622
150	5	early	0.834106	0.039542
150	5	late	0.822754	0.039194
150	50	early	0.886047	0.028004
150	50	late	0.805698	0.033176
200	5	early	0.847365	0.038722
200	5	late	0.851127	0.041122
200	50	early	0.823324	0.030145
200	50	late	0.824207	0.032853

Table 3: The relative solution costs and the relative computational times of the re-optimization approach starting from random solutions with respect to the state-of-the-art method for the PTSPD for instances with probability 0.1.

size	instances		relative solution costs	relative computational time
	penalty	deadline		
40	5	early	0.931735	0.247196
40	5	late	0.901220	0.230418
40	50	early	0.951521	0.235699
40	50	late	0.904918	0.224615
60	5	early	0.939064	0.372208
60	5	late	0.935594	0.360091
60	50	early	0.962987	0.385531
60	50	late	0.933262	0.381546
100	5	early	0.962730	0.639642
100	5	late	0.937703	0.590919
100	50	early	1.000496	0.628824
100	50	late	0.980548	0.569637
150	5	early	0.971920	0.805668
150	5	late	0.970617	0.753859
150	50	early	0.995391	0.804249
150	50	late	0.996494	0.725374
200	5	early	1.049282	0.894601
200	5	late	0.992090	0.849735
200	50	early	1.011055	0.890174
200	50	late	1.021435	0.829429

Table 4: The relative solution costs and the relative computational times of the re-optimization approach starting from random solutions with respect to the state-of-the-art method for the PTSPD for instances with probability 0.9.

The relative solution costs and the relative computational times of the re-optimization approach starting from a priori solutions with respect to the state-of-the-art method for the PTSPD

size	instances		relative solution costs	relative computational time
	penalty	deadline		
40	5	early	0.861843	0.060040
40	5	late	0.862388	0.051775
40	50	early	0.903652	0.054616
40	50	late	0.858565	0.048918
60	5	early	0.913646	0.075651
60	5	late	0.899232	0.073898
60	50	early	0.918930	0.065145
60	50	late	0.902577	0.061994
100	5	early	0.904263	0.125905
100	5	late	0.906030	0.128128
100	50	early	0.902253	0.127664
100	50	late	0.881486	0.112703
150	5	early	0.930277	0.146336
150	5	late	0.925704	0.145153
150	50	early	0.904958	0.137884
150	50	late	0.934797	0.137334
200	5	early	0.917778	0.150020
200	5	late	0.905611	0.194891
200	50	early	0.932841	0.173776
200	50	late	0.918292	0.150018

Table 5: The relative solution costs and the relative computational times of the re-optimization approach starting from a priori solutions with respect to the state-of-the-art method for the PTSPD for instances with probability *range*.



size	instances		relative solution costs	relative computational time
	penalty	deadline		
40	5	early	0.883953	0.032741
40	5	late	0.888664	0.044685
40	50	early	0.903140	0.032059
40	50	late	0.880585	0.031868
60	5	early	0.929178	0.071535
60	5	late	0.886351	0.083711
60	50	early	0.978557	0.063016
60	50	late	0.889560	0.063487
100	5	early	0.921983	0.095026
100	5	late	0.940027	0.076598
100	50	early	0.949269	0.095398
100	50	late	0.934299	0.087532
150	5	early	0.957643	0.141475
150	5	late	0.960701	0.127194
150	50	early	0.943186	0.151491
150	50	late	0.974795	0.117558
200	5	early	0.956818	0.133703
200	5	late	0.963108	0.140185
200	50	early	0.969909	0.129115
200	50	late	0.929538	0.100691

Table 6: The relative solution costs and the relative computational times of the re-optimization approach starting from a priori solutions with respect to the state-of-the-art method for the PTSPD for instances with probability *mixed*.

size	instances		relative solution costs	relative computational time
	penalty	deadline		
40	5	early	0.711362	0.009513
40	5	late	0.697379	0.010289
40	50	early	0.707930	0.006613
40	50	late	0.700966	0.008314
60	5	early	0.735826	0.014517
60	5	late	0.702808	0.015100
60	50	early	0.794000	0.012093
60	50	late	0.698348	0.010446
100	5	early	0.797909	0.026377
100	5	late	0.794592	0.030560
100	50	early	0.816293	0.020310
100	50	late	0.789773	0.024079
150	5	early	0.847573	0.041040
150	5	late	0.829821	0.038516
150	50	early	0.872295	0.031348
150	50	late	0.806472	0.032563
200	5	early	0.853855	0.038812
200	5	late	0.840801	0.029140
200	50	early	0.844263	0.025646
200	50	late	0.852733	0.029068

Table 7: The relative solution costs and the relative computational times of the re-optimization approach starting from a priori solutions with respect to the state-of-the-art method for the PTSPD for instances with probability 0.1.

size	instances		relative solution costs	relative computational time
	penalty	deadline		
40	5	early	0.939631	0.084801
40	5	late	0.908447	0.086126
40	50	early	0.964267	0.086216
40	50	late	0.914070	0.085134
60	5	early	0.964582	0.127958
60	5	late	0.931221	0.094245
60	50	early	0.960854	0.137836
60	50	late	0.943903	0.092672
100	5	early	0.927946	0.167943
100	5	late	0.925466	0.125220
100	50	early	1.026584	0.173581
100	50	late	0.933145	0.139779
150	5	early	0.960254	0.193553
150	5	late	0.946540	0.160956
150	50	early	0.948087	0.206706
150	50	late	0.941096	0.143680
200	5	early	0.976825	0.192772
200	5	late	0.949608	0.193718
200	50	early	0.924469	0.189762
200	50	late	0.972299	0.184595

Table 8: The relative solution costs and the relative computational times of the re-optimization approach starting from a priori solutions with respect to the state-of-the-art method for the PTSPD for instances with probability 0.9.

**The relative solution costs and the relative arrival time variances of the modified re-optimization approach with respect to the state-of-the-art method for the PTSPD**

size	instances		relative solution costs	relative arrival time variance
	penalty	deadline		
40	5	early	0.942943	0.411169
40	5	late	0.939177	0.455820
40	50	early	0.937423	0.461752
40	50	late	0.945279	0.503027
60	5	early	0.966346	0.435484
60	5	late	0.964808	0.503882
60	50	early	0.946918	0.465193
60	50	late	0.958964	0.469990
100	5	early	0.969261	0.267488
100	5	late	0.980473	0.377819
100	50	early	0.979166	0.313813
100	50	late	0.966038	0.372169
150	5	early	0.975665	0.346585
150	5	late	0.985665	0.301211
150	50	early	0.956013	0.349158
150	50	late	0.984237	0.424772
200	5	early	0.994454	0.292078
200	5	late	0.988718	0.293585
200	50	early	0.946795	0.285643
200	50	late	0.987840	0.336058

Table 9: The relative solution costs and the relative arrival time variances of the modified re-optimization approach with respect to the state-of-the-art method for the PTSPD for instances with probability *range*.

size	instances		relative solution costs	relative arrival time variance
	penalty	deadline		
40	5	early	0.947907	0.306572
40	5	late	0.941718	0.591298
40	50	early	0.935772	0.724036
40	50	late	0.924337	0.644409
60	5	early	0.962111	0.490085
60	5	late	0.937939	0.654872
60	50	early	0.981004	0.546785
60	50	late	0.935901	0.657303
100	5	early	0.975520	0.565386
100	5	late	0.961666	0.352147
100	50	early	0.977643	0.641162
100	50	late	0.970868	0.537668
150	5	early	0.972338	0.415429
150	5	late	0.967239	0.370557
150	50	early	0.981053	0.470003
150	50	late	0.968610	0.520515
200	5	early	0.989995	0.526789
200	5	late	0.982822	0.516162
200	50	early	0.975172	0.615252
200	50	late	0.980654	0.398486

Table 10: The relative solution costs and the relative arrival time variances of the modified re-optimization approach with respect to the state-of-the-art method for the PTSPD for instances with probability *mixed*.

size	instances		relative solution costs	relative arrival time variance
	penalty	deadline		
40	5	early	0.802385	0.908408
40	5	late	0.779540	0.856234
40	50	early	0.782289	0.993253
40	50	late	0.810647	1.150448
60	5	early	0.827172	0.832608
60	5	late	0.793055	0.892129
60	50	early	0.910373	1.050589
60	50	late	0.822829	0.755638
100	5	early	0.937013	0.512598
100	5	late	0.918147	0.540349
100	50	early	1.026098	0.495204
100	50	late	0.902039	0.603204
150	5	early	0.985234	0.400787
150	5	late	0.977752	0.559806
150	50	early	0.894497	0.373704
150	50	late	0.961812	0.428290
200	5	early	0.963892	0.273193
200	5	late	0.965168	0.348553
200	50	early	0.997250	0.336419
200	50	late	0.953642	0.291389

Table 11: The relative solution costs and the relative arrival time variances of the modified re-optimization approach with respect to the state-of-the-art method for the PTSPD for instances with probability 0.1.

size	instances		relative solution costs	relative arrival time variance
	penalty	deadline		
40	5	early	0.942365	0.400316
40	5	late	0.958940	0.441285
40	50	early	0.937394	0.497510
40	50	late	0.948547	0.449186
60	5	early	0.968027	0.483520
60	5	late	0.972925	0.449668
60	50	early	0.975925	0.510214
60	50	late	0.971037	0.447116
100	5	early	0.961713	0.329965
100	5	late	0.956874	0.422907
100	50	early	0.909266	0.545794
100	50	late	0.962477	0.420493
150	5	early	0.963336	0.392670
150	5	late	0.984081	0.393998
150	50	early	0.949341	0.469297
150	50	late	0.981994	0.426392
200	5	early	0.985708	0.507420
200	5	late	0.991076	0.395777
200	50	early	0.987078	0.537760
200	50	late	0.991883	0.381600

Table 12: The relative solution costs and the relative arrival time variances of the modified re-optimization approach with respect to the state-of-the-art method for the PTSPD for instances with probability 0.9.