

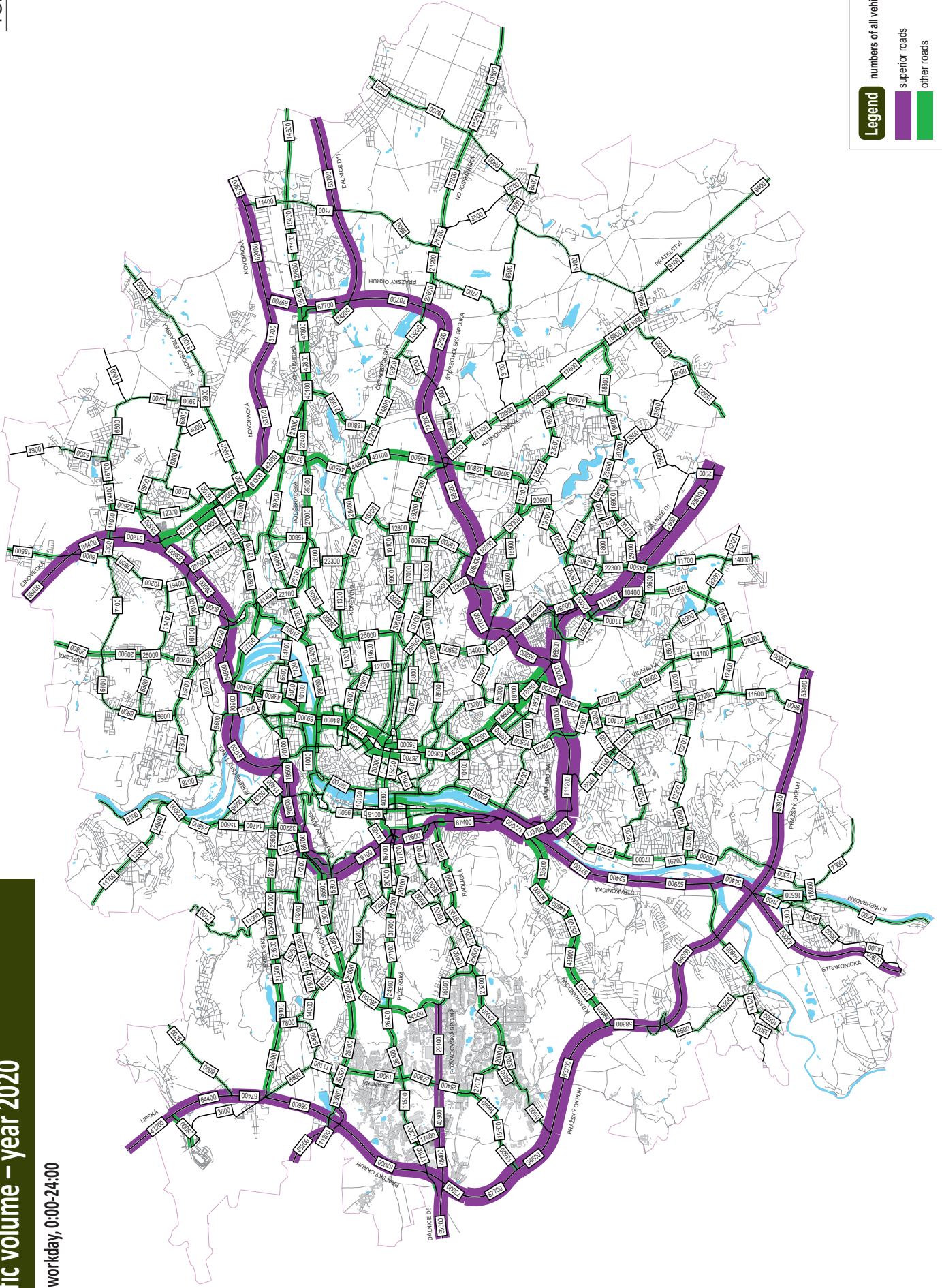
PRAGUE TRANSPORTATION YEARBOOK 2020

Technická správa komunikací
hlavního města Prahy, a. s.
Úsek dopravního inženýrství

PRA HA
PRA GUE
PRA GA
PRA G

Traffic volume – year 2020

Average workday, 0:00-24:00



Legend

- numbers of all vehicles for 24 h
- superior roads
- other roads



PRAGUE TRANSPORTATION YEARBOOK 2020

Dear readers,

let me start off this year's 2020 Prague Transportation Yearbook with a few words about this past year, a non-traditional one for all. Transport behaviour in Prague transformed last year more than at any other time. The reasons why and where we travelled also changed. There was nowhere to go for entertainment, shopping, visits and, due to people working from home, often not even for work. We experienced and are experiencing fundamental restrictions on our lives in connection with the coronavirus pandemic, and this is in part reflected in a markedly lower demand for mobility. Choice of individual types of transport is also constantly changing. The development of pedestrian and bicycle traffic was critical. Pedestrian traffic was the only type of transport not to record a decline in the modal split (with the exception of tourist numbers) and bicycle transport even registered a strong increase.



This development led to a very interesting result. When individual automobile traffic at first dropped 35% and then remained at least 20% below regular levels, our streets became much safer and provided much easier passage for cars. This led to a feeling of safety for pedestrians and cyclists and this in and of itself facilitated the spread of these types of transport. From among the major projects for pedestrians and cyclists last year, I would like to highlight the opening of the Trojská lávka (Troja Footbridge) and the transformation of the intersection Karlovo náměstí x Resslova, where after decades, the inability to cross one of the biggest squares in Europe barrier-free was finally rectified.

I wish to emphasise one thing. We speak a lot about public transport, pedestrians and cyclists, but these efforts stick out for one reason only: in the past these areas were unfortunately overlooked. This certainly does not mean that this comes at the expense of other types of transport and we are certainly not letting up in road works. The efforts we devote to individual types of transport are based on where the circumstances so require. In major cities around the world, mass public transport has the greatest efficiency. The healthiest methods are walking and cycling. But at the same time it is necessary to build high-capacity roads for bypassing the city.

We began renovating Barrandovský most and I would include the load tests of Libeňský most among the year's other extraordinary activities. Never before have tests been done where each arch is given a load of over 500 tonnes and at the same time a fully loaded tram passes over at a speed of 60 km/h. This extreme load convinced the broad professional public that renovating the bridge is the proper approach and this architectural gem connecting Prague 7 and 8 can be saved. The iconic arches will undergo sensitive reconstruction, with a completely new bridge over Rohanský ostrov to connect to it based on Janák's original sketches.

Work is also underway on finishing up the plans for the last part of the City Ring Road. We provide the state with maximum support in preparation of the Prague Outer Ring Road, but we have also commenced project work on increasing the capacity of the Průmyslový polookruh and Jižní spojka. These latter two roads can be of fundamental assistance for transport through the city much sooner and be highly effective before the two ring roads are completed. As such they will play an essential role before the former have been completed and can fully stand in for them. Last year we already managed to finish increasing the capacity of the on- and off-ramps from the Barrandovský most to Modřanská, at the crossing of Cínovecká and Kbelská and the ramp from 5. května to Tůrkova.

Happy travels and above all safe travels around Prague in 2021

A handwritten signature in blue ink, reading 'Scheinherr'.

Ing. Adam Scheinherr, MSc., Ph.D.
Deputy Mayor of the City of Prague
for Transport

Prague, 30 April 2021

CONTENTS

Dear readers,

I welcome you to the 2020 Prague Transportation Yearbook, which was produced by a team of employees of the Department of Transport Engineering at the Technical Administration of Roads. In it you can find a continuation of the long-running series of traditional data and information mapping out the situation and developments of individual types of transport in Prague.

It is my pleasure to state on behalf of TSK that last year we managed to utilise the allocated funding both to provide for the whole spectrum of obligatory services and to improve the transport infrastructure, as well as producing a large amount of planning documentation for upcoming works.

We carried out a whole range of renovations, repairs and general maintenance tasks. The most significant of these included the first stage of repairs to Barrandovský most, new carriageways on the Jižní spojka, road surface repairs on Evropská, Novodvorská and Novovysočanská, complete refurbishing of the streets Prosecká, Jaselská, Jungmannova and repairs to the retaining wall of the Letná Tunnel.

I consider it important that summer and winter maintenance was fully provided for, including street cleaning, which was particularly so important last year.

TSK did its standard monitoring of transport characteristics in the city. Despite the atypical nature of 2020, the number of registered vehicles continued to grow, numbering among the highest in Europe with a value of 870 vehicles per 1000 inhabitants. The impact of the restrictive anti-epidemic measures was significantly reflected in transport. The amount and intensity of automobile traffic also dropped and there were changes in the modal split leading to an increase in the percentage of individual automobile transport. Bicycle traffic also saw growth and there was a shift in the variation of transport, with the daytime period strengthening at the expense of the night.

In order to handle traffic demands, we continued developing intelligent traffic management, which is realised through sophisticated telematic devices and tools that the public appreciates, for example dynamic traffic control through traffic lights or providing current traffic information. Symbolically, on the occasion of the 90th anniversary of the first automatic traffic light (1930 at the middle of Wenceslas Square), we collaborated with the Association for Transport Telematics to launch a new expert discussion platform entitled Organising, Influencing and Managing Traffic for a 21st Century Prague. This activity will serve for exchanging opinions on the future development of transport telematics in Prague and obtaining feedback from the widest possible range of users.

Our continued efforts to increase transport safety is reflected in all works and projects. Once again last year, a number of crosswalks and crossings were improved structurally and documentation was prepared for new extra lighting there. The opening of new bicycle paths and traffic markings on the roads created more favourable conditions for cyclists.

I would like to use this opportunity to thank our suppliers and our team of employees for their full commitment, thanks to which we managed to fulfil our planned tasks in this complicated time.

I wish you pleasant reading.



A handwritten signature in blue ink, appearing to be 'J. Sinčák', written over a vertical blue line that extends downwards from the signature.

Mgr. Jozef Sinčák
CEO and Chairman of the Board
City of Prague Technical Administration of Roads

Prague, 30 April 2021

CONTENTS

1	BASIC DATA	5
1.1	Selected data on the City of Prague as of 31 December 2020	5
1.2	Comparison of Prague and the Czech Republic	6
2	IMPACT OF CORONA CRISIS ON TRANSPORT IN PRAGUE	7
3	AUTOMOBILE TRANSPORT	9
3.1	Development of vehicle and car ownership	9
3.2	Volume of automobile traffic on workdays	10
3.3	Vehicle modal share and temporal traffic patterns	13
4	PUBLIC TRANSPORT	14
4.1	Prague Integrated Public Transport	14
4.2	Metro	16
4.3	Trams	16
4.4	PID buses	17
4.5	PID railway transport	18
4.6	Funicular and ferries	20
4.7	Public transport between Prague and external territory	20
4.8	Development of demand and measures in PID during the COVID-19 epidemic	22
5	BICYCLE TRAFFIC	23
6	PEDESTRIAN TRAFFIC	26
7	TRANSPORT TELEMATICS AND TRAFFIC MANAGEMENT	28
7.1	Construction and renewal of traffic signals (TS)	28
7.2	Control centres	29
7.3	Traffic Information Centre Prague	29
7.4	Other transport telematics systems	29
8	PRIORITY FOR PUBLIC TRANSPORT VEHICLES	35
8.1	Priority for public transport vehicles at traffic signals	35
8.2	Other measures for public transport vehicle priority	37
9	ROAD TRAFFIC SAFETY	38
9.1	Traffic accidents	38
9.2	Traffic education	40
9.3	Measures to increase traffic safety	40
10	PARKING	41
10.1	Parking areas with paid parking zones	41
10.2	Park and Ride facilities (P+R)	43
10.3	Kiss and Ride points (K+R)	43
11	INFRASTRUCTURE AND MAINTENANCE	44
12	FINANCING OF TRANSPORTATION IN PRAGUE	50
12.1	City of Prague municipal budget closure for 2019 (approved 7 June 2020)	50
12.2	Approved City of Prague budget for 2019 (of 13 December 2018)	51
13	SUSTAINABLE MOBILITY PLAN FOR PRAGUE AND SURROUNDINGS	52
14	OTHER FORMS OF TRANSPORT	53
14.1	Air transport	53
14.2	Water transport	56
14.3	Freight rail transport	58

MAP: Network of trunk roads and metro

1 BASIC DATA

1.1 Selected data on the City of Prague as of 31 December 2020

Land area	496 km ²
Number of inhabitants	1 335 084
Total length of road network	4 060 km
of which administered by TSK	2 342 km
administered by other	1 718 km
Number of bridge structures on the road network administered by TSK	615
of which bridge structures over the Vltava	31
underpasses	124
Number of road tunnels (total length 14 km)	13
Sidewalk area administered by TSK	852 ha
Number of motor vehicles	1 160 982
of which number of passenger automobiles	925 716
Vehicle ownership (vehicles per 1 000 inhabitants)	870
Automobile ownership (passenger automobiles per 1 000 inhabitants)	693
Length of metro network	65.1 km
Length of tram network	142.7 km
dedicated track bed	52 %
Length of urban and suburban bus network in Prague	879.8 km
Vehicle kilometres travelled (VKT) by metro, trams, buses and trains on city territory territoralaky)	
average workday	0.6 mil. VKT
annually	195.2 mil. VKT
Number of traffic signals	668
signals at separate pedestrian crossings	156
Vehicle kilometres travelled (VKT) by automobile on road network	
average workday	21.5 mil. VKT
annually	6.8 mld. VKT
Modal split – motor transport (by number of trips on city territory over the workday)*	
public transport	42 %
automobile transport	58 %
Number of recorded traffic accidents	16 925
Number of recorded traffic accident injuries	1 757
fatal	22
serious	131
minor	1 604
Relative accident rate (number of accidents per 1 million VKT)	2.5

* Balance of all trips in passenger transport within the city per workday. Derived calculation is based on the 43th week of 2020 (that is from 19th to 23th October), more detailed numbers are not available.

1.2 Comparison of Prague and the Czech Republic

Comparison by area, population and level of vehicle and car ownership			
	Prague	Czech Rep.	Prague/CZ (%)
Land area (km ²)	496	78 870	0.6
Population (mil.)	1.335	10.702	12.5
Number of motor vehicles (in thousands)	1 161	8 243	14.1
of which passenger cars (thousands)	926	6 096	15.2
Vehicle ownership			
motor vehicles per 1 000 persons	870	770	-
persons per 1 motor vehicle	1.1	1.3	-
Car ownership			
Passenger cars per 1 000 persons	693	570	-
Persons per 1 motor vehicle	1.4	1.8	-

Comparison of VKT in the years 1990–2020 (millions of VKT/avg. workday, 0:00-24:00)		
Year	Prague*	Czech Republic**
1990	7.3	80.9
2000	16.6	131.2
2010	22.2	140.9
2015	21.8	154.9
2016	22.3	160.4
2018	23.0	171.1
2019	23.4	174.2
2020	21.5	158.0
Index 2020/1990 (%)	294.5	195.1
Index 2020/2019 (%)	91.9	90.6

* whole road network ** motorways and class 1, 2 and 3 roads, incl. segments within Prague

Comparison of registered vehicles in 1961–2020										
Year	Prague					Czech Republic (up until 1971 Czechoslovakia)				
	Population (000s)	Motor vehicles		Passenger cars		Population (000s)	Motor vehicles		Passenger cars	
		total	%	Total	%		total	%	total	%
1961	1 007	93 106	22	44 891	13	13 746	1 326 801	-	291 680	-
1971	1 082	203 519	48	133 129	40	14 419	2 931 629	-	1 041 137	-
1981	1 183	367 007	86	284 756	85	10 306	3 449 300	85	1 872 694	79
1990	1 215	428 769	100	336 037	100	10 365	4 039 606	100	2 411 297	100
2000	1 181	746 832	174	620 663	185	10 267	5 230 846	129	3 720 316	154
2010	1 257	928 769	217	699 630	208	10 533	6 036 576	149	4 494 425	186
2015	1 267	941 145	219	740 745	220	10 554	6 990 542	173	5 130 266	213
2016	1 281	1 002 645	234	795 178	237	10 579	7 265 766	180	5 346 182	222
2017	1 295	1 058 949	247	844 613	251	10 610	7 550 908	187	5 572 788	231
2018	1 309	1 104 392	258	882 717	263	10 650	7 814 215	193	5 778 593	240
2019	1 324	1 140 482	266	911 844	271	10 694	8 053 984	199	5 960 041	247
2020	1 335	1 160 982	271	925 716	275	10 702	8 243 499	204	6 095 702	253

Up until 2001, data on the number of registered motor vehicles in Prague and the Czech Republic were taken from the Police of the Czech Republic.

In 2002–2011 they were taken from the new keepers of this data – for Prague this was the Prague City Hall Department of Transport Administration and for the Czech Republic the Ministry of Transport's Department of Transport Administration.

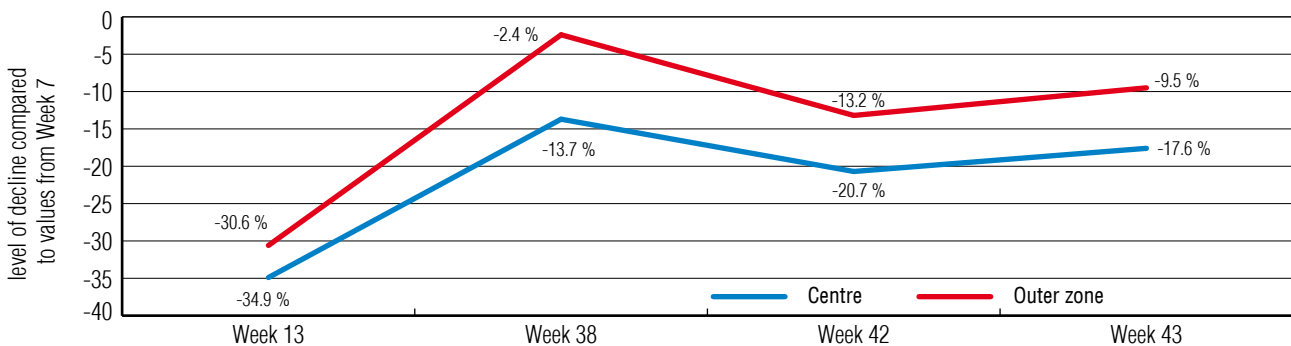
Starting in 2012 the data have been taken from the new central vehicle registry (data administered by the Ministry of Transport's Department of Road Vehicles).

2 IMPACT OF CORONA CRISIS ON TRANSPORT IN PRAGUE

Since March of 2020, the whole world has been having to deal with the pandemic of SARS CoV-2. In the Czech Republic the disease was particularly felt in the spring and autumn months. In an attempt to mitigate the consequences of the disease and prevent hospitals from being overwhelmed, the government gradually introduced measures starting in March, with the exception of the summer holidays and the start of September, continuing until December, which resulted in changes to the transport behaviour of inhabitants. Over the course of the whole year, the City of Prague Technical Administration of Roads monitored the development of transport in the capital. It analysed both automobile traffic – the progression of traffic volume at selected profiles on the Prague road network, the behaviour of traffic flow and accident rates – and bicycle traffic, where it monitored cyclist volumes at permanent counter stations, as well as determining public transport developments from Prague Public Transport Company data.

Automobile traffic saw its most marked drop of roughly 30 % in the spring. Around the summer holidays, during which individual restrictions were eased, it reached nearly standard levels (compared to data from 2019) and in the autumn months, when the public health situation in the Czech Republic deteriorated again, automobile traffic in Prague ranged around 85 % to 90 % of its standard state.

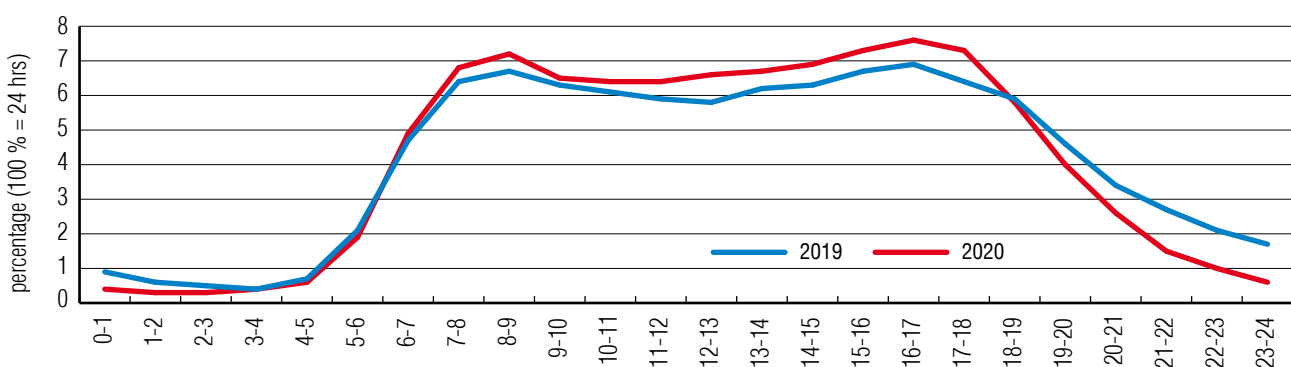
Comparison of automobile transport development during selected work weeks in 2020



It is evident that the monitored indicators changed over the course of the year in direct correlation to the level of government restrictions in place.

Changes in traffic behaviour over the course of the day are documented by what is called the “daily variation”, which shows the percentage distribution of the traffic load on the whole Prague road network over the course of an average workday, thus depicting the periods when the transport network is under the greatest pressure.

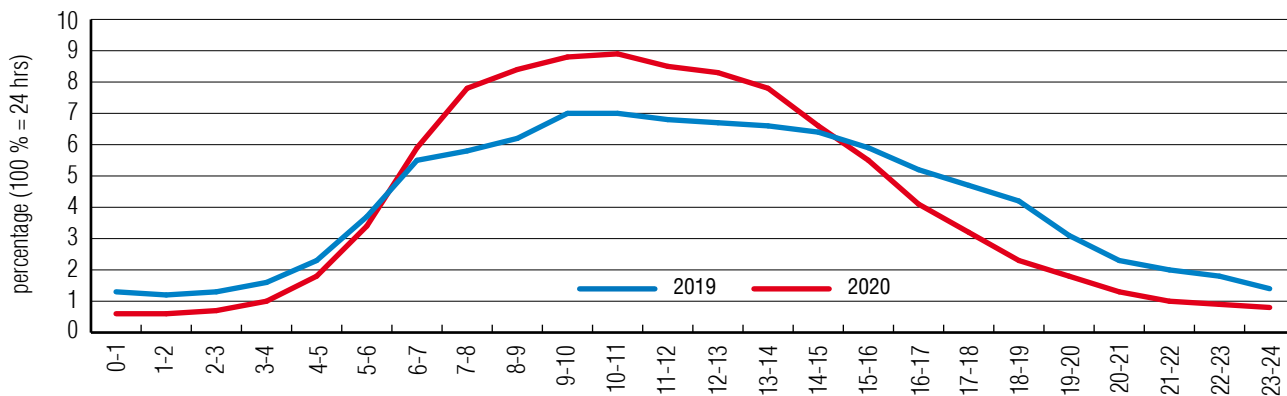
Comparison of daily variation in automobile traffic in 2019 and 2020 – total vehicles



It is apparent from a year-on-year comparison of the average daily variation in 2019 and 2020 that the majority of trips by automobile during 2020 were carried out during the daytime (from approx. 5:00 to 19:00). This change is due to the fact that one of the government measures applied during the spring, autumn and end of the year was a night-time curfew, only exempting trips to and from work. For this reason, as well as with regard to the reduced number of trips taken by taxi due to the limited opening hours of restaurants and nightclubs during the government restrictions and the overall marked drop in tourism in the capital, there was a lower number of trips by automobile during the night-time, as is evident from a year-on-year comparison of the daily variation.

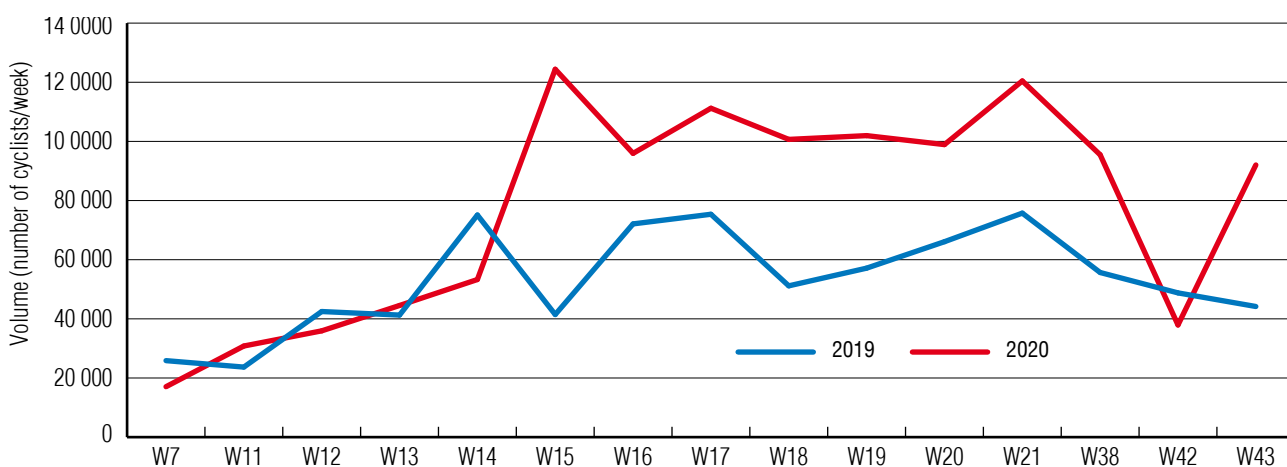
The decline in traffic during the night-time was even more pronounced in the daily variation of slow vehicles, i.e. vehicles with a maximum permissible weight of over 3.5 tonnes.

Comparison of daily variation of automobile traffic in 2019 and 2020 – slow vehicles



Alongside automobile traffic, the development of bicycle traffic was also monitored during 2020.

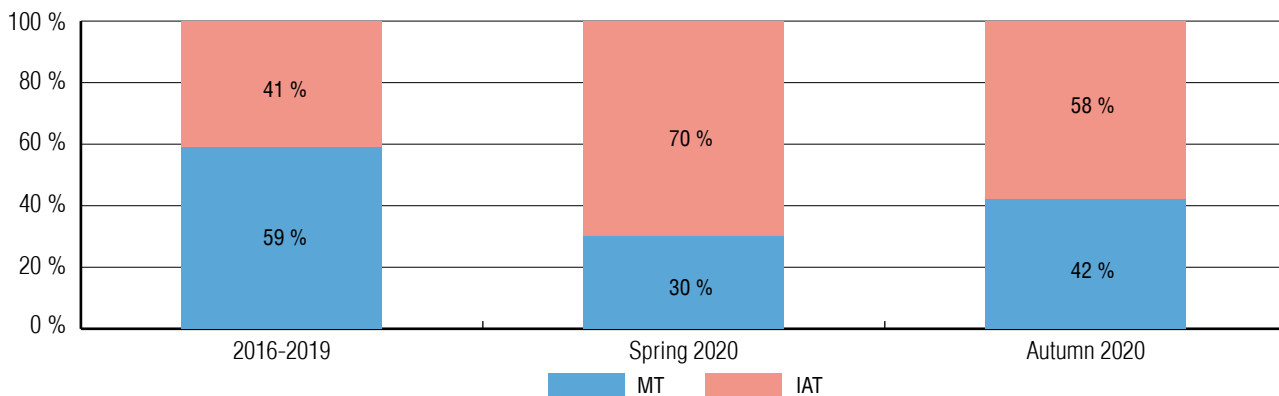
Year-on-year comparison of bicycle traffic development in 2019 and 2020 (weekly volume)



More than any other type of transport, bicycle transport is dependent on the weather. A year-on-year comparison shows that there was an overall increase in bicycle traffic volume in 2020. In all likelihood, this rise is closely tied to the situation at the time, which forced many people to use a bicycle as an alternative to public transport, as well as the use of a bicycle as a possible replacement for other types of cancelled sports activities.

Changes in the transport behaviour of the capital's inhabitants in 2020 can be observed in the development of the modal split. The last comprehensive assessment of the set of transport-sociological surveys was produced in 2016 and comprised a balance of all trips within the territory of the City of Prague, i.e. intra-urban trips, plus external trips, i.e. trips into or out of the city, as well as transit trips, both by inhabitants of Prague and visitors to the capital. Unfortunately, a similar set of studies could not be conducted to the same detail in 2020, thus only the available source materials were used to calculate the modal split in 2020, primarily changes to traffic volume recorded by automatic counters.

Development of modal split (MT/IAT – mass transport/individual automobile transport)



3 AUTOMOBILE TRANSPORT

3.1 Development of vehicle and car ownership

The total number of motor vehicles registered within Prague increased dramatically up until 1999, after which the growth slowed. As of the end of 2020 there was one registered passenger automobile per 1.4 inhabitants.

According to the available source materials, in spring 2020 there was a drop in transport to roughly half the level of previous years. In autumn the decline was smaller, around 30 % lower than the standard traffic levels. The growth in IAT at the expense of MT during spring 2020 can be tied to concerns about travelling by mass transport, the overall lower volume of traffic in Prague transport, and the elimination of fee collection for the use of parking zones in the whole capital city. During the autumn, collection of these fees was not suspended and the overall volume of traffic likewise did not see as marked a decline compared to standard levels. The fact that the population was less concerned about travelling by MT also had an influence.

Over the course of 2020, the share of bicycle traffic also increased, but this change did not lead to a significant change in the overall modal split values. Only in certain monitored weeks did it probably cross the threshold of two percent.

The introduced restrictions were also felt in public transport. A detailed description of the development of supply and demand in public transport and a summary of the measures applied in MT is contained in Chapter 4.8. The coronavirus epidemic was also reflected in the majority of indicators in specific transport areas for 2020 provided cross-sectionally in the following chapters.

Degree of vehicle and car ownership								
Year	Prague				Czech republic (until 1971 Czechoslovakia)			
	Motor vehicles		Passenger cars		Motor vehicles		Passenger cars	
	vehicles per 1 000 ppl	persons per 1 vehicle	cars per 1 000 ppl	persons per 1 car	vehicles per 1 000 ppl	persons per 1 vehicle	vehicles per 1 000 ppl	persons per 1 car
1961	92	10.8	45	22.4	97	10.4	21	47.1
1971	188	5.3	123	8.1	203	4.9	72	13.8
1981	310	3.2	241	4.2	335	3.0	182	5.5
1990	353	2.8	276	3.6	390	2.6	233	4.3
2000	632	1.6	525	1.9	510	2.0	362	2.8
2010	739	1.4	557	1.8	573	1.7	427	2.3
2017	818	1.2	652	1.5	712	1.4	525	1.9
2018	844	1.2	675	1.5	734	1.4	543	1.8
2019	861	1.2	689	1.5	753	1.3	557	1.8
2020	870	1.1	693	1.4	770	1.3	570	1.8

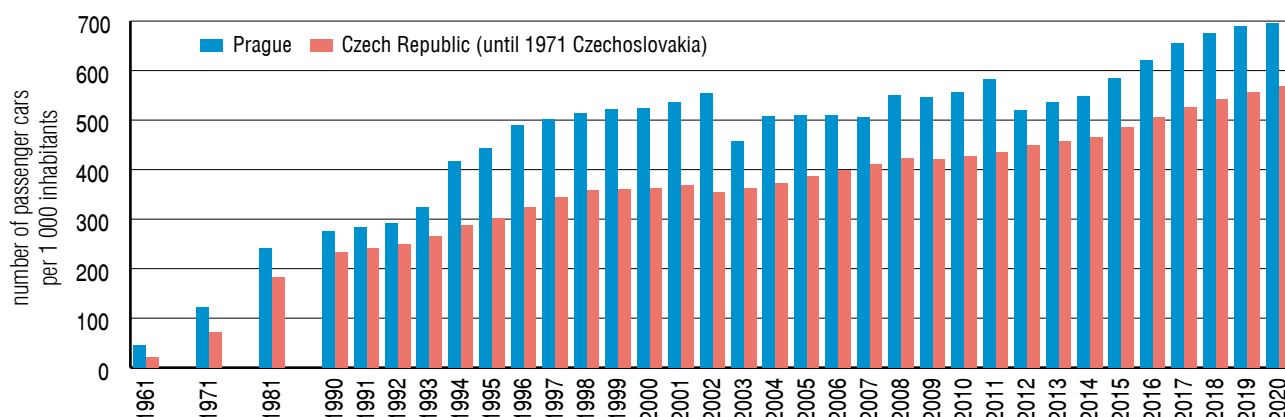


Street Bělohorská



Vítězné square

Development of car ownership



Note: In 2003–2007 the administrator for Prague data on the number of vehicles used a different algorithm that produced lower values. In 2012 the data were taken over by the central register of the Czech Ministry of Transport.

3.2 Volume of automobile traffic on workdays

The City of Prague occupies a unique position in automobile transport in the Czech Republic, which manifests in the exceptionally high traffic intensity and volume in comparison with other Czech cities or with motorways and roads in rural areas.

All data on traffic volume apply to the period from 0:00-24:00 of an average workday. All data on automobile traffic exclude municipal public transport buses.

The base aggregated indicator for the development of automobile traffic in Prague is traffic volume (vehicle kilometres travelled) on the whole road network, which has been monitored since 1978.

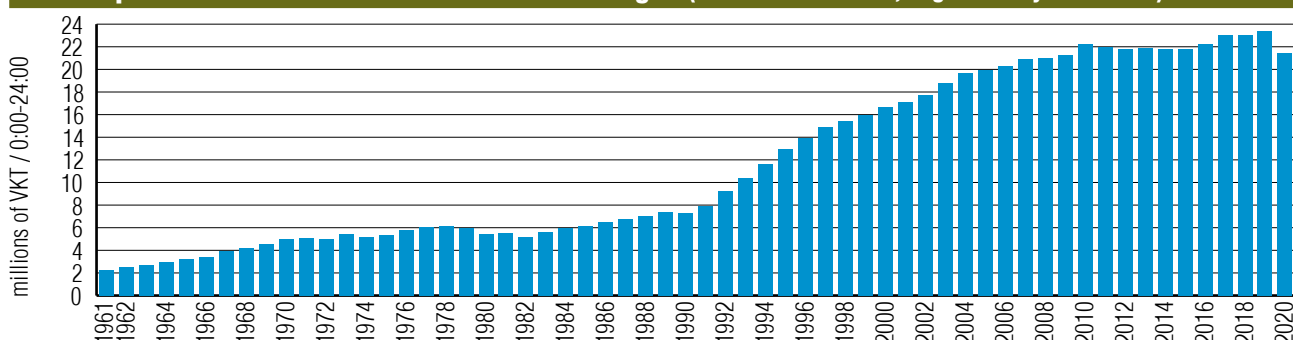
In the period of 0:00-24:00 of an average workday for the year, motor vehicles drove in 2020 21.482 million VKT in all of Prague. Of this amount, passenger cars accounted for 19.534 million VKT, or 91 %.

Automobile traffic volume in Prague (whole road network, avg. workday, 0:00-24:00)

Year	Motor vehicles total		Passenger automobiles		Passenger automobiles as percentage of total traffic volume (%)
	millions of VKT	%	millions of VKT	%	
1961	2.273*	31	1.273*	23	56
1971	5.061*	69	3.543*	65	70
1981	5.562	76	4.338	79	78
1990	7.293	100	5.848	100	80
2000	16.641	228	15.131	259	91
2010	22.205	304	20.435	349	92
2017	23.043	316	21.062	360	91
2018	23.006	315	20.977	359	91
2019	23.356	320	21.315	364	91
2020	21.482	295	19.534	334	91

100 % = year 1990 * Estimate based on traffic volume trends at cordons (traffic volume in Prague only monitored since 1978)

Development of automobile traffic volume in Prague (whole road network, avg. workday 0:00-24:00)



Alongside this data, another method of determining trends in Prague's automobile traffic is "cordon monitoring", meaning periodic traffic counts at sites that form a connected cordon of important entrance roads into the designated zone. The development of inner-city traffic is monitored at the "central cordon", while peripheral traffic is monitored at the "outer cordon".

Greater city centre – central cordon

Based on the counts made at the central cordon, which measures two-way traffic volume at the entry points to the greater city centre, delineated roughly at Petřín in the west, Letná in the north, Riegrovy sady in the east and Vyšehrad in the south (with the Strahov and Mrázovka tunnels lying outside the central cordon). Because of the restrictions caused by the Coronavirus pandemic, counts on cordon took place only in one third of the usual number of locations.

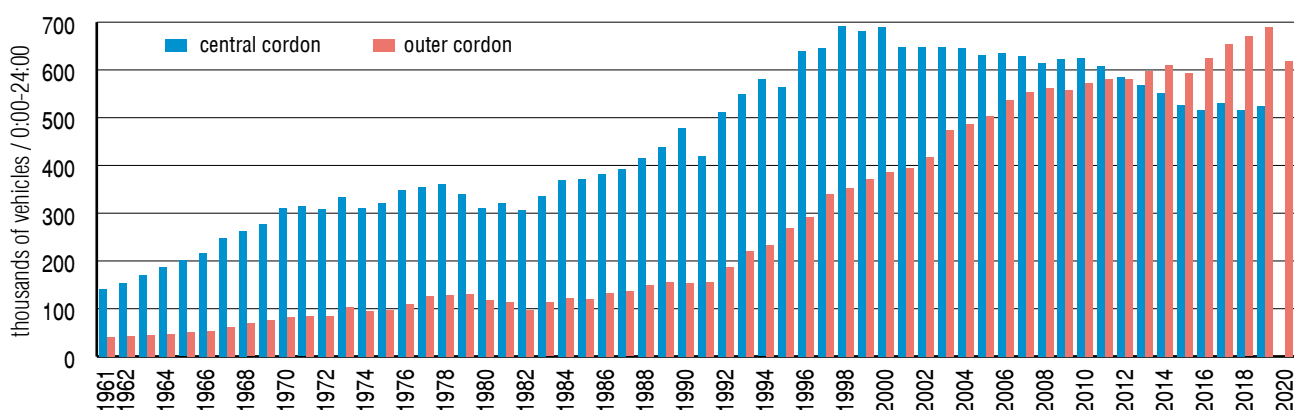
Outer zone of the city – outer cordon

Based on counts done at the outer cordon, which expresses the volume of traffic at the entrances from the main roads and motorways into the continually settled area of the city, over the 24 hours of an average workday 309 000 vehicles entered Prague (single-direction) across the boundary of the outer cordon, of which 272 000 were passenger cars. Compared to the previous year this was a decrease of 10.3 %.

Traffic volume at central and outer cordon (average workday, both directions total, 0:00-24:00)												
Year	Central cordon						Outer Cordon					
	Passenger		Freight		Vehicles total		Passenger		Freight		Vehicles total	
	number	%	number	%	number	%	number	%	number	%	number	%
1961	76 000	18	35 000	81	141 000	29	15 000	14	15 000	41	40 000	26
1971	265 000	62	42 000	98	314 000	66	56 000	50	25 000	68	85 000	55
1981	272 000	64	43 000	100	321 000	67	74 000	67	34 000	92	114 000	74
1990	424 000	100	43 000	100	479 000	100	111 000	100	37 000	100	154 000	100
2000	653 000	154	25 000	58	690 000	144	334 000	301	47 000	127	386 000	251
2010	598 000	141	14 000	33	625 000	130	505 000	455	58 000	157	572 000	371
2017	505 000	119	10 000	23	530 000	111	580 000	523	64 000	173	655 000	425
2018	491 000	116	10 000	23	517 000	108	595 000	536	62 000	168	670 000	435
2019	498 000	117	11 000	26	525 000	110	606 000	546	69 000	186	689 000	447
2020*	-	-	-	-	-	-	543 000	489	71 000	192	618 000	401

* Based on the Coronavirus pandemic, counts on cordon took place only in one third of the usual number of locations. 100 % = year 1990

Development of traffic volume at cordons in Prague (avg. workday, both directions total 0:00-24:00)



Data on traffic volume on various segments of the monitored road network in Prague for 2020 are available in table form on the TSK website in the section "Transport Engineering" and in graphic form on the inside cover of the yearbook.

Prague road network segments with heaviest traffic in 2020

	Segment	Total vehicles per day (0:00-24:00)
1.	Barrandovský most	134 000
2.	Jižní spojka (5. května – Vídeňská)	122 000
3.	Strakonická ulice (Dobříšská – Barrandovský most)	122 000
4.	Jižní spojka (Chodovská – V korytech)	118 000
5.	Jižní spojka v úseku Sulická – Braník	111 000

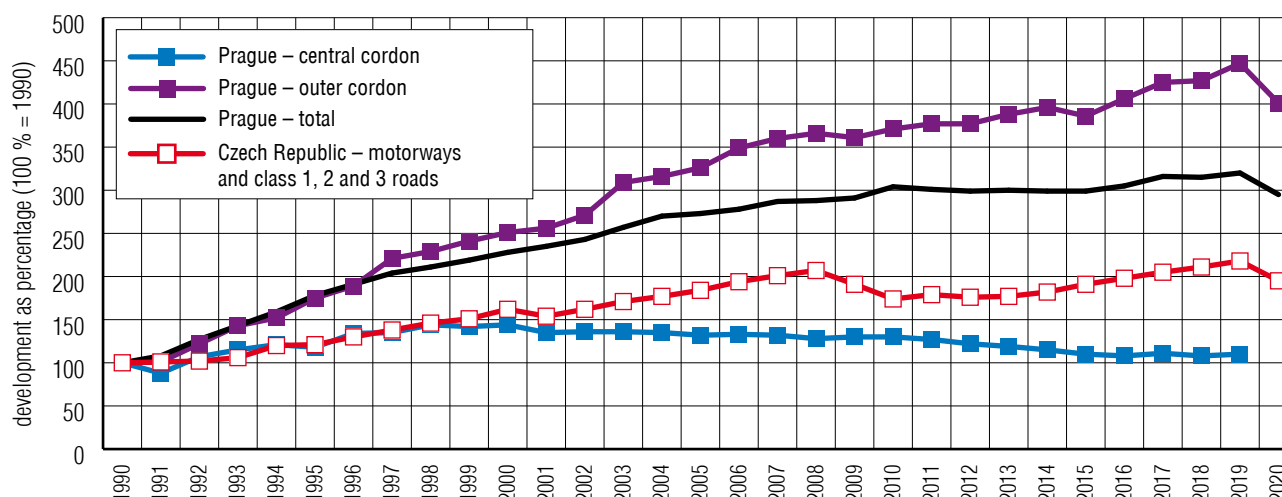
Heaviest bridges across Vltava and Prague road net. tunnels with heaviest traffic in 2020

	Bridge	Total vehicles per day (0:00-24:00)		Tunnel	Total vehicles per day (0:00-24:00)
1.	Barrandovský most	134 000	1.	Dejvický tunel	89 000
2.	Hlávkův most	69 000	2.	Brusnický tunel	87 000
3.	most Barikádníků	58 000	3.	Zlíchovský tunel	87 000
4.	Radotínský most	54 000	4.	Bubenečský tunel	82 000
5.	Jiráskův most	40 000	5.	Strahovský tunel	79 000

Grade-separated intersections on the Prague road net. with the heaviest traffic in 2020

	Intersections	Total vehicles per day at the intersection (0:00-24:00)		Intersections	Total vehicles per day at the intersection (0:00-24:00)
1.	5. května – Jižní spojka	196 000	1.	Černokostecká – Průmyslová	68 000
2.	Strakonická–Barrandovský most	184 000	2.	Poděbradská – Kbelská	68 000
3.	Jižní spojka – Chodovská	145 000	3.	Kolbenova – Kbelská	60 000
4.	Jižní spojka – Barrandovský most	134 000	4.	Vypich	58 000
5.	Průmyslová – Jižní spojka	131 000	5.	Legerova – Anglická	57 000

Development of traffic volume in Prague and Czech Republic (average workday)



Average occupancy of Passenger automobiles (persons per vehicle)

Year	Centre (central cordon)	Outer zone (outer cordon)	Prague total
1990	1.57	1.90	1.71
2000	1.37	1.49	1.44
2010	1.30	1.30	1.30
2019	1.30	1.30	1.30
2020	1.30	1.30	1.30

3.3 Vehicle modal share and temporal traffic patterns

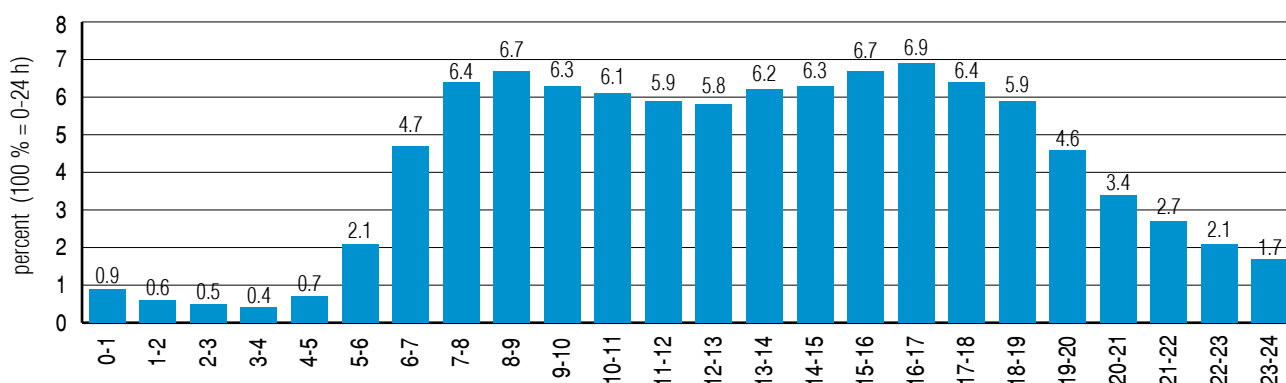
The modal share of traffic is dominated by passenger automobiles. In terms of territorial breakdown, the proportion of passenger vehicles increases toward the centre of the city. In 2020, this rate was 96 % at the central cordon, 88 % at the outer cordon and 91 % on average for the whole network.

Basic characteristics of daily variation of workday traffic volume in Prague (2019)

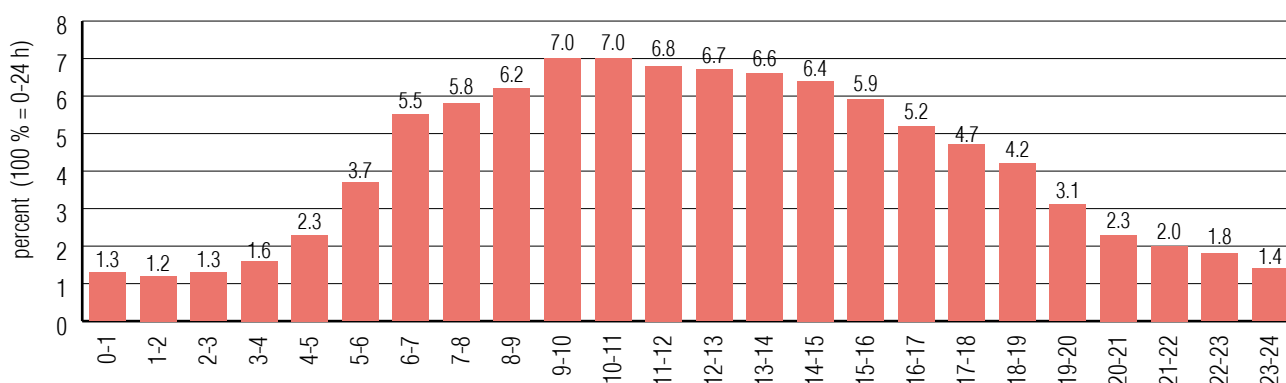
The listed data comes from 2019, the last year which was not influenced by the Coronavirus pandemic. The evolution of daily variations from 2020 is listed in chapter 2.

The majority of traffic volume for the whole day takes place during the daytime period (74 % for 6:00-18:00), with the period 6:00-22:00 accounting for approx. 91 %. After 19:00, traffic volume begins to drop off steeply and more or less uniformly until midnight. The morning peak is at 8:00-9:00; the afternoon peak hour is 16:00-17:00. The volume of the morning peak hour makes up 6.7 % of the total, the afternoon peak hour makes up 6.9 % of the total, with 100 % equalling the whole volume for 0:00-24:00 of an average workday. The difference between the peak hours and the noon sag is not very pronounced.

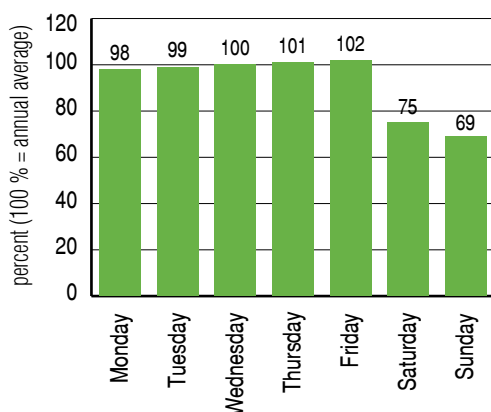
Daily variation of total automobile traffic (2019, Prague, whole network, workday)



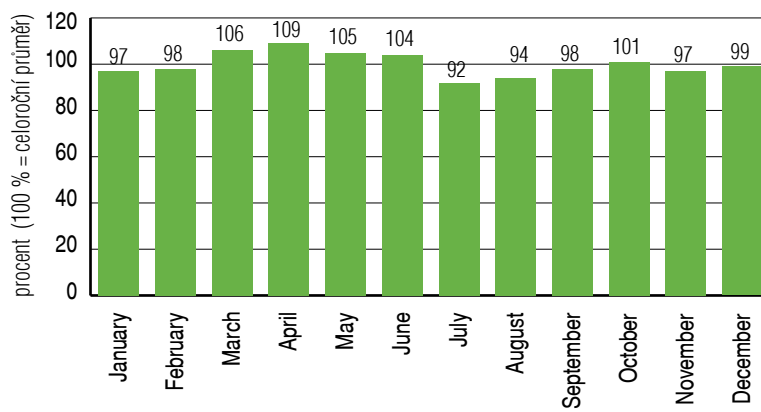
Daily variation freight vehicles and buses, not incl. public buses (2019 Prague, whole network, workday)



Weekly variation (Prague, whole network, total vehicles)



Annual variation (Prague, whole network, total vehicles)



4 PUBLIC TRANSPORT

4.1 Prague Integrated Public Transport



The integrated system of public transport in Prague has been developing for 28 years. In 1992 the first city bus lines crossed the city limits and almost immediately thereafter integration of railways lines began as well. The Prague Integrated Public Transport (PID) system offers inhabitants of Prague and a large part of the Central Bohemian Region the opportunity to travel on a single travel document regardless of the chosen mode of transport.

Basic data on PID	
Modes of transport under PID	Metro, trams, urban and suburban buses, trolleybus, railway, funicular, ferries
PID organisers	ROPID (Prague, from 1993) a IDSK (Central Bohemian Region, from 2017)
Inhabitants with access to PID	2 715 134 (1 335 084 in Prague a 1 380 050 in the Central Bohemian and Regions)
Area served	9 850 km ² (496 km ² City of Prague a 9 354 km ² Central Bohemian and Regions)
Municipalities served	908 (240 served by railway and bus, 100 only by railway, 568 only by bus)
Number of PID lines	632 (215 solely within Prague, 147 btw. Prague and region, 270 solely in region)
Number of PID carriers	29 (Prague Public Transport Company, Czech Railways and 27 private carriers)
Persons transported annually	881 261 425 (800 442 125 within Prague and 80 819 300 in Central Bohemia)
Cost of basic PID tickets	In Prague – CZK 24 (valid 30 min), CZK 32 (valid 90 min), CZK 550 (valid month), CZK 3 650 (valid 1 year)
PID operation costs in Prague	CZK 19.8 bn (83.4% Prague budget, 15.2% revenue, 1.3% state budget, 0.1% other entities)
PID fare revenue in Prague	CZK 3.0 bn (15.2% of costs)



An M1 train at Muzeum station on the C line



New Tram Stop Marker on Palacký Square

Development of annual PID VKT in the capital city of Prague

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Metro (mil. VKT/year)	54.8 ↑	54.1 ↓	53.0 ↓	52.2 ↓	55.7 ↑	57.5 ↑	58.1 ↑	59.2 ↑	60.9 ↑	56.7 ↓
Trams (mil. VKT/year)	54.0 ↑	53.5 ↓	51.0 ↓	50.9 ↓	51.5 ↑	54.6 ↑	57.9 ↑	57.7 ↓	58.5 ↑	54.4 ↓
Buses (mil. VKT/year)	76.2 ↑	76.8 ↑	75.8 ↓	75.8 ↓	77.3 ↑	78.0 ↑	79.4 ↑	81.7 ↑	82.0 ↑	78.4 ↓
Railways (mil. trainkm/year)*	4.4 ↑	4.6 ↑	4.6 ↑	4.7 ↑	4.8 ↑	4.9 ↑	5.2 ↑	5.4 ↑	5.7 ↑	5.7 ↓
TOTAL	189.4 ↑	189.0 ↓	184.4 ↓	183.6 ↓	189.3 ↑	195.0 ↑	200.8* ↑	204.4* ↑	207.6* ↑	195.2 ↓

* There was a small adjustment made to the buses data in the years 2017, 2018 and 2019 (the performance of a new PID carrier was added)

Development of PID system around Prague

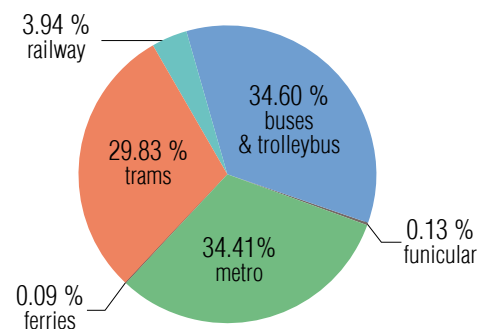
	1992	1995	2000	2005	2010	2015	2018	2019	2020
Number of municipalities served by PID	3	23	221	345	347	359	657	770	908
Number of PID railway stations and stops in PID	23	59	190	212	222	235	529	532	536
Number of PID suburban and regional bus lines	2	11	89	147	150	161	220	263	331

632 lines operated under PID		
Mode of transport	Lines	Type and numbering of lines
Metro	3	day lines A, B, C
Trams	34	25 day (numbered 1-18, 20-22, 23 temporarily out of service, 24-26) and 9 night lines (91-99)
Urban buses (with routes solely within City of Prague boundaries)	168	127 day (100-250), 15 night (901-915), to the airport (AE temporarily out of service), 23 school lines (251-275), for persons with reduced mobility (H1), trolleybus (58)
Suburban buses (with routes btw. city and region)	110	100 day (300-404, 500) and 10 night lines (951-960)
Regional buses (with routes solely in the region)	221	220 day lines (416-499, 509-747) and 1 seasonal cyclobus
Railway (btw. Prague and territory of region)	39	14 S (S1-S9, S22, S49, S54, S65, S88), 1 urban line (S34), 15 R (R9, R10, R16-R21, R24, R26, R41, R43, R44, R45, R49), 9 seasonal and tourist lines
Railway (only in the region)	50	39 lines S (S10-S12, S18, S20, S21, S23-S28, S30-S35, S40, S42-S46, S50, S53, S57, S60, S66, S67, S70, S75, S76, S80, S90, S98, S99), 2 lines R (R22, R23), 7 lines U (U4-U40), 1 line L4 and 1 seasonal line
Ferries	7	P1, P2 (both year-round), P3, P4, P5, P6 and P7 (all seasonal)
Funicular	1	Újezd-Petřín funicular

PID carriers	
Metro, trams, Petřín funicular	Prague Public Transport Company (DPP) (38 lines)
Urban buses	DPP (130 lines), 5 private carriers (38 lines)
Suburban and regional buses	20 private carriers (318 lines), DPP (13 lines)
Railway	Czech Railways (72 lines), KŽC Doprava, s. r. o. (8 lines), Arriva vlaky, s. r. o. (5 lines), Die Länderbahn CZ s. r. o. (3 lines), Leo Expres Tenders (1 line)
Ferries	Pražské Benátky, s. r. o. (5 lines), PPS, a. s. (1 line), Vittus group, s. r. o. (1 line)



PID ridership and share of total passengers within the City of Prague for 2020		
Mode of transport and carrier	Persons/year	
Metro (DPP)	251 423 000	31.41 %
Trams (DPP)	238 788 000	29.83 %
Urban buses, trolleybus (DPP and privat carriers)	232 911 000	34.60 %
Suburban buses (private carriers and DPP)	44 056 000	
Railway (ČD, KŽC, Arriva, Leo Express)	31 556 000	3.94 %
Funicular (DPP)	1 014 000	0.13 %
Ferries (private carriers)	694 125	0.09 %
TOTAL	800 442 125	100.00 %



Composite data on PID in 2020				
	Metro	Trams	Buses**	Railway
Operation length of network within Prague (km)	65.1	142.7	879.8	159.8
Operation length of network outside Prague (km)	-	-	> 2 400.0	1 520.0
Average distance between stations and stops in Prague (km)	1.122	0.52	0.578	3.72
Average travelling speed within Prague (km/h)	35.7	19.5	23.9	49.3
Annual VKT within Prague (in thousands)*	56 660	54 386***	78 353	5 677
Annual VKT outside Prague (in thousands)*	-	-	36 834	16 368
Passengers transported annually in Prague (thousands)	251 423	239 802***	276 967	31 556
Passengers transported annually outside Prague (thousands)	-	-	37 611	43 208****

* for rail transport, data in train-kilometres ** in Prague including trolleybus *** including the Petřín funicular **** in ČD trains

4.2 Metro

The Prague metro forms the foundation of the public transport network. If a transfer is counted as part of a single ride, passengers took around 680 000 trips per day in October (around 828 000 trips counting transfers separately), i.e. approximately 44 % less than in the same period a year earlier. The scope of service at the same time was cut back by about 9 %, with 1 644 train connections being dispatched daily (490 on A line, 540 on the B line and 614 on the C line). You can find a more detailed overview of the development of supply and demand in connection with the coronavirus epidemic in Chapter 4.8.

Basic data on the metro network in Prague

Lines	Operating time	Operating length of network	Persons transported per day*
3 (A, B, C)	daily approx. 4:45-0:15	65.1 km	828 000
Stations	Barrier-free stations	Average distance between stations	Average travelling speed
61	45 (74 %)	1.122 km	35.7 km/h
Passengers transported annually (2019) and share in PID	Annual VKT	Trains running at peak*	
251 423 000	31,41 %	56 660 000 (a train has 5 vehicles)	90 (A 21, B 33, C 36)
Most connections*	Shortest interval at peak*	Most frequented segment**	Most frequented station**
Line C (628 conn./day)	Line C (2 min 10 seconds)	IPP-Vyšehrad (277 300 ppl/day)	Můstek A/B (178 100 ppl/day)

* as of 14 October 2020 with standard service reduced by about 9 % ** data from the last network-wide survey in 2015



An 81-71 train at Smíchovské nádraží station



The new elevator up to the bus stops at Opatov

4.3 Trams

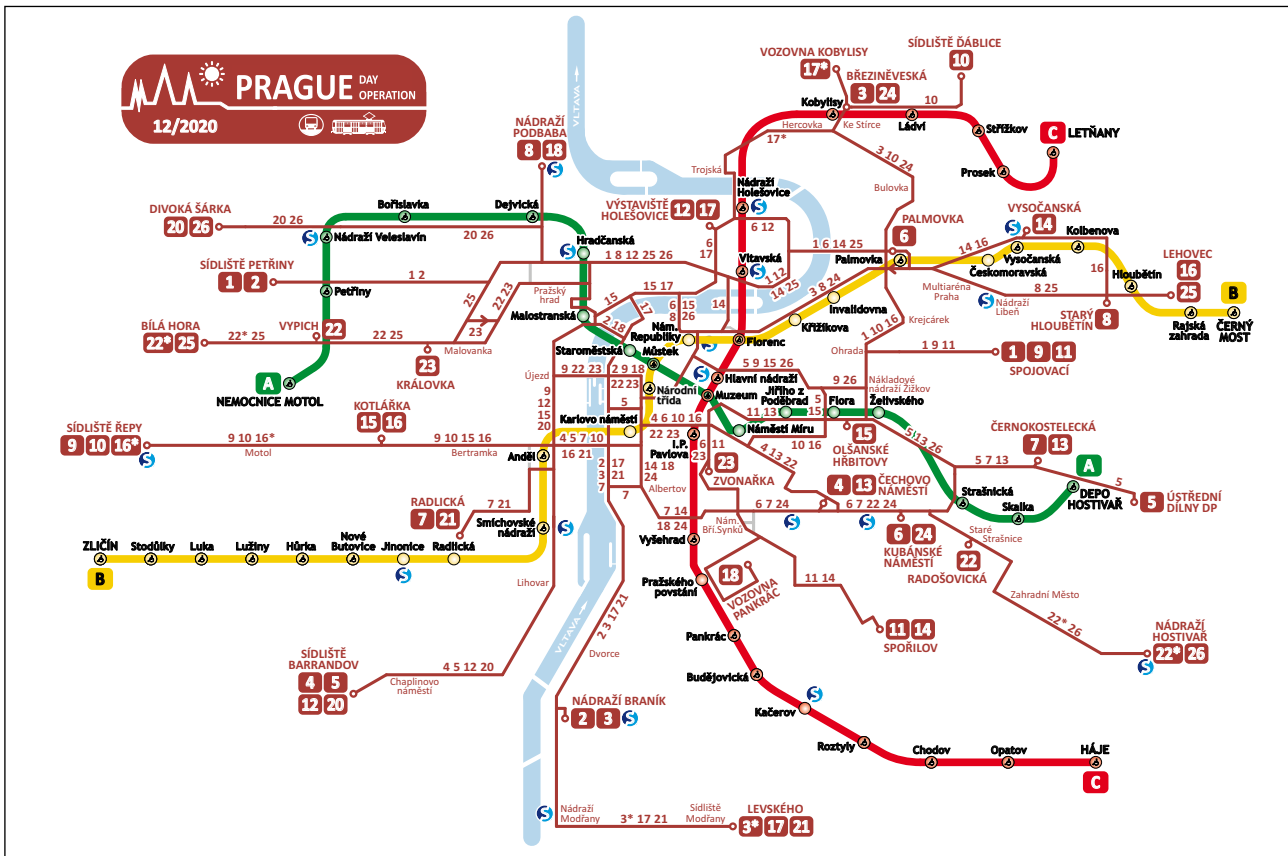
Trams are part of the arterial network of rail transport. Tram lines provide all types of connections, both radial and tangential, and hold an irreplaceable role in the PID network. Over the course of single workday passengers took approximately 784 600 trips in October 2020, which is about 36 % less than under standard conditions. The scope of operations at the same time was cut back by about 9 %, with approximately 6 790 connections dispatches a day.

Basic data on the tram network in Prague

Lines	Day operating time	Operating length of network	Persons transported per day**
34 (25 day, 9 night)	approx. 4:45-0:30	142.7 km (52 % dedicated* track bed)	784 600
Stops	Night operating time	Average distance between stations	Average travelling speed
275 (601 by stop marker)	approx. 0:15-5:00	0.52 km	19.5 km/h
Passengers transported annually (2019) and share in PID	Annual VKT	Trains running at peak**	
238 788 000	29.83 %	54 386 000 (30m tram = 2 vehicles T)	439
Most connections**	Shortest interval at peak**	Most frequented segment***	Most frequented station***
Linka 22 (480 conn./day)	Linka 9, 17, 22 (4 minutes)	IPP-Štěpánská (84 730 ppl/day)	Anděl (80 380 ppl/day)

* or raised track ** as of 14 October 2020 with standard service reduced by about 9 % *** data from last network-wide survey (2016)

Metro and tram lines in Prague (day lines as of 31 December 2020 – not including closures)



4.4 PID buses

Urban and suburban bus transport is operated within the city as part of PID. Urban bus transport forms a supplementary network to the metro and trams, also providing blanket service in some areas and many important tangential connections, particularly in the outlying areas of the city. Suburban bus transport connects the city with the surrounding region.

Over a single workday in mid-October 2020, 23 209 PID bus connections were dispatched within the city, transporting approximately 739 350 passengers (about 39 % less than usual). Of this amount, 17 825 were urban lines (the 100, 200 and 900 series) and 5 384 suburban lines (series 300-404, 950-960 and the 500 line).

Basic data on the bus network in Prague			
Lines	Day operating time	Operating length of network	Persons transported per day
168 (153 day, 15 night)	approx. 4:45-0:30	879.8 km	739 350
Stops	Night operating time	Average distance between stations	Average travelling speed
1 240 (3 290 by stop marker)	approx. 0:15-5:00	0.578 km	23.9 km/h
Passengers transported annually (2020) and share in PID		Annual VKT	Buses running at peak*
276 967 000	34.60 %	78 353 146	1 416
Most connections*	Shortest interval at peak*	Most frequented segment**	Most frequented station**
Line 200 (403 conn./day)	Lines 107, 200 (3 min)	N. Krč – U Labutě (67 020 ppl/6-20 h)	Kačerov (49 860 ppl/6-20 h)

* as of 14 October 2020 with standard service reduced by about 9 % ** data from last network-wide survey (2016)

On an average workday, approximately 5 384 connections crossed the city boundaries in both directions on suburban bus lines (the 300-404 and 950-960 series), carrying approximately 66 652 passengers across the city limits. Suburban bus lines used a total of 34 locations as starting or final stops within Prague. The most suburban PID lines (18) and connections (826) used the Zličín terminal, while the highest daily passenger turnover was at the terminals Zličín, Smíchovské nádraží and Černý Most.

Basic data on the bus network in the surroundings of Prague		
Suburban bus lines	Regional bus lines	Operation length of network outside Prague
110 (100 day and 10 night)	221 (220 day, 0 night, 1 seasonal)	> 2 400.0 km
Stops	Average distance between stations	Average travelling speed
3 416 (6 084 by stop marker)	1.208 km	34.5 km/h
Passengers transported annually outside Prague (2020)		Operating time
37 611 000		day 4:30-0:30, night 0:00-5:00
Annual VKT		Buses running at peak
36 833 736		964 (of which 516 on suburban lines)

The network of PID bus lines is also supplemented by regional lines that do not enter the territory of Prague (the 421-747 series). At the end of 2019 a daily total of about 4 560 connections rode outside Prague's limits, carrying roughly 75 510 passengers on an average workday. They were all operated by private carriers.



Since 1 Aug the 112 bus has also used Trojský most on the way to the Zoo



Suburban line buses at Smíchovské nádraží

The network of PID bus lines is also supplemented by regional lines (series 416-499, 509-747) that do not enter the territory of Prague. At the end of 2020 a daily total of about 6 106 connections rode outside of Prague's limits, carrying roughly 46 459 passengers. They were all operated by private carriers.

4.5 PID railway transport

Railway transport under PID has been expanding since 1992. In 2007 the process of labelling lines with the letters S and R was begun, with regular intervals and easy-to-remember times also starting to be implemented. A total of 1 216 train connections rode through Prague under PID on an average workday in autumn of 2020, transporting approximately 98 730 passengers. Service was significantly affected by renovations around Radotín and between Hostivař and Vršovice.

Basic data on the PID rail network within Prague			
Linek	Operation time	Operation length of network	Persons transported per day*
39 (15 S, 15 R, 9 seasonal)	approx. 4:45-0:30	159.8 km	98 730
Stations	Weekend night trains	Average distance between stations	Average travelling speed
45	at 2:30 from Praha hl. n.**	3.72 km	49.3 km/h
Passengers transported annually (2019) and share in PID		Annual number of train kilometres	Trains running at peak*
31 556 000 3.94 %		5 677 000	140
Most connections	Shortest interval at peak	Most frequented segment*	Most frequented station*
Line S7 (134 conn./day)	Line S7 (10 minutes)	P-Kyje – P-Libeň (28 278 ppl/day)	Praha hl. n. (38 575 ppl/day)

* in October 2020 with slight reduction in service ** temporarily suspended for several periods during 2020

Number of persons transported by rail under PID per year									
	2012	2013	2014	2015	2016	2017	2018	2019	2020
Persons	32 361 000	34 762 000	36 548 000	36 669 000	37 462 000	39 448 000	45 014 000	51 523 000	31 556 000

CONTENTS

Percentage share of tickets used by passengers on PID trains within Prague (workday)

	2000	2002	2004	2006	2008	2010	2012	2014	2016	2018	2019	2020*
PID document** (%)	39.2	52.1	57.7	60.4	63.8	68.7	72.7	72.2	71.6	58.9*	59.2	59.2
of which individual PID fare (%)	-	7.2	10.6	7.5	5.6	8.5	5.3	5.3	5.4	4.7	5.3	5.3
ČD document, free transport (%)	60.8	47.9	42.3	39.6	36.2	31.3	27.3	27.8	28.4	41.1	40.8	40.8

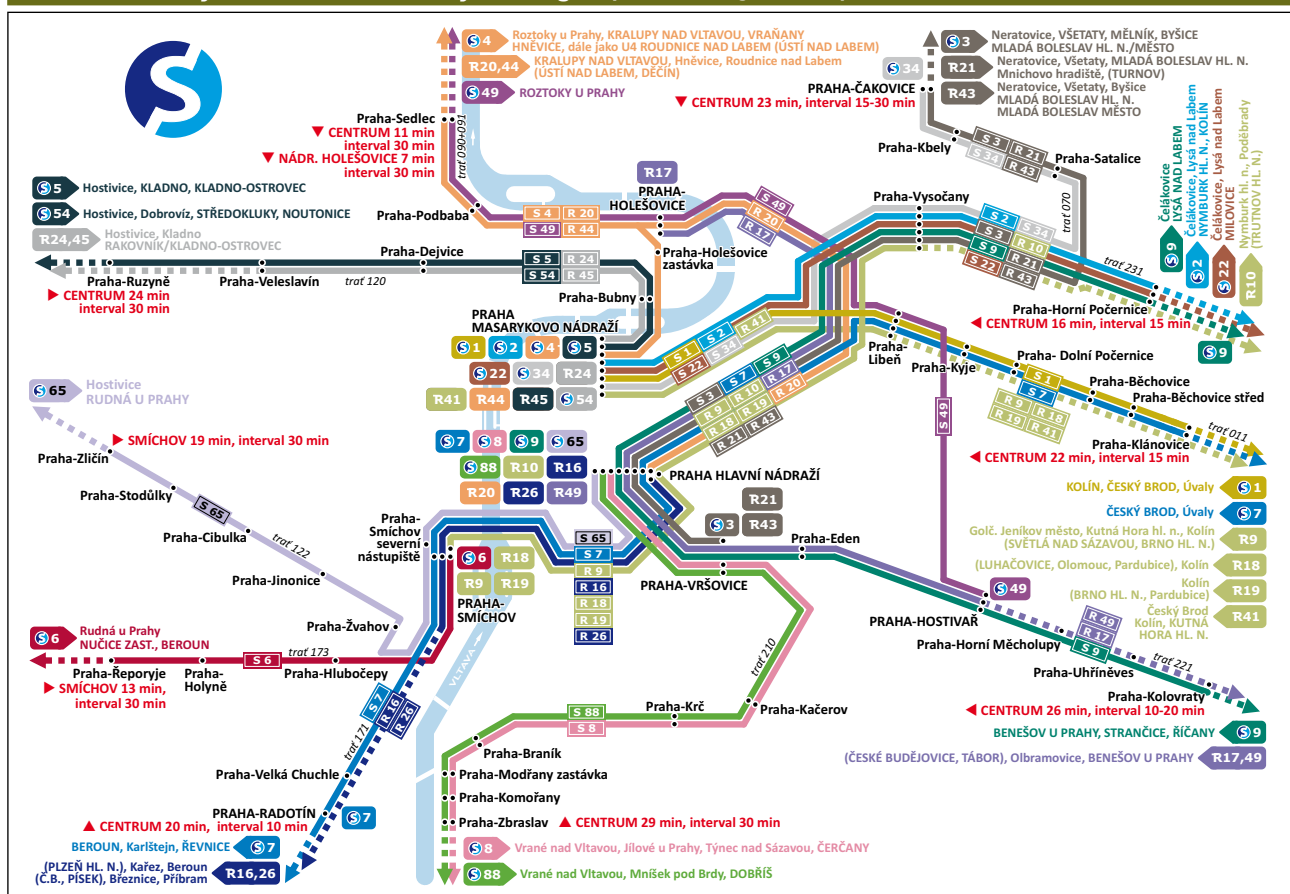
* no survey was conducted in 2020 due to the coronavirus situation, data is from 2019 ** including individual PID tickets

Number of persons transported by rail under PID divided by tracks (average workday)

Track	Line	2012	2013	2014	2015	2016	2017	2018	2019	2020*
011	S1, S7, R9, R18, R19, R41	20 940	21 790	21 520	21 090	22 720	24 660	37 320	37 900	24 650
070	S3, S34, R21, R43	2 960	3 800	4 430	3 890	4 340	5 030	4 830	4 190	2 580
090	S4, S49, R20, R44	10 710	13 400	14 820	15 720	16 370	14 410	15 180	14 870	10 310
120	S5, S54, R24, R45	5 470	7 040	7 080	7 210	7 500	6 500	5 050	6 560	3 880
122	S65	400	390	390	590	510	600	600	680	390
171	S7, R16, R26	20 360	21 590	21 990	21 870	20 630	22 420	27 420	27 420	14 480
173	S6	1 030	1 160	1 500	1 640	1 790	2 440	2 680	2 880	1 830
210	S8, S88	2 250	2 670	2 280	2 670	2 580	3 570	4 180	3 070	2 350
221	S9, R17, R49	21 650	23 710	25 420	23 780	25 830	30 890	34 350	34 890	21 830
231	S2, S9, S22, R10	15 100	16 070	16 680	16 080	16 210	24 370	22 550	26 680	14 150
ML	S49	2 470	1 520	1 010	2 210	2 450	3 000	3 480	2 360	2 280
TOTAL		103 340	113 140	117 120	116 750	120 930	137 890	157 640	161 500	98 730

* the boundaries of Prague were crossed on PID trains by approx. 79 650 passengers on an average workday in 2020 (37 660 travelling into Prague, 41 990 out of Prague); on Saturdays in 2019 (current data is not available) PID trains transported 62 % of the workday average, on Sundays just 55 %

S and R railway lines within the City of Prague (not including closures)



In the surroundings of Prague, roughly 1 500 connections were dispatched on 50 PID lines daily, travelling 1 520 km of track and stopping at 491 stations. In 2020, PID trains in the Central Bohemian Region transported a total of 43.2 million passengers (only Czech Railways connections).

CONTENTS

4.6 Funicular and ferries

The funicular is part of PID and provides a connection between Újezd, Nebozízek and Petřín. In 2020 it carried a total of 1 014 000 passengers (a daily average of 2 778) and accounted for 0.13 % of the overall number of persons transported by PID within the city.

Since 2005, river ferries across the Vltava have already become a standard component of Prague Integrated Public Transport. Their primary importance is for recreational travel (connecting to cycle paths, serving the islands on the Vltava), but increasingly they are also used for standard transport, e.g. to work (in the winter 75 % of trips).

There were 8 ferries in operation in 2020, which transported an average of 2 559 passengers a day and a total of 694 125 for the year (0.09 % of persons transported by PID within Prague).



Újezd – Petřín funicular

Due to the coronavirus epidemic, P5 ferry service only began at the end of April and was separated into the ferries P4 (Císařská louka – Kotevní) and P5 (Císařská louka – Výtoň). The temporary P8 ferry was only in operation until 24 October 2020, when the new Troja footbridge was opened.

Overview of Prague ferries operated in 2020 and selected operating parameters

Line	Route	Beginning of operation	Service	Persons transported/day	Persons transported/year
P1	Sedlec – Zámky	1 Jul 2005	year-round	123	45 010
P2	V Podbabě – Podhoří	1. Jul 2006	year-round	533	195 090
P3	Lihovar – Veslařský ostrov	17 Jul 2007	seasonal	155	34 025
P4	Císařská louka – Kotevní	30 Apr 2020	seasonal	73	13 540
P5	Císařská louka – Výtoň	30 Apr 2020	seasonal	209	38 680
P6	Lahovičky – Nádraží Modřany	19 Sep 2009	seasonal	221	48 390
P7	Pražská tržnice – Ostrov Štvanice – Rohanský ostrov	7 Aug 2015	seasonal	363	79 440
P8	Císařský ostrov – Troja (end of service 24 Oct 2020)	23 Dec 2017	temporary	882	239 950
TOTAL				2 559	694 125

Share of guaranteed barrier-free (low floor) connections

Metro	Trams	Urban buses	Suburban buses	Railway
100 %	in timetable 60 % (in operation 67 %)	100 % (from 7 Dec 2020)	in timetable 48 % (in operation 77 %)	89 %*

* services ordered by the City of Prague, not all train (in particular fast train) connections in PID

4.7 Public transport between Prague and external territory

Public mass transport between the capital and other areas in the region and the country as a whole is provided by a number of carriers. Prague is an important hub for regional, domestic and international rail travel, as well as a point of departure, destination and transit stop for many long-distance Czech and international bus lines.

Railway transport in Prague, including non-PID long-distance connections

A total of 1 316 train connections operated by Czech Railways started, ended or passed through Prague on an average workday in 2020, carrying an estimated 100 000 passengers across the city limits. Roughly 14 % of that number were outside of PID, the remainder were under PID.

The operation of long-distance passenger rail transport (both under and outside of PID) is provided by Czech Railways, RegioJet, LEO Express and Arriva trains. The infrastructure for transport is provided by the state organisation Správa železnic ("Railway Administration", previously SŽDC).

Number of trains starting, ending or stopping at railways stations in Prague (10/2020)

Station	Praha hlavní nádraží	Praha Masarykovo nádraží	Praha-Libeň	Praha-Smíchov	Praha-Vršovice	Praha-Holešovice	Praha-Vysočany	Praha-Radotín
Trains per year	290 697	122 367	118 736	104 875	80 548	70 807	66 028	43 924
of those České dráhy	256 926	112 444	93 378	101 569	80 210	52 340	52 268	43 924
of those RegioJet	15 117	0	0	0	0	0	0	0
of those LEO Express	6 891	0	6 891	0	0	0	0	0
of those Arriva vlaky	10 095	2 397	18 467	3 164	0	18 467	5 730	0
of those KŽC Doprava	1668	7 526	0	142	338	0	8 030	0
Trains per day (14.10.)	842	390	349	309	245	173	199	138
of those in PID	619	390	283	279	245	123	199	138

Non-PID bus transport

Public bus transport between Prague and other areas is operated by a number of carriers from the Czech Republic; some international lines are also run by carriers from other countries.

Development of selected characteristics at main bus station Florenc

	2012	2013	2014	2015	2016	2017	2018	2019	2020
Number of connections/avg. workday	425	435	450	485	505	510	510	495	200
of those international	145	155	175	230	260	285	285	280	100
domestic long-distance	280	280	275	255	245	225	225	215	100
Number of connections/year	150 000	155 000	155 000	170 000	180 000	180 000	180 000	180 000	75 000
Number of carriers	100	105	120	125	125	125	110	110	100

The only bus station in Prague that dispatches exclusively non-PID buses is ÚAN Florenc.

In connection with the coronavirus epidemic in 2020, the Florenc bus station saw an average decline in the daily number of international connections of 2/3 and domestic connections of 1/3.

Other non-PID lines connecting Prague with external areas were dispatched and terminated to the greatest extent at the Černý Most bus terminal (totalling over 240 connections a day in mid-October 2020 and thus exceptionally more than at Florenc). All Prague terminals saw an annual decline in connections dispatched. Just as at Florenc, these saw a drop in the number of international connections down to nearly one third of 2019 levels, while for domestic connections only about half as many connections were dispatched.



A long-distance bus connection at Na Knížecí

Number of connections on other important non-PID bus terminals in Prague

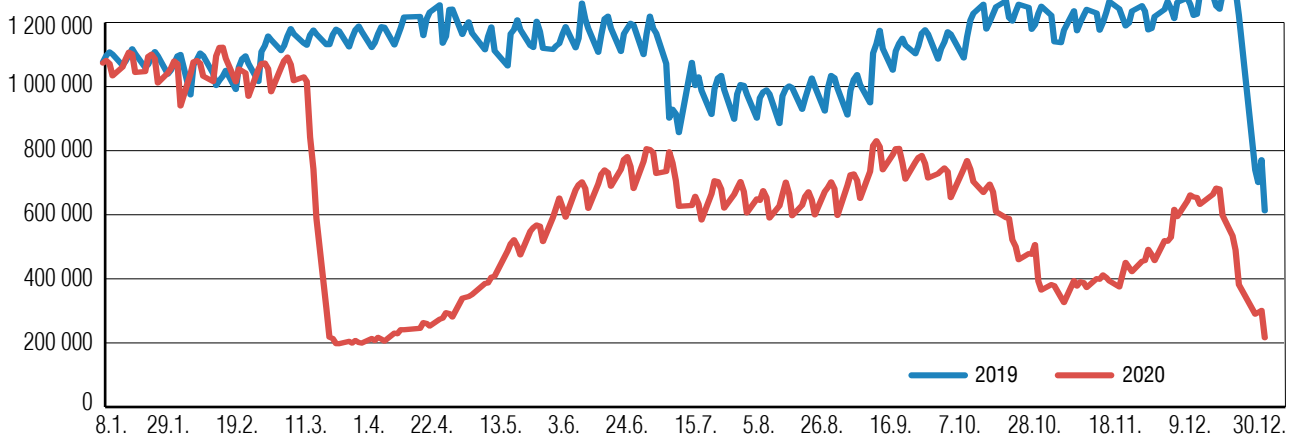
	Number of connections per average workday (14.10. 2020)			Number of connections per year 2020		
	International	Domestic	TOTAL	International	Domestic	TOTAL
Černý Most	0	244	244	1	66 272	66 273
Hradčanská	0	80	80	0	23 912	23 912
Na Knížecí	4	64	68	1 335	17 584	18 919
Zličín	2	61	63	933	17 677	18 610
Roztyly	14	76	90	4 382	22 211	26 593
Nádraží Holešovice	0	95	95	0	26 729	26 729
Nádraží Veleslavín	0	0	0	0	0	0
Hlavní nádraží	9	0	9	6 322	359	6 681
Želivského	1	0	1	419	0	419
TOTAL	30	620	650	13 392	174 744	188 136

The only non-PID lines that enter Prague as part of Central Bohemian Integrated Transport (SID) are those from the Vlašim and Benešov regions (E15, E16, E17 and E20) and the F71 line from Světlá nad Sázavou.

4.8 Development of demand and measures in PID during the COVID-19 epidemic

In terms of impact on PID service, the first wave of the epidemic can be dated to the period from 11 March to 26 May. On 11 March 2020, the number of workday passengers transported in the metro first dropped below 1 million a day, and eight days later on 19 March only around 200 000 people used underground connections (in 2019 the metro was transporting around 1 150 000 passengers a day in the same period, thus the maximum drop in demand was 83 %). In April and May, demand for public transport gradually rose and on 26 May there were already over 600 000 people taking the metro (about 50 % less than in 2019).

Development of number of persons transported on workdays in the metro in Prague in 2019 and 2020



From mid-March 2020, the coronavirus epidemic had a fundamental impact on PID service. Due to fluctuating demand and the ongoing regulations from the Czech government, around 10 000 changes to the timetables of individual lines were drawn up and enacted through to the end of the year. Providing for even the somewhat reduced service was also complicated due to the infection or quarantine of some of the service staff.

The scope of PID service was set up to not only take into account demand, but also to allow for maximum observance of distancing within vehicles. Thus for the whole epidemic, care was taken so that the offer of connections was at least 20-30 % higher than the current demand.

An objective comparison of the demand over the whole year was provided by online counters placed at each entrance and exit to the metro. At the end of 2020, automatic tallying had also already been installed in some of the tram and bus fleet, but this did not allow a year-on-year comparison to individual days from 2019. What these did show, however, was that demand on surface connections was always about 5-10 % higher than in the metro.

In the months June, July, August and September, the decline in demand compared to normal levels stopped at around 30 %. Metro counters showed the highest number of persons transported, about 830 000, on Wednesday 2 September.

Subsequently, the number of passengers started to fall off slightly again. The start of the second wave of the epidemic can be dated to 30 September, when there were only 770 000 workday passengers on the metro.

The minimum, which totalled 330 000 passengers, occurred a month later this time, on 30 October (with 72 % fewer people travelling compared to normal).

After the next phase of easing began, passenger levels in the metro had returned to at least 600 000 on 3 December (50 % of normal). Up until the end of 2020 the number of persons transported did not pass 700 000 a day, however, and after mid-December began to fall off markedly again.

The overall number of passengers transported in PID within Prague fell by around 40 % due to the coronavirus. The decrease was slightly higher in the metro and slightly lower in surface transport. In terms of PID connections offered, around 12.5 million vehicle kilometres went untraveled compared to 2019 (about 6 % less than was planned).



Closing the front door in older tram T and KT

5 BICYCLE TRAFFIC

The network of marked bicycle routes in the City of Prague has a total length of over 520 kilometres. The individual routes are broken down into arterial, main, local and supplementary, with the goal of completely relabeling them into a system marked with A and a number. The 8100 circuit cycle route (in places labelled A50) is a specific route that leads approx. 130 km around Prague. Currently it is still possible to encounter the older type of cycle route labelling (BŘ-LE, ŘE-HL etc.). The system is supplemented by cycle tourist routes.

Basic information on bicycle infrastructure in Prague		
Total length of marked cycle routes	Total length of protected marked and recommended cycle routes	One-way roads with two-way lanes for cyclists
520 km	200 km	32.6 km (173 sections)
Cycle pictocorridors	Separated / protected cycle lanes	Shared cycle lanes (+bus +taxi)
34.1 km	57.8 km / 35.8 km	32.1 km
Bicycle stands (two spots each)	Advance stop lines for cyclists	Bicycle crossings
4 083	1 608	157 (of those 73 with traffic signals-TS)



New Troja footbridge bridge



Čuprova underpass

New bicycle infrastructure implemented in 2020			
Type	Length / number	Type	Length / number
Cycle lanes (V14 / V14 protected)	8.1 km / 18.4 km	Shared cycle lanes (+bus +taxi)	5.8 km
Cycle pictocorridors (V20)	2.5 km	Bicycle crossings (V8)	40 (29 with TS)
One-way road with two-way lanes for cyclists	3.3 km / 20 ulic	Bicycle stands (two spots each)	211

The new Troja footbridge was opened in October 2020, replacing the footbridge that collapsed in December 2017. The bridge was built in less than a year, and is 4 metres wide and 256 metres long. Its service life is at least 100 years. It serves pedestrians, inline skaters, cyclists and if necessary also integrated rescue system vehicles. Special sensors will monitor this footbridge connecting Troja and Císařský ostrov for its whole service life.

Among the most demanding pieces of cycling infrastructure in recent years was the underpass on the A26 cycle path completed in 2020 underneath the bridge on Čuprova. The path lies in the municipal districts of Prague 8 and 9, predominantly in the built-up area along the riverbed of the Rokytka river. It is part of the A26 cycle path "Rokytka": Libeň – Vysočany, with the new infrastructure starting with the ramp before the Čuprova bridge, continuing under the bridge by the "water passage" and ending with the ramp on the other side of the bridge, where it connects to the existing cycle path on the street Nad Kolčavkou.

In November 2020, the first urban bike depot, Depot.Bike, was opened at Florenc in Prague, designed for distribution of packages around the city centre by electric freight bikes. With this step, Prague wants to alleviate public space, reduce the traffic burden and thus help improve the quality of life of the city's inhabitants. The project's pilot run is planned for 6 to 8 months and in one day couriers can deliver as many as 80 parcels from this depot.

New bike stands have also been installed at a number of sites around the city. Prague 3 has put in place a system for the parking of bikes or scooters in that municipal district. The system was named CYRIL and all the sites designed for parking bikes and scooters have been marked on a map, with the whole system gradually expanding (currently there are around 180 sites). Thanks to this, Prague 3 has the densest network for bicycle parking in Prague.

At the end of October 2020, riding through the Vyšehrad Tunnel was legalised (the right-bank A2 cycle route) with a simple adjustment to the sign. The “pedestrian path” sign had the additional “cyclist, lead your bicycle” sign removed and replaced with a “cyclists permitted” sign with a speed limit of 5 km/h. This is a significant change for the thousands of cyclists that pass through here daily.



Legalisation of cyclists riding through Vyšehrad Tunnel



Re-paving of part of embankment by Mánes

Prague’s embankments saw a re-paving of smooth strips for easier cyclist movement in 2020 (the New Town embankment between Jiráskův most and Mánes, the Old Town embankment, the embankment under Štefánikův most).

On the street Novodvorská in Prague 4, a continuous corridor addressing bicycle traffic in the main traffic area was completed after several years and stages of reconstruction.

The bicycle measures primarily implemented in Prague in 2020 were protected bicycle lanes, either on one side of the roadway (e.g. on Turistická, Husitská, Kamýcká), or on both sides of the roadway (e.g. Bucharova, Bubenská, Železničářů).

Cyclists on Prague Integrated Public Transport (PID)

In the metro it is possible to transport bicycles in the front and back part of each metro car with the exception of the first car behind the driver (max. of two bikes in each such space). Selected lifts can be used to transport bicycles at metro stations – currently Anděl, Bořislavka, Černý Most, Háje, Chodov, Ládví, Letňany, Národní třída, Nemocnice Motol, Palmovka, Pankrác, Petřiny, Prosek, Roztyly, Skalka, and Střížkov. The lifts are marked with a blue bicycle pictogram.

On trams, bicycles can only be transported on selected stretches heading out of the centre. Bikes can only be transported in the spots designated for transporting prams (for short cars generally at the back, for articulated trams at one or more spots in the middle). At most 2 bicycles can be transported in each such spot. Before entering or exiting the vehicle, passengers with a bicycle shall signal the driver, who may refuse them entry.

On buses, the transport of bicycles is not permitted (even if they are filling in for trams or metro), except for the 147 line, the AE bus (Airport Express) and the bicycle bus (Dobřichovice – Kytín). Transport was possible on the 147 line on the route Dejvická – Výhledy from 28 March to 29 October in 2020, only when heading out of the centre with the bicycle loaded at the stops Dejvická (transfer from the metro) or V Podbabě (transfer from the ferry) and unloaded only at the stops Internacionální or Výhledy.

For passengers with a valid PID ticket (or document for free transport under the PID Tariff), transport of bicycles is free on trains within Prague (zones P, 0 and B), as it is in the metro, trams, the funicular and on ferries, while outside the city limits there is a fee.

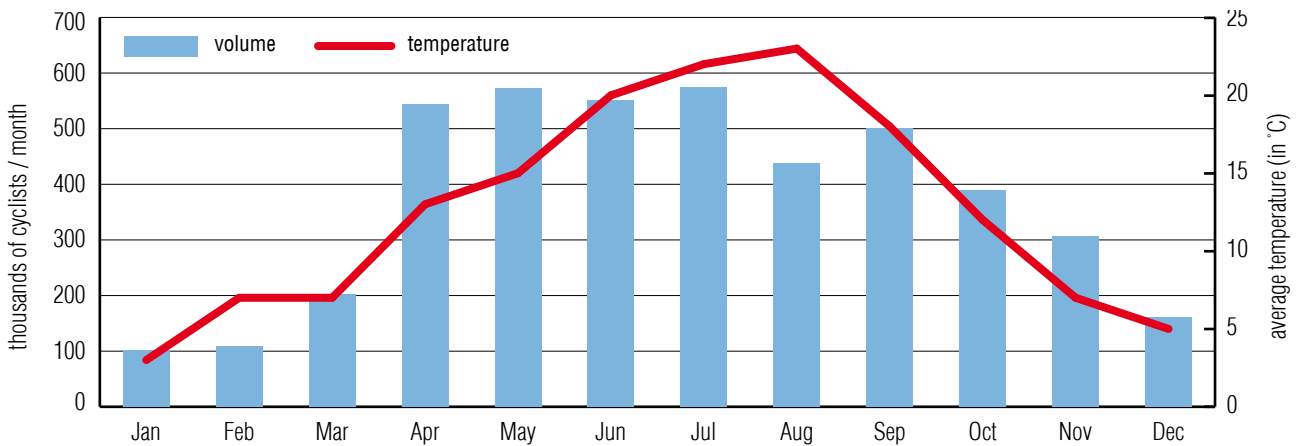
Before or after taking PID connections it is also possible to store bicycles in lockable bike boxes (by OC Chodov, at the Kbely train station, at the Main Train Station and at P+R Běchovice Centre once it is opened) or deposit them for free at certain P+R lots (Černý Most 1, Depo Hostivař, Holešovice, Ládví, Letňany, Opatov, Nové Butovice, Radotín, Rajska zahrada, Skalka 1 and Zličín 1).

Automatic bicycle counters

Bicycle counters provide useful data on cycle path traffic in real-time. Monitoring of volumes is carried out with the help of bicycle counters located on the arterial cycle path network in Prague. Currently there are two types of technology used: induction loop or radar, with some locations combining both technologies. The passage of cyclists is recorded directly at the measurement point, distinguishing the direction of travel, and each location provides information on both directions. The data also take note of the current temperature and are recorded in real-time (or rather 5-minute intervals) into the City of Prague data platform, Golemio.

In comparing 2020 and 2019, a growth in the volume of cyclists of 38 % can be seen. The results of the automatic bicycle counters were significantly impacted by the SARS-CoV-2 pandemic in 2020 (interest in outdoor sports activities increased, bicycle sales grew, people were afraid of taking public transport due to the infection risk). The Povltavská and Modřany profiles have long been the locations with the highest number of cyclists detected in both directions. The month with the highest number of detected cyclists was July.

Annual variation of bicycle traffic 2019 according to automatic bicycle counters

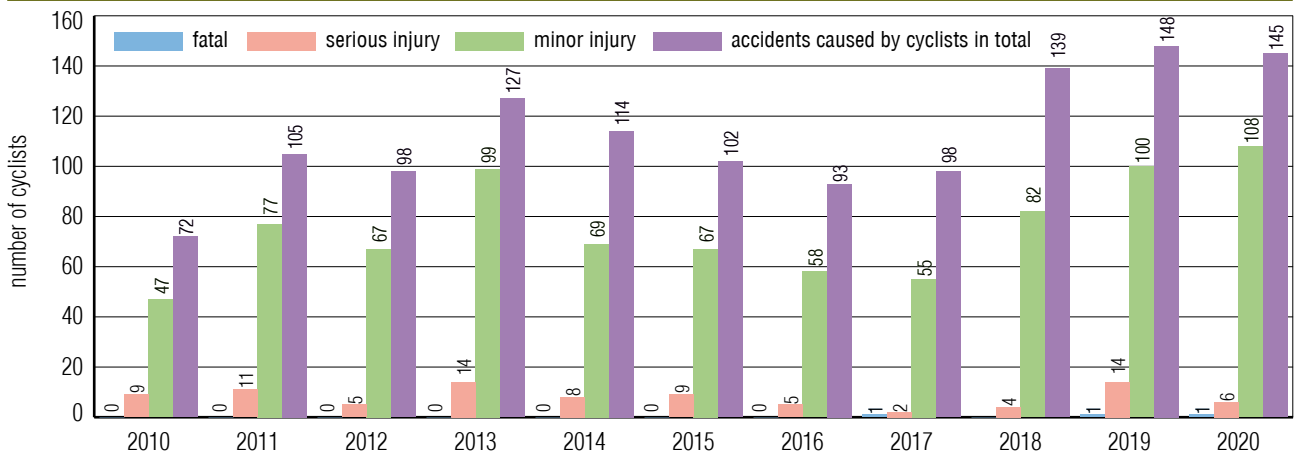


Bicycle lanes and protected bicycle lanes on Vaničková



The Novodvorská bicycle lane

Results of cyclists accidents in Prague 2010-2020 (source Traffic Police Department, City of Prague Police)



6 PEDESTRIAN TRAFFIC

Walking is the most natural and frequent way for people to get from place to place. Every trip using any means of transport begins and ends with walking. Roughly a quarter of all trips (26 %) are made solely by foot. Relatively speaking, the greatest number of pedestrian trips occur in the central part of the city, in particular within the Prague 1 municipal district.

One of the most visible projects with an impact on pedestrian traffic in 2020 was modification to the intersection at Karlovo náměstí, where three new pedestrian crossings were added, across Resslova, an extension of Ječná, and across the branch leading to Moráň. Pedestrians are thus no longer forced to use the underpass via the metro station vestibule.

Another new pedestrian crossing was installed in 2020, 500 metres east of Karlovo náměstí roughly in the middle of the section of Ječná between I. P. Pavlova and Štěpánská by the intersection with Melounova. It is also controlled by a traffic light and allows pedestrians to now move from the medical complexes on Kateřinská towards the street V Tůních.



New crossing at intersection Karlovo náměstí – Resslova



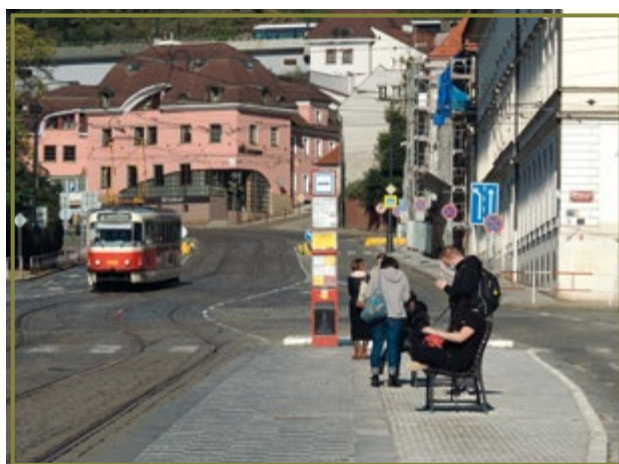
New Troja footbridge

At the end of October, the new Troja footbridge, a footbridge over an unregulated arm of the Vltava, was opened to the public, connecting Císařský ostrov with Troja and the nearby zoological garden. The bridge is made of steel with a wooden deck and a length of 256 m, width 4 m. People can walk on it and ride bikes, scooters or inline skates. The width and load capacity of the footbridge also allow EMS vehicles of up to 3.5 tonnes to cross it if necessary.

During a comprehensive overhaul of the street Jungmannova, the part leading up to the intersection with Vodičkova saw a fundamental transformation in terms of pedestrian traffic. The pedestrian crossing was shifted to the south, closer to Vodičkova, which straightened out the pedestrian route heading towards Lazarská. The pedestrian area was widened and benches were added.



Modifications to part of Jungmannova leading up to Vodičkova



Widening of narrow stop island at Malostranská

In autumn 2020, the previously narrow tram stop islands at Malostranská were successfully widened. With regard for further planned projects at the location, the modification was done in a provisional manner, and the considerably lower amount of tourists in the area allowed it to be realised quickly.

On the street Na Slupi near Albertov, the sidewalk alongside the hospital building was expanded, having previously only been 35 centimetres wide. The railing was also removed, having prevented for example prams from passing through and long since ceased being functional.



Expansion of the sidewalk on Na Slupi



New crossing from Vltavská tram stops towards the embankment

The Technical Administration of Roads devoted major attention to sidewalk repairs last year. Fifteen thousand metres of Prague sidewalks (an area of 57 000 m²) received new surfaces and 156 pedestrian crossings saw minor modifications, some of them from the special Pavement Programme. Barrier-free modifications for pedestrians were realised for example on the streets Dubnova, Františka Kadlece, V Štíhlách, Svatovítská and Tusarova.

The City of Prague and TSK both work to improve conditions for pedestrians on an ongoing basis by implementing measures to increase the safety of crossing the street. As part of these projects, construction is done to raise the surfaces at intersections, install speed humps with integrated pedestrian crossings (e.g. in front of Pod Marjánkou Primary School) and new traffic islands have also been added at a number of crossings. There is a detailed list of the projects completed in 2020 in Chapter 9.3 “Measures to increase transport safety”.



Structural speed hump at a crosswalk (Pod Marjánkou Public School)



Structural speed hump at a crosswalk (Litoměřická – K Lípám)

In order to have a better idea about the volume of pedestrian mobility in the city, work was commenced in 2020 on the project “Pedestrian traffic volume in public space”.

Determining the number of pedestrians in selected areas will be conducted using several technologies – WiFi sensors, PIR sensors (an electromagnetic sensor that measures infrared light) and advanced video analysis to detect movement.

7 TRANSPORT TELEMATICS AND TRAFFIC MANAGEMENT

Systems in the individual areas of traffic management and transport telematics were expanded and innovated on in 2020 with an emphasis on connecting them to each other. The primary goal was to increase the permeability of the road network via these systems and thereby optimise traffic levels and increase the flow and safety thereof.

Transport telematics have had increasingly broad application in the road traffic management processes through traffic signals and superordinate switchboards, as well as in the provision of traffic and travel information, in parking, monitoring and warning systems, and last but not least in creating the conditions for improving the quality of public transport.

7.1 Construction and renewal of traffic signals (TS)

Two new traffic signals were built within the City of Prague in 2020. One is a provisional pedestrian crossing on Ječná and the other, in its final form, was installed on the street Na Zlíchově as part of overhauling the tram tracks. As part of the same project, the timed traffic light for access from the Lihovar tram stop was done away with. As part of restoration of the Strakonická – Nádražní intersection, the standalone pedestrian cross that was controlled by a single sequencer along with the intersection was removed. The number of sequencers thus increased by one to 668, with the number of signal-controlled sites on the road network also increasing by one to a total of 706.

The number of traffic signals on the tram network has not changed. The number of lights with tram priority increased by five to 211. Bus priority was implemented at seven sites. Detailed information on priority for public transport is provided in Chapter 7.

Basic data on traffic signals in Prague

Traffic signals (TS) total	Stand-alone pedestrian crossings	TS centrally controlled
668 (by number of controllers)	156	503
TS on tram network	TS with tram priority	TS with bus priority
247	219	251
Number of new, removed and refurbished traffic signals in 2020		
2 new, 1 removed		37 refurbished



Traffic signal 2.034 Resslova – Karlovo náměstí



Traffic signal 4.454 Modřanská – Barrandovský most ramps

A total of 37 signal-controlled intersections and crossings were renovated in 2020. These works particularly improved the conditions for pedestrians, for example during restoration of the signals at the Resslova – Karlovo náměstí intersection, where barrier-free street-level crossings were added.

Intersections around Anděl and Na Knížecí had their equipment renewed. During restoration of traffic signal 4.454 Modřanská – Barrandovský most ramps, the capacity of the whole intersection was increased through structural modifications.

Development of basic data on traffic signals in Prague												
	1961	1971	1981	1990	2000	2010	2015	2016	2017	2018	2019	2020
Traffic signals total	33	76	339	348	398	578	646	658	660	665	667	668
Stand-alone crossings	-	9	37	45	57	108	146	152	154	153	154	156
TS centrally controlled	-	-	-	20	116	270	440	456	466	478	484	503
TS with tram priority	-	-	-	1	59	145	189	195	197	206	211	219
TS with bus priority	-	-	-	-	-	121	206	223	231	238	245	251

7.2 Control centres

Control centres are systematic nodes for managing traffic using traffic signals. The structure of such management in Prague is divided up into several levels. At the lowest level are the individual traffic signals with sequencers, which are gradually being connected to the Area Traffic Control Centres (ATCC).

Control of traffic signals and management of whole areas is centralised through the automated ATCCs into the main Urban Traffic Control Centre (UTCC), which is located at the public transport Central Dispatching building on the street Na bojišti in Prague 2. From the UTCC, dispatchers can currently control roughly two thirds of all the traffic signals in Prague. The system of control centres is run by TSK.

As of 31 December 2020, ten Area Traffic Control Centres had been installed in Prague and 503 signals were connected to this central level.

7.3 Traffic Information Centre Prague

The Traffic Information Centre (TIC) has been in operation since 1 July 2005 and is the longest serving centre of its type in the Czech Republic. Since 2016 it has been providing continuous operation under the City of Prague Technical Administration of Roads (TSK). In 2017 the TIC was joined by the City Camera System (CCS).

TIC dispatchers make sure information is entered into the content management system, collaborating actively with the Prague Outer Ring Road Control Centre (PORR CC) in Rudná, the National Traffic Information Centre in Ostrava (NDIC), Czech Radio and Czech Television. They also run the system of devices for traffic information (DTI), keep track of the differences between automatically generated traffic volumes and the actual situation, and last but not least monitor alternative sources of traffic information.

As part of the Single Traffic Information System (STIS), information is passed on to Mapy.cz, Waze, etc. Output is also provided for the TSK website (www.tsk-praha.cz) and the TIC website (dic.tsk-praha.cz or www.dopravapraha.cz).



The UTCC hall and TIC Prague

TSK also provides information for broadcast by the RDS – TMC (Radio Data System – Traffic Message Channel) on the frequency of Czech Radio's Regina DAB Praha station. This system displays the current traffic information in navigation systems and makes driving around the city easier.

7.4 Other transport telematics systems

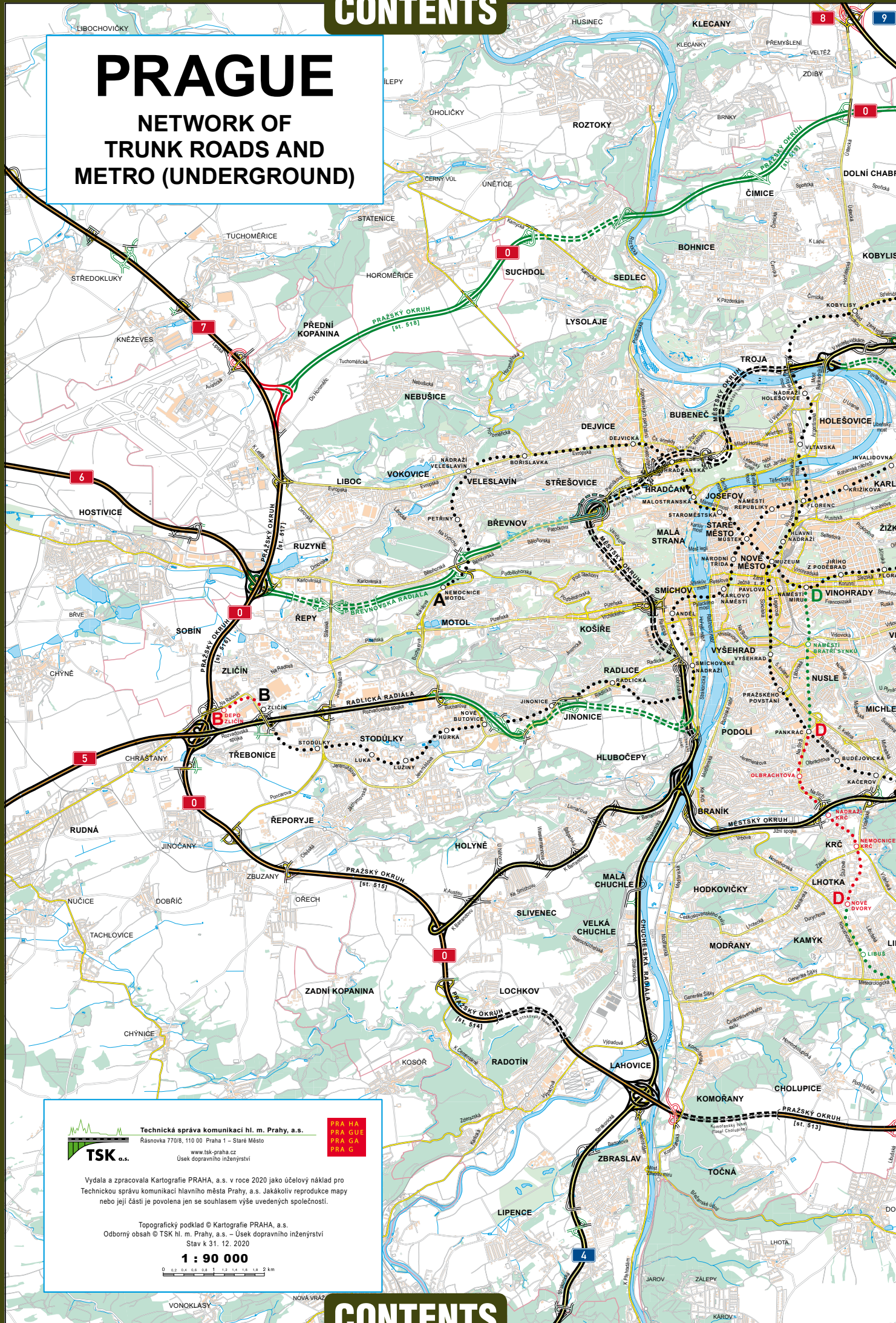
The other transport telematics systems in the City of Prague include all the systems that help monitor the traffic situation on Prague's roads.

CAMERA MONITORING SYSTEMS

The centre of the TVD-TSK camera monitoring system is the Urban Traffic Control Centre and the main users are the dispatchers at UTCC and TIC Prague. Overall 843 cameras are available in the television monitoring system, both from TSK's surveillance systems and from monitoring in the Blanka Tunnel Complex.

PRAGUE

NETWORK OF TRUNK ROADS AND METRO (UNDERGROUND)



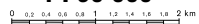
Technická správa komunikací hl. m. Prahy, a.s.
Rásovkova 770/6, 110 00 Praha 1 – Staré Město
www.tsk-praha.cz
Úsek dopravního inženýrství



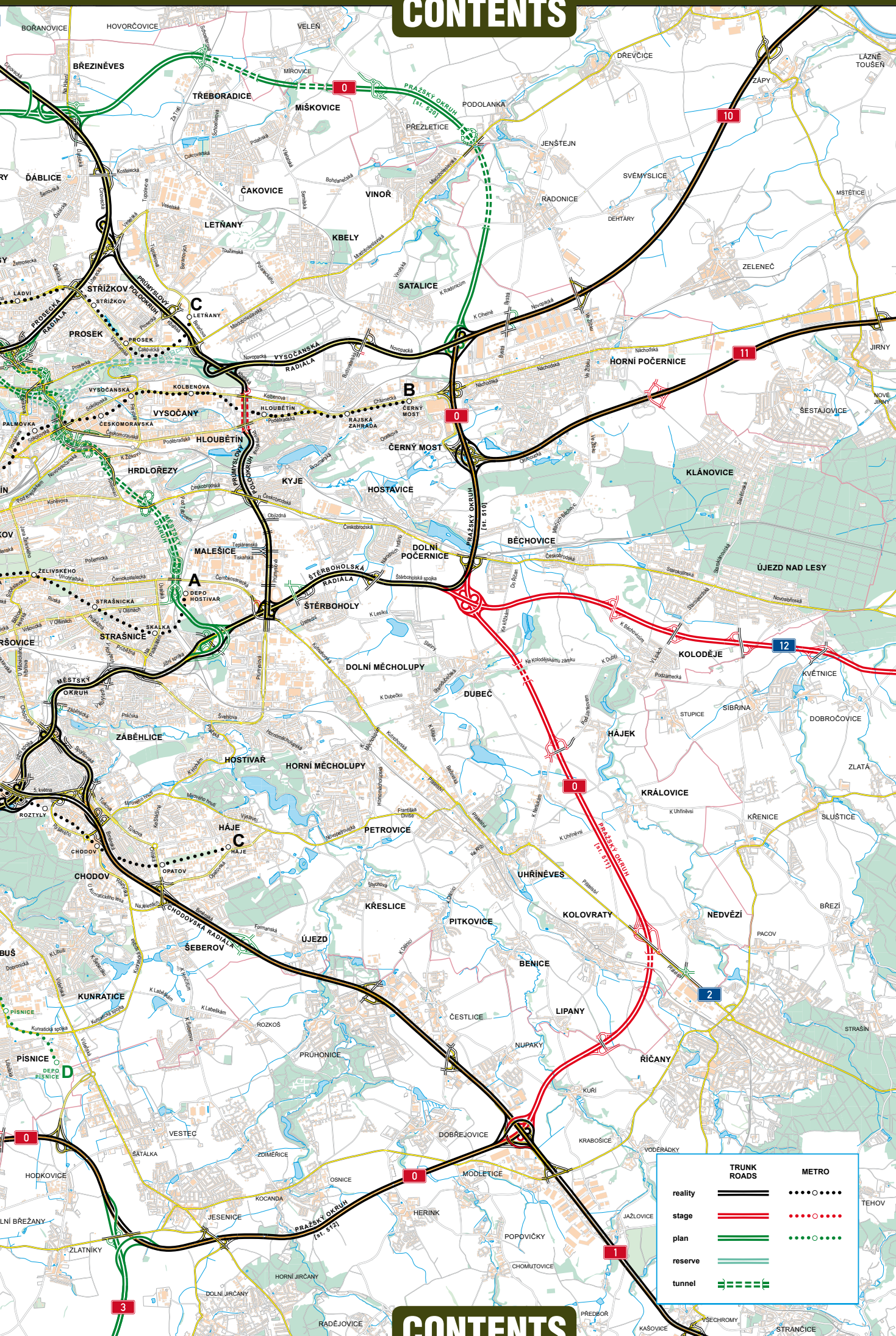
Vydala a zpracovala Kartografie PRAHA, a.s. v roce 2020 jako účelový náklad pro Technickou správu komunikací hlavního města Prahy, a.s. Jakákoliv reprodukce mapy nebo její části je povolena jen se souhlasem výše uvedených společností.

Topografický podklad © Kartografie PRAHA, a.s.
Odborný obsah © TSK hl. m. Prahy, a.s. – Úsek dopravního inženýrství
Stav k 31. 12. 2020

1 : 90 000



CONTENTS



	TRUNK ROADS	METRO
reality		
stage		
plan		
reserve		
tunnel		

CONTENTS

Camera television monitoring systems in the City of Prague (TVD)

System	Cameras	System description
TVD-TSK	448	Monitoring of traffic situation – run by TSK
TVD-TKB	395	Monitoring of traffic and equipment in Blanka Tunnel Complex
MKS	1 100	Monitoring of (traffic) safety system – run by City Hall Departments
DPP	1 200	Monitoring of situation in metro – run by Prague Public Transport Company

We distinguish between several types of camera, chiefly based on their primary purpose. In tunnels there are fixed cameras with a video detection safety function. Using a software definition of potential events that can take place in their field of vision, these cameras can detect a stopped vehicle, a slow-moving vehicle, emerging congestion, an object on the roadway that is blocking traffic, or other potentially dangerous situations such as a pedestrian in traffic, vehicle going the wrong way or reduced visibility in the tunnel. Not only do these cameras provide an image for online monitoring by UTCC and TIC dispatchers, but also events that trigger predefined automatic reactions in the control system of the tunnel in question.



Camera on Sokolská street



UTCC

The second type of camera are rotating cameras that allow operators to rotate or zoom the camera, thereby acquiring an overview of the transport situation from farther parts of the road being observed. Newer types of such rotating cameras installed in the most recent projects under the Operational Programme Transport OPD can also detect basic characteristics of traffic. Stills from traffic cameras are also available on TSK's website <http://unicam.tsk-praha.cz/Discoverer/KTDS> or at <http://www.tsk-praha.cz/wps/portal/root/aktualni-doprava/dopravni-kamery>.

System of traffic information collection

Another type of transport telematic device is strategic traffic detectors. We differentiate between strategic loop detectors (induction loops), which are part of the relevant traffic signal, and strategic spot detectors (SDDR) and section detectors (SDDÚ), which are a significant source of traffic data in the City of Prague.

Spot (SDDR) and section (SDDÚ) strategic traffic detectors

Detectors	Number	Description
SDDÚ	22	Two portals with cameras designed for collection of data on a section.
SDDR	108	Video detectors placed on lamp posts designed for collection of data at a spot.

Devices for high-speed weighing of freight vehicles (WIM)

The system of weighing vehicles while moving (WIM – Weight in Motion) is in place at eight locations in Prague that are heavily trafficked by freight vehicles. The principle of the system is based on measurement of the dynamic effect of individual wheels on the carriageway (pressure sensors). When the vehicle passes, the speed and acceleration or deceleration of the vehicle is also measured. The system furthermore categorises vehicles into classes and, in connection with other WIM locations (reading licence plates), makes it possible to evaluate where vehicles are travelling.

Travel times

In order to inform about current travel times between selected locations, a network of routes with sensors monitoring travel times has been built in the City of Prague. The system collects and encrypts the MAC addresses of passing wireless devices. When these pass through multiple cross-sections on the route, the system obtains the actual time it took. It then provides the statistically analysed data to the public using selected DTIs (28 DTI locations) and the website <http://unicam.tsk-praha.cz/Discoverer/TravelTime3>. In 2020 travel times were measured in this manner at 40 sections, with 1 of those also evaluating travel times for the category of freight vehicles.

Parking sensors

A smart parking project – Parking Detection, was started in Hradební and Řásnovka street. It is a smart parking system based on the real-time detection of occupancy rates of parking places, primarily by the use of cameras and artificial intelligence.

The key benefits of this system are the optimisation of limited parking areas, providing information to drivers of vehicles about current occupancy rate of the parking area, improved safety of the area thanks to modern surveillance technologies, utilizing the system for long-term gathering of traffic data for development planning, integration of solution to higher units – e.g. linking to the police etc.

Using magnetometric detectors, the occupancy of 57 parking spots reserved for those with physical disabilities (holders of the ZTP or ZTP/P cards) in the central part of Prague is determined. The read online data are sent to a central server, which then provides them in the tied-in “ZTP Parking” app, available for both Android and iOS. As part of this project, inventory was taken of reserved parking spots in Prague 1, 2, 3 and 8.

Weather detectors

The network of weather detectors include road weather detectors (RWD, 28), automatic emission monitors (AEM, 12) and informative emission monitoring stations (IEMS, 18).

Traffic offence telematics systems

The basis for all traffic offence systems is a close-up camera that can read registration plates. The data acquired in this manner are passed on in a protected manner to the competent department of the municipal or state police. All devices also serve to collect traffic information.

Section speed measurement (MÚR)

Devices for measuring the speed on a road section (MÚR) consist of a pair of cross-sections with cameras that take a picture of vehicles. By identifying the vehicle from its registration plate, geodetically measuring the length of the segment and using time data, the average vehicle speed in the measured section is calculated, reduced by the margin of tolerance, and compared to the speed limit. The system is highly effective in terms of forcing the speed limit to be followed. Since this system was installed in 2006, the number of offences in the given locations fell from a range of 30 to 60 % to a range of around 1 to 5 % of recorded vehicles.

In 2019 the location V Holešovičkách – heading into the centre was put into operation, thus in total speed is now being measured in this way at 60 stretches in Prague. Of this number, ten locations are located in tunnels on the City Ring Road, where they contribute significantly to the flow and thus also safety of traffic.

Spot speed measurement (MOR)

In certain cases the measurement of section speed is also tied in to a location for spot speed measurement (MOR) using cameras at a single cross-section. Spot speed is measured by evaluating signals from a pair of induction loops. A close-up camera with registration plate reading then takes care of registering the offence. The MOR system was first realised in Prague in 2010 near the Ořechovka tram stop heading into the centre. As of 31 December 2020, spot speed measurement was being conducted at 38 locations.

Intersections with a system for documenting the running of red lights

As part of the applications for registering traffic offences, systems have been installed in Prague for detecting and documenting the running of red lights. As of 31 December 2020, this offence was being recorded at a total of 19 locations.

Since 2012, a device has been installed on Čs. armády by the street Národní obrany that records the offences of drivers who do not yield to pedestrians at the uncontrolled crossing.

PROVISION OF TRAFFIC INFORMATION

Devices for traffic information (DTI)

Serving to directly and indirectly manage and influence traffic in Prague are devices for traffic information – DTIs. The project phase for building and modernising DTIs in Prague was completed in 2013.

Since that year, a total of 58 DTIs have been at the disposal of TIC operators and also motorists.

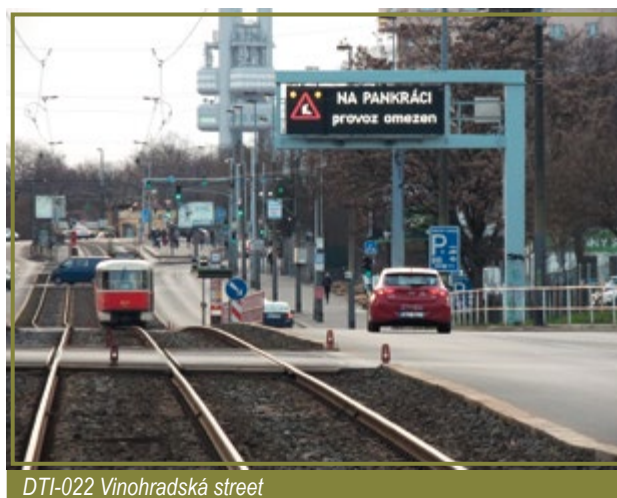
In 2015, the DTIs installed as part of building the Blanka Tunnel Complex were also incorporated into the system, which now numbers a total of 72 information boards meant for traffic information of citywide significance (a further 26 two-line DTIs are installed in Blanka to inform on the current situation in the tunnel).

Through the system that collects current traffic information from the various subsystems, operators of the Traffic Information Centre (TIC) can use text messages on DTIs to inform drivers of various emergencies, closures and restrictions or on the current traffic situation immediately in front of the driver.

In terms of choosing which messages to display, there is a system of priorities and orders that takes into account the significance of an emergency and its location relative to the DTI in question.



Detektor Evropská street



DTI-022 Vinohradská street

Cooperative systems – RSU locations

In 2015, RSUs were installed on radial roads as part of the Operational Programme Transport (OPD). The goal was to build up an infrastructure of connection points where vehicles equipped with compatible OBUs can pass along data on their trip and acquire traffic information from the whole route. This was a pilot project.

Telematic systems for increasing traffic safety

This subsection mentions telematics systems intended to address the issue of improving traffic safety in concrete locations with concrete measures. These systems tend to be solely local in scope.

The most numerous of such systems is informative speed measurement. An LED panel shows the road users their speed as measured by radar, which leads to an increase in compliance with the speed limit.

In 2018, a height checking system was installed on the street Dukelských hrdinů, the purpose of which is to prevent the overhead lines from being torn down in the low underpass leading to Výstaviště. The system warns drivers through flashing lights that the height limit has been exceeded.

Telematics systems do not only serve vehicles and their drivers, but also pedestrians. At ten locations in Prague, highlighting of pedestrian crossings has been installed. LED markers have been installed in the street along the axis of the crossing. These start flashing when a pedestrian enters the waiting space at the edge of the crossing, thus signalling the presence of a pedestrian to the approaching vehicles.

8 PRIORITY FOR PUBLIC TRANSPORT VEHICLES

Implementation of priority for public transport vehicles has been ongoing in Prague since the beginning of the 1990s on the basis of the adopted “City of Prague Transport Policy Principles”. This process helps maintain a positive ratio of persons transported by mass transit in relation to individual transport. It also helps keep public transport flowing more smoothly and to uphold transport quality standards.

8.1 Priority for public transport vehicles at traffic signals

New and refurbished traffic signals are now by default equipped with technology that allows the right-of-way to be given to public transport vehicles. These vehicles can thus be the preferred option and have extended green lights adjusted in real time according to their needs so that they can pass through controlled intersections without stopping where possible, or with only a minimum of delay.

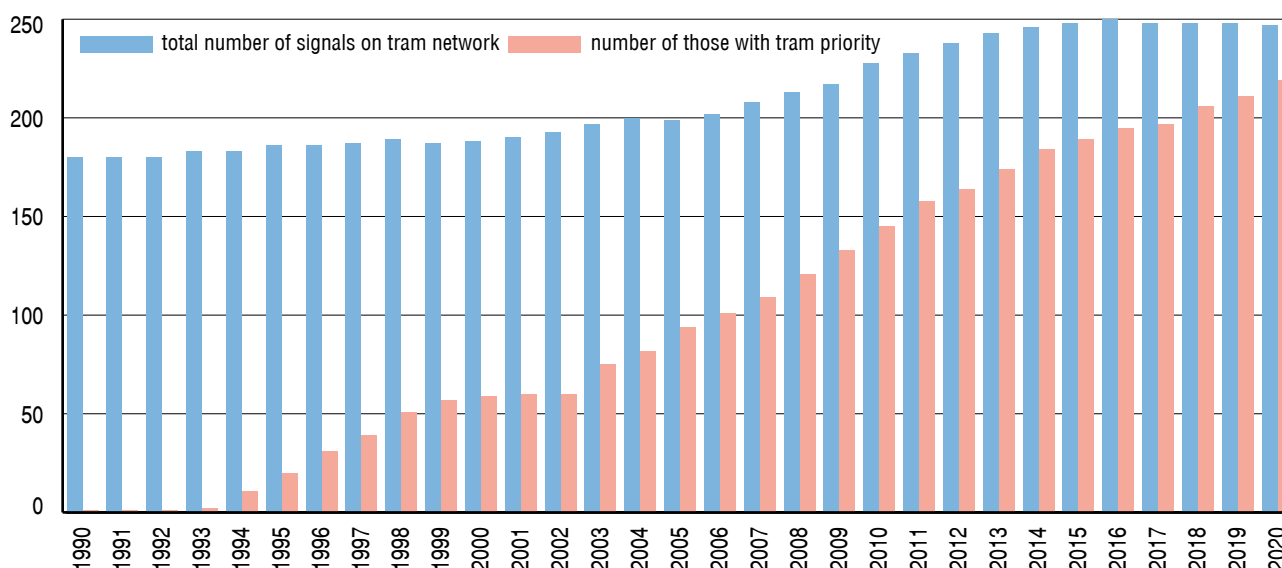
The first signal with public transport priority on the tram network appeared in 1993. At the end of 2020, 219 of 247 signals through which trams pass were equipped with some form of tram preference (89 %).

Traffic signals (TS) with tram priority – basic data

Total on tram network	With tram priority	With absolute* tram priority	With conditional* tram priority
247 TS (100,0%)	219 TS (89%)	67 TS (27%)	152 TS (62%)
year 2020: -1 TS	year 2020: +8 TS	year 2020: -1 TS	year 2020: +9 TS

* *Absolut priority means that all trams will pass through the intersection without stopping (except when multiple trams arrive at once); conditional means that the delay and stopping of trams will at least be severely reduced compared to TS without priority.*

Traffic signals on tram network



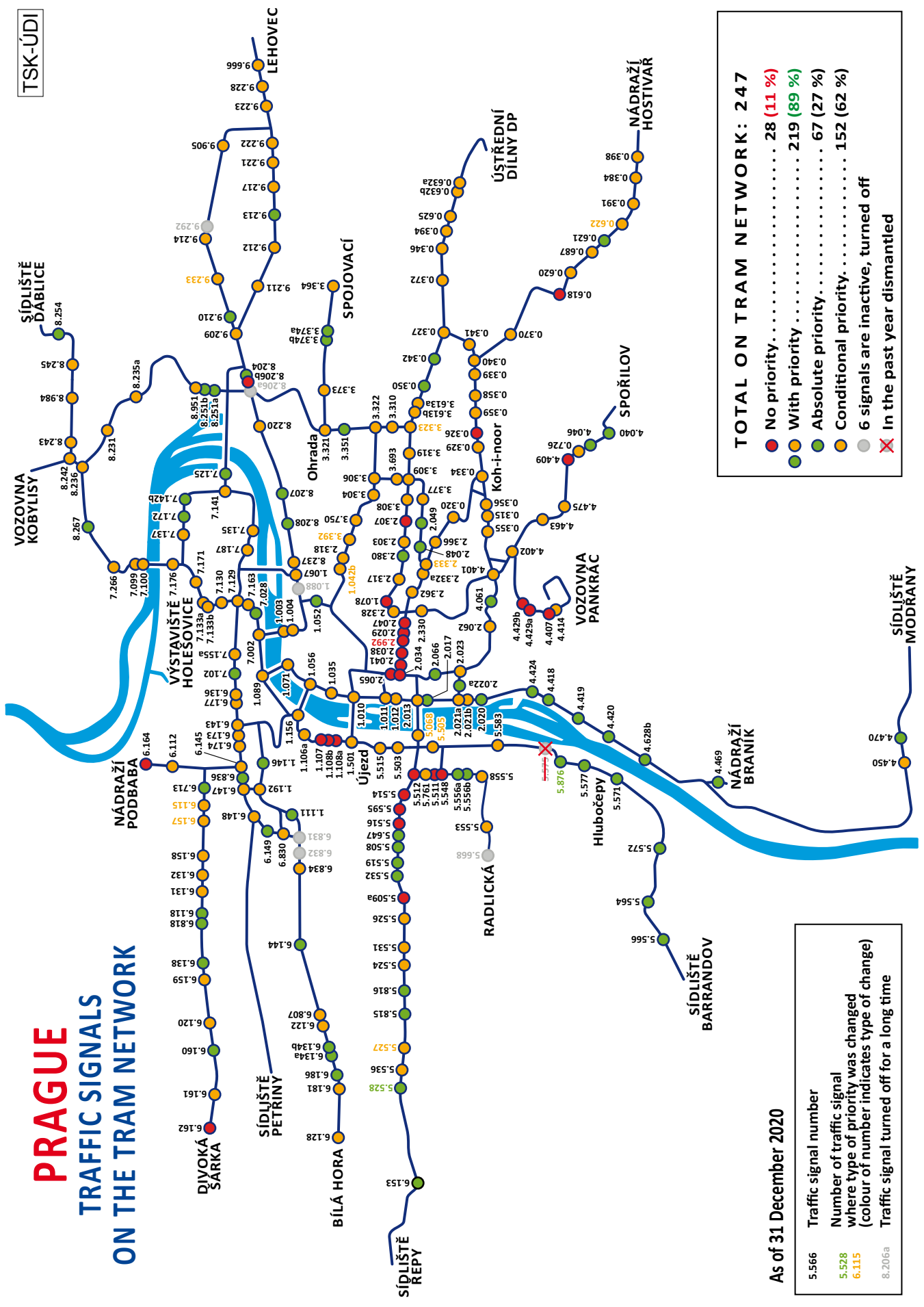
Priority was introduced at another nine already existing traffic signals and the total number of signals with priority thus increased to 219. Absolute priority has now replaced conditional priority at the intersection Plzeňská – Kukulova ramp. In contrast, two traffic signals were modified to only apply conditional preference instead of the original absolute preference.

Bus priority in the form of active detection was put in place at the first pair of intersections in Prague in 2003. At the end of 2019 the total number of traffic signals with active or passive detection had reached 251.

Eight traffic signals were added in 2020 where buses can be given priority using active detection.

The overall number of traffic signals with detection for bus priority thus reached 251.

TSK-ÚDI



PRAGUE TRAFFIC SIGNALS ON THE TRAM NETWORK

TOTAL ON TRAM NETWORK: 247

- No priority 28 (11 %)
- With priority 219 (89 %)
- Absolute priority 67 (27 %)
- Conditional priority 152 (62 %)
- 6 signals are inactive, turned off
- ✗ In the past year dismantled

As of 31 December 2020

5.566	Traffic signal number
5.528	Number of traffic signal
6.115	Where type of priority was changed (colour of number indicates type of change)
8.206a	Traffic signal turned off for a long time

Bus priority at traffic signals – basic data		
With detection for bus priority	With active* bus detection	With passive* bus detection
251 TS (100.0%)	242 TS (96%)	9 TS (4%)
year 2020: +6 TS	year 2020: +7 TS	year 2020: -1 TS

* *Passive detection means a bus's claim is recorded through a standard automobile detector (induction loop or video loop), primarily in a dedicated lane. Active detection means a bus logs in and out through radio signal broadcast at defined points from the vehicle to the traffic signal controller. Infrared beacons or GPS are used to locate vehicles approaching the signals.*

Traffic signals equipped with detection for bus priority on bus network																	
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
TS with bus detection	8	20	54	81	104	121	144	167	180	200	206	223	231	238	245	251	

8.2 Other measures for public transport vehicle priority

An important indicator of the quality of public transport in a city is the degree to which public mass transport is separated from individual transport. For trams, reduction of the number of areas with mixed traffic and an increase in public transport vehicle priority is achieved by constructing tracks on own track bed, potentially also separated from other traffic by concrete dividers (in Prague 52% of the 142.7 km of tram track is on its own track bed).

Greater fluidity is achieved in bus transport by separate dedicated lanes or buses driving in the tram lane. Priority measures were less needed in 2020 due to lower traffic volumes, nevertheless measures were enacted on the bus network that will help during the expected resurgence of mobility.

Tram priority – raised thresholds along tram tracks

The installation of this element to prevent the frequent cases of cars entering the tram lane proved successful and, starting in 1997, concrete separating thresholds began to pop up in other spots as well.

At the end of 2020, raised concrete dividers along tram tracks had reached a total length of approximately 13 470 metres. Last year around 300 metres of such dividers were added. All the changes in the length of dividers took place during refurbishing of the street Sokolovská.

Bus priority – dedicated lanes

At the end of 2020, the length of dedicated bus lanes had reached approximately 56 000 metres (approx. +7 000 m), with 40 300 metres of that on roads (+5 700 m) and 15 800 on tram track bed (+1 400 m).

The longest dedicated lane installed last year (reaching almost 900 m) was on Kamýcká heading into the centre. As part of changes to traffic markings on the street 5. května, a new dedicated lane was implemented between the connection from Türkova and the Jižní spojka. Smoother passage of buses is also facilitated by the newly dedicated lanes on the streets Bělohorská from Patočkova to Tomanova, Bohdalecká heading towards U Plynárny, Freyova heading towards the Harfa intersection, Modřanská heading into the centre before Branický most, Novovysočanská heading out of the centre up to the Odlehlá stop, Na Jelenách from Chilská to the Kunratická spojka and Plzeňská between the stops Krematorium Motol and Hlušičkova.

Traffic markings underwent a considerable transformation, including dedicated lanes, on Opatovská.

Buses are now also driving along the tram tracks in segments on Radlická (the 153 line) and at Malostranské náměstí (the 194 line).

In 2020, the first electronic check on compliance with traffic markings was introduced in a dedicated bus lane, on Evropská heading into the centre. The stretch is monitored by a camera system that detects registration plates and automatically evaluates whether the vehicle is authorised.



New dedicated strip for buses in Modřanská Street

9 ROAD TRAFFIC SAFETY

9.1 Traffic accidents

In 2020 there were 16 925 accidents recorded in Prague (-21 % compared to 2019), with 22 casualties (+10 %) and 1 735 persons injured (-16 %). There were 426 accidents involving pedestrians (-23 %) with 7 persons killed (0 %) and 380 injured (-27 %). Pedestrians themselves were responsible for 172 accidents (-37 %), with 1 casualties (-67 %) and 145 persons injured (-40 %).

The decisive majority of accidents were caused by drivers (16 363 of 16 925 accidents, or 97 %). The main causes of accidents caused by drivers were failure to keep proper distance, which is caused primarily by the nature of urban driving, lack of due care and attention and failure to yield when changing lanes. The number of accidents where alcohol was detected in the culprit was 405 (-6 %).

Number, impact on health and main causes of traffic accidents in Prague				
	2018	2019	2020	Dif 20/19 (%)
Number of accidents	22 767	21 458	16 925	-21
Number of fatal injuries	31	20	22	+10
Number of serious injuries	182	114	131	+15
Number of minor injuries	2 165	1 958	1 604	-18
Number of accidents with injury	1 955	1 760	1 497	-15
Number of accidents without injury	20 812	19 698	15 428	-22
Number caused by the driver	22 068	20 753	16 363	-21
due to failure to keep proper distance	4 097	3 652	2 711	-26
lack of due care and attention	2 168	1 944	1 374	-29
red-light violation	323	297	214	-28
failure to yield in violation of a traffic sign	1 042	1 017	856	-16
failure to yield when making left turn	734	725	571	-21
failure to yield when passing from lane to lane	1 875	1 689	1 116	-34
failure to adapt speed to density of traffic	101	146	108	-26
failure to adapt speed to vehicle condition	119	123	118	-4
failure to adapt speed to road conditions (ice, potholes, wetness, mud)	384	392	353	-10
failure to adapt speed to road (turn, width, decline, incline)	173	158	146	-8
Caused by road defect	5	9	6	-33
Caused by pedestrian	303	271	172	-37
Caused by cyclist	139	148	145	-2

The basic accident rate trends in 2020 can be characterised by a marked decrease in the number of recorded accidents in comparison with the previous year, an increase in the number of fatalities and persons with serious injuries, and a decline in the number of minor injuries and accidents involving injuries. In general it can be said that in terms of the consequences of accidents, 2020 was highly unfortunate in light of the marked drop in overall accidents. Despite the fall in minor injuries, which with regard for the year-on-year comparison of number of accidents is a matter of course, there was a 30 % increase in the likelihood of an accident having serious or fatal injuries.

Assessing the long-term evolution of recorded accidents in Prague, it follows that from the 1960s through the 1980s, the trend was relatively positive. The number of accidents corresponded to the development of traffic volume, or even increased at a slower rate than traffic volume. In the 1990s the general tendency of development reversed to become quite negative, with traffic accidents starting to increase more rapidly than the volume of traffic. This led to an increase in the risk of accident expressed by the indicator of relative accident rate (the number of accidents per million vehicle kilometres travelled).

Only after 2001 did the number of recorded traffic accidents begin to fall again, despite the ongoing growth of automobile traffic. The relative accident rate has also decreased, by 66 % in 2020 compared to the year 2000. In 2020 the Prague-wide average was 2.5 recorded accidents per million vehicle kilometres travelled.

An interesting indicator is the division of relative accident rate by road type. This breakdown confirms that while the City Ring Road and Prague Outer Ring Road along with the radial roads transport the greatest proportion of traffic volume in Prague, they have a 3 times lower relative accident rate compared to the Prague-wide average.

The provisions of Act No 361/2000 Coll. on Road Traffic and its subsequent amendments have also had an influence on the marked drop in the number of recorded accidents since 2001, having several times changed to obligation to report an accident to the police. Traffic accidents without injury or damage to third party property have only needed to be reported where the material damage clearly exceeds the following amounts:

Until end of 2000	From January 2001	From July 2006	From January 2009
CZK 1 000	CZK 20 000	CZK 50 000	CZK 100 000

The overall number of traffic accident injuries has fallen from 3 861 in 2000 to 1 757 in 2020, i.e. by 54 %, while in the same period automobile traffic in Prague has risen 29 %.

Also still positive is a comparison of the long-term trend in the number of injuries to the volume of automobile traffic. Over the past 30 years, automobile traffic in the city has risen to triple 1990 levels (by 195 %), while the number of injuries in traffic accidents has fallen 46 % (from 3 269 injuries in 1990 to 1 757 in 2020), covering all kinds of injury – fatal, serious and minor.

Development of number of traffic accidents, injuries and relative accident rate in Prague

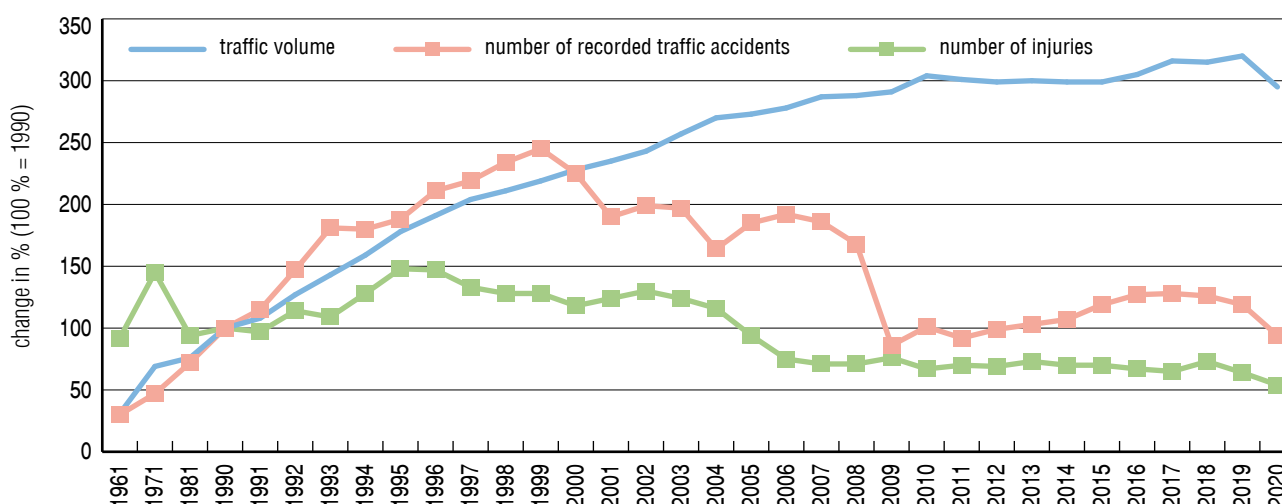
Year	Total accidents		Fatal injuries		Serious injuries		Minor injuries		Relative accident rate	Traffic volume (%)
	number	%	number	%	number	%	number	%		
1961	5 495	30	63	69	580	157	2 361	84	7.3	31
1971	8 496	47	123	135	567	154	4 046	144	5.1	69
1981	13 064	72	81	89	401	109	2 572	92	7.1	76
1990	18 024	100	94	100	369	100	2 806	100	7.5	100
2000	40 560	225	80	85	521	141	3 260	116	7.4	228
2010	18 190	101	29	31	279	76	1 893	67	2.5	304
2011	16 572	92	39	41	279	76	1 955	70	2.3	301
2012	17 795	99	26	28	236	64	2 009	72	2.5	299
2013	18 593	103	29	31	228	62	2 116	75	2.6	300
2014	19 306	107	20	21	206	56	2 070	74	2.7	299
2015	21 462	119	25	27	179	49	2 078	74	3.1	299
2016	22 876	129	21	22	194	53	1 983	71	3.3	305
2017	23 032	128	17	18	156	42	1 951	70	3.2	316
2018	22 767	126	31	33	182	49	2 165	77	3.1	315
2019	21 458	119	20	21	114	31	1 958	70	3.0	320
2020	16 925	94	22	23	131	36	1 604	57	2.5	295

relative accident rate = number of accidents per million VKT (average values, whole road network in Prague)

traffic volume = vehicle kilometers travelled on whole road network in Prague

100 % = 1990 levels

Accidents, injuries and traffic volume in Prague 1961–2020 (whole road network, annual total)



9.2 Traffic education

Traffic education is a significant preventive element in terms of traffic safety for children, youth and even adult road users. In 2020 the course of traffic education and all preventive safety programmes was affected by the COVID-19 pandemic, just like many other fields. During the period from 11 March to 25 March 2020, primary schools were closed by government order and after schools were opened, the Ministry of Education, Youth and Sport prohibited instruction off school premises. These regulations prevented traffic education at child traffic playgrounds (CTPs) as well as holding of traffic competitions. Autumn traffic education took place from the start of September until 14 October, when CTPs were once again closed by government order.

In terms of education of children and youth, the main thing is support of child traffic playgrounds, where instruction takes place according to the Thematic Plan of the Ministry of Transport (for grades 4 and 5), as well as familiarisation with traffic education for other years of primary and also nursery schools. Over the past year, approximately 22 000 pupils underwent organised traffic education at Prague's traffic playgrounds, of those 7 976 completed traffic education under the Thematic Plan of the Czech Ministry of Transport. This instruction was only possible during the time that the Ministry of Education had not ordered remote learning for pupils.

In other years, a whole range of traffic education programmes take place with the goal of helping increase the effectiveness of traffic education at schools, but these could not be realised to the necessary extent due to the ordered safety measures related to COVID-19. During the period when the restrictions were eased, a „Traffic Education Day for Pedestrians and Cyclists“ was held on the premises of the Czech Police Museum, which takes place every year as part of the European Mobility Week. Several performances of black light theatre on traffic safety topics were also played for primary school children. 2020 was wrapped up with a skill ride for car drivers, which took place in cooperation with the Prague Autoclub.

Another element of traffic education is providing the driver training that every employer is required to ensure within the meaning of the Labour Code for employees that drive a work or personal motor vehicle of up to 3.5 t while carrying out their work. In 2020, 721 people underwent this training.

9.3 Measures to increase traffic safety

In 2020, a total of CZK 95.4 million was spent under the BESIP (road traffic safety) budget on implementing measures to increase safety on the City of Prague road network. This included funds earmarked for minor structural modifications, modifications to traffic markings, installation of traffic devices and preventive programmes. Significant modifications were made independent of investment drives and road maintenance.

An amount of CZK 93.4 million was drawn from the City of Prague budget for capital expenditures (construction of structural speed humps, extra lighting at pedestrian crossings and other primarily structural measures). Other non-structural safety measures, in particular by schools and pedestrian crossings (modifications to pedestrian crossings including carriageway surface roughening, assembled traffic humps, adjusting signage, crash barriers, posts and railings, information on current speed), were realised under current expenditures at a cost of CZK 2.0 million.

Some of the funding for 2020 was used to cover costs associated with producing and discussing project documentation.



Dividing island at Vídeňská street



Dividing island at Wassermannova street

10 PARKING

10.1 Parking areas with paid parking zones

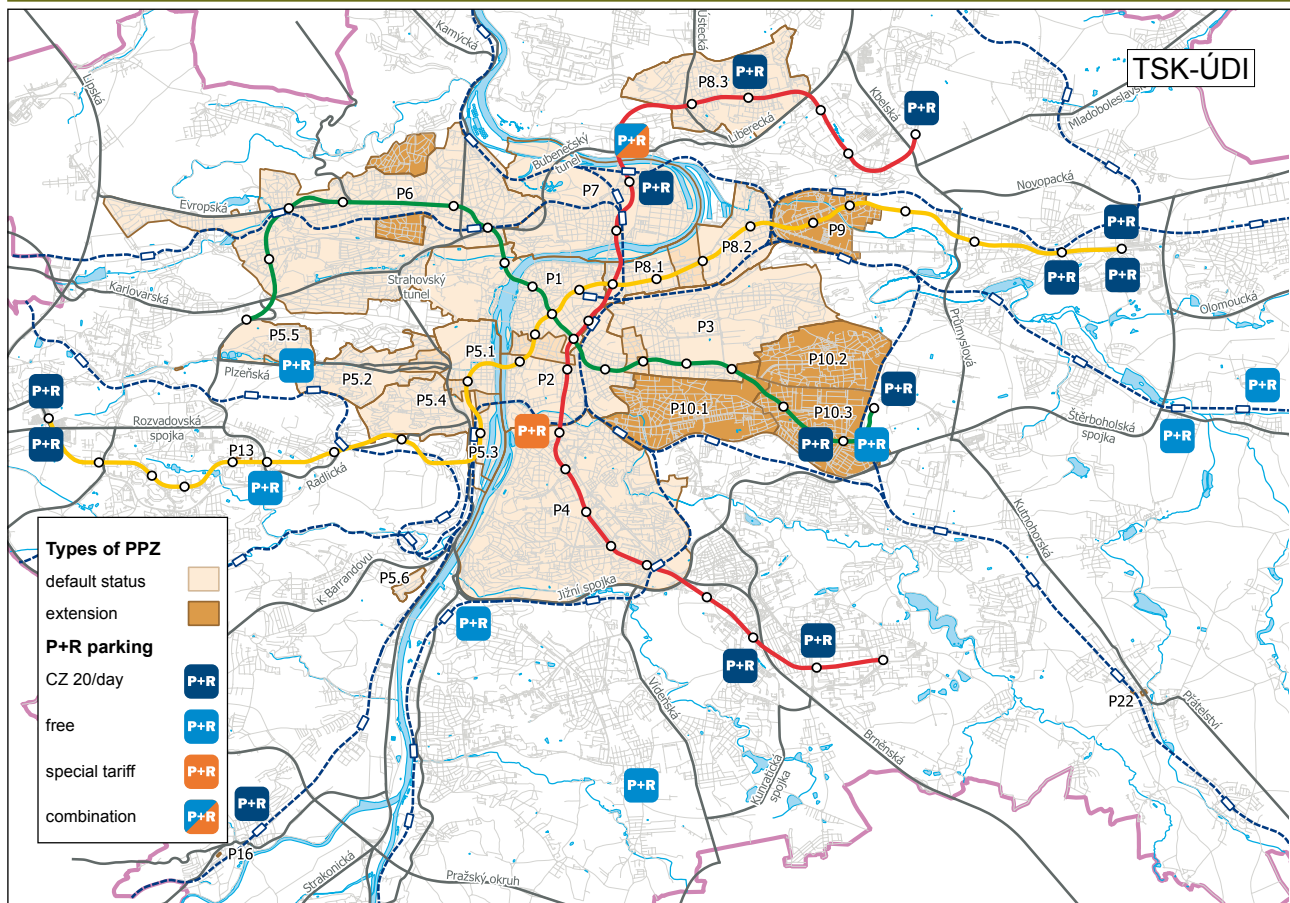
Paid Parking Zones (PPZs) were just one of the ways the year 2020 was highly atypical. Due to the epidemic of the SARS-CoV-2 virus, PPZs were made free-of-charge by order of Prague City Hall starting 16 March 2020. This measure lasted until 10 May 2020 and brought about many changes in the functioning of the competent authorities that issue parking permits as well as in the resulting PPZ data. Changes to the software used by citizens to obtain and manage parking permits also took place.

The following table provides an overview of the basic types of parking zones used in Prague.

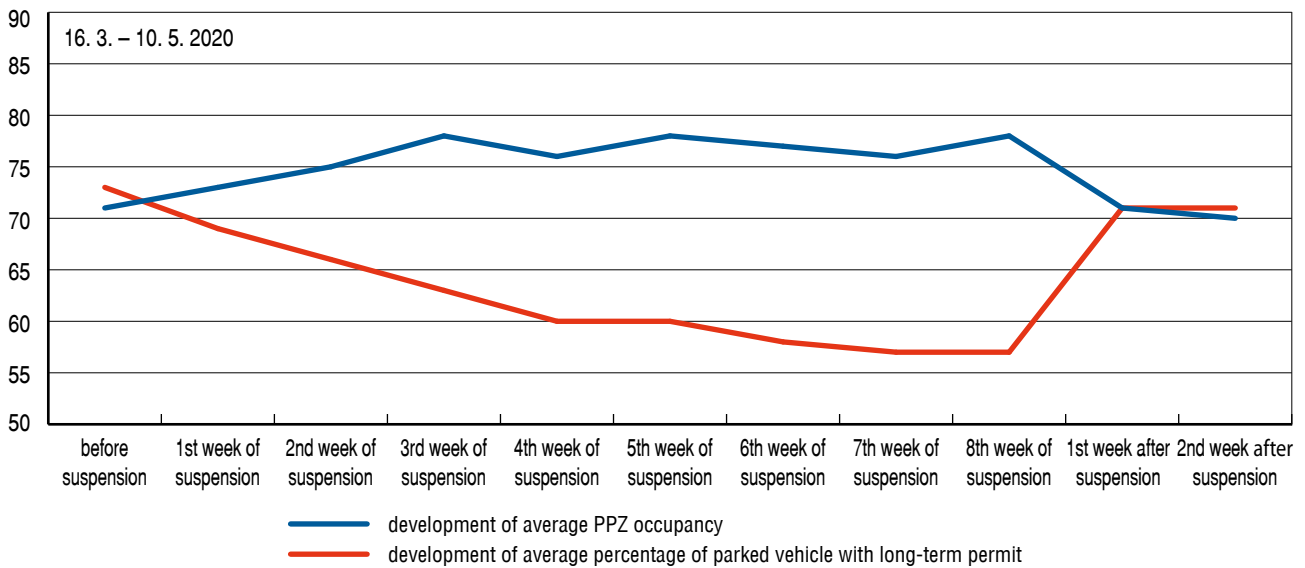
Types of PPZ in the centre of Prague			
	Blue zone (residents)	Purple zone (mixed)	Orange zone (visitors)
Type of parking	Preferentially resident and subscriber parking	Combination of resident and paid parking	Paid parking
Time of parking	Long-term parking for holders of parking permits; for visitors short-term paid parking (3 hrs)	Long-term parking for holders of parking permits; for visitors short-term paid parking (24 hrs)	Short-term paid parking (2 hrs)
Users	Residents with permanent residence and businesses with place of business in PPZ; visitors after paying via virtual parking meter	Residents, business owners and visitors; combination of users to have more balanced use of parking capacity	Visitors to the given area
Operation*	Mon-Fri 8:00-20:00	Mon-Fri 8:00-20:00	Mon-Fri 8:00-20:00

* This is the basic time of operation. Individual municipal districts may adjust this time.

Map of paid parking zones and P+R lots in Prague



Development of PPZ occupancy and percentage of vehicles with long-term permit during the PPZ suspension [%]



It follows from the above graph that the suspension of PPZs resulted in an influx of vehicles that otherwise do not regularly drive to the area.



New PPZ in Prague 10 (Vladivostocká street)



Infobox on Střelničná

Number of spots and parking machines in areas with PPZs (as of December 2020)

	P-1	P-2	P-3	P-4	P-5	P-6	P-7	P-8	P-9	P-10	P-13	P-16	P-22	TOTAL
Blue zone (resident)	6 112	7 896	11 196	12 972	7 161	18 299	6 595	9 621	0	13 213	0	0	0	93 065
Purple zone (mixed)	1 866	3 467	3 289	8 761	4 930	8 393	2 140	4 828	3 655	5 808	0	0	0	47 137
Orange zone (visitors)	0	0	0	192	87	5	550	94	0	60	56	18	120	1 182
Other	598	629	592	835	583	1 083	426	576	153	654	5	2	6	6 142
TOTAL	8 576	11 992	15 077	22 760	12 761	27 780	9 711	15 119	3 808	19 735	61	20	126	147 526
Number of parking machines	87	113	115	185	119	205	94	101	66	91	2	1	3	1 182

A new aspect of the PPZ system was the installation of payment information stands, termed infoboxes, the aim of which is to partially replace less used parking meters in selected areas. The infoboxes feature information on how to pay for marking, the procedure for paying online, a map with the closest parking meters and other essential information for people parking.

10.2 Park and Ride facilities (P+R)

P+R lots for parking of passenger vehicles have been in operation in the City of Prague since 1997. At the end of 2020 it was possible to park a car and continue on by public transport at 21 P+R lots with a total capacity of 3 710 (3 475 spots for the basic function of the P+R system, 150 spots for the disabled and 85 long-term contract spots for use by residents). For P+R lots with technology that allows monitoring of the number of vehicles parked, a total of 590 203 vehicle entries were registered over the whole year.

Further expansion of the P+R system is supported by the Sustainable Mobility Plan for Prague and Surroundings. It is anticipated that by 2030 there will be around 12 000 spots within Prague (primarily by metro stations) and nearly 8 000 in the Central Bohemia Region (primarily by railway stations and stops).

If we compare the P+R lots with year-round registration of parked cars in 2019 and 2020, compared to last year an average decline of 35.3 % in P+R lot use was recorded. It can be assumed that this drop is directly connected to COVID-19 and the adopted government measures, as there has never been such a large drop-off in demand in the history of P+R lots in Prague

Usage of the basic function of P+R lots

P+R lot	Number of spots	Cars parked		P+R lot	Number of spots	Cars parked	
		Oct 2020	Year			Oct 2020	Year
Běchovice	92	without evidence		Letňany	633	10 308	146 295
Běchovice-střed	60	without evidence		Nové Butovice	57	without evidence	
Braník	110	without evidence		Opatov	208	1 769	28 858
Černý Most 1 (do 06/20)	294	-	32 260	Písnice	95	without evidence	
Černý Most 2	131	2 749	34 576	Radotín	36	276	3 915
Depo Hostivař	169	3 134	41 374	Rajská zahrada	88	1 509	20 113
Holešovice	74	2 484	30 241	Skalka 1	63	1 408	12 333
Chodov	653	10 646	149 536	Skalka 2	74	without evidence	
KCP	260	1 055	15 496	Troja	269	without evidence	
Kotlářka	181	without evidence		Zličín 1	83	2 219	29 549
Ládví	78	1 903	23 485	Zličín 2	61	1 677	22 172

For usage of P+R, the strongest period was the first two months of the year, i.e. the last months before the restrictions on movement related to COVID-19. In March and May, use of P+R lots fell to 42 % of the values reached in the same months of 2019, while April recorded the utterly lowest usage of around 13 %. In October and December, P+R use was somewhat greater, but even so it was only around 54 %, and in November it once again saw even lower values of around 36 %. In the inter-period of eased restrictions (June to September), P+R use was at a level of 84 % of the comparable period in 2019.

10.3 Kiss and Ride points (K+R)

K+R "Kiss and Ride" points allow for short-term stopping of vehicles in order for passengers to exit or enter vehicles. Currently there are 37 lots of this type available by public transport stops and stations within the City of Prague with a total capacity of 138 spots. Other K+R spots near schools and public offices are not part of the above numbers (e.g. the newly established K+R lot on Vyskočilova).



K+R points in Prague

- Bořislavka (Evropská), Dejvická (Evropská), Dejvická (Evropská hotel), Hradčanská (Milady Horákové), Nádraží Veleslavín (Evropská), Náměstí Míru (náměstí Míru), Nemocnice Motol (Kukulova), Petřiny (Na Petřínách), Želivského (Vinohradská)*
- Černý Most (Chlumecká), Florenc (Sokolovská), Nové Butovice (Bucharova), Radlická (Radlická)
- Háje (Opatovská), Háje (U Modré školy), Chodov (Rožtylská), I. P. Pavlova (Legerova), Kačerov (Michelská), Kobylisy (Nad Šutkou), Ládví (Sítělničná), Letňany (Beladova), Opatov (Chilská), Prosek (Prosecká), Vltavská (nábř. Kpt. Jaroše)
- Hostivař (U Hostivařského nádraží), Radotín (Věštínská), Radotín (Vrážská)

* temporarily invalid

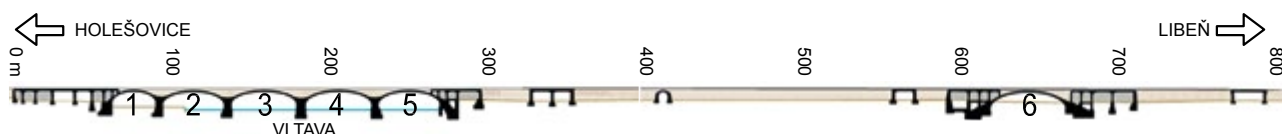
11 INFRASTRUCTURE AND MAINTENANCE

Transport infrastructure in Prague is primarily financed by the chapters of the City of Prague budget (see Chapter 13) and investment is organised above all by the Prague City Hall Investment Department (INV), Technical Administration of Roads (TSK) and the Prague Public Transport Company (DPP). State funds (the State Fund of Transportation Infrastructure – SFDI) go to finance railway track within Prague (via Správa železnic – SŽ), works on the Prague Outer Ring Road (through the Road and Motorway Directorate – RMD) and also help finance city roads that make up for the as yet unbuilt sections of these state-guaranteed structures.

Static load tests on Libeňský most* [TSK]

In the years 2016–2020, a number of diagnostic activities were conducted on the Libeň bridge complex with the goal of describing the condition of all its structures in the greatest detail, determining its static reliability and then recommending a suitable approach for repairs. This work culminated in 2020 with a series of static and dynamic tests on the main arches.

Along with its earthworks, the total length of the Libeň bridge complex is approx. 780 m (380 m comprise the bridge structures themselves). The main arch bridge over the Vltava V 009 (arches 1-5) have a length of 295 m and a width of 21 m. The second arch flood bridge X 656 (arch 6) has the same width and a length of approx. 147 m. The load-bearing arches are made up of three-hinged arches with joints at the base and crown. A reinforced concrete frame structure forms the bridgehead.

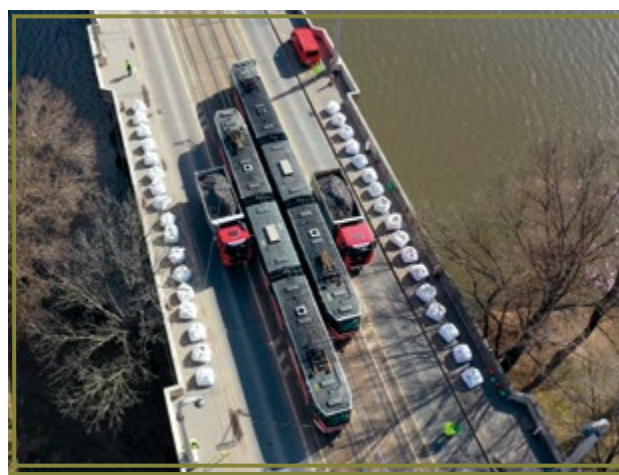


These demanding tests were carried out by the company INSET s.r.o. on the basis of documents drawn up in cooperation with the company Pragoprojekt a.s. and the Czech Technical University's Klokner Institute. The load consisted of two trams weighing 66 t and, based on the type of arch, up to 8 freight vehicles of 30 t or 42 t depending on the test programme. In all likelihood the structure had never experienced a load like the one applied in the static load tests during its whole service life. Even after application of this load, however, the deformations stabilised and the structures behaved flexibly. It was found that without additional reinforcements, the current condition of the arch structures allows for a normal load capacity by car traffic of $V_n = 20$ t with simultaneous unrestricted tram service in both directions (according to the norms $2 \times 2 \times 48$ t = 192 t, in reality more like 150 t).

For an urban bridge of this type, this load capacity can be considered quite satisfactory and adequate. Thus at the end of 2020, TSK announced and published a public tender for complete renovation of the whole Libeň bridge complex including, aside from new construction of a number of the bridge structures, preservation of the main arch bridge V 009 and the arch flood bridge X 656.

With a proper design and execution of the repairs (reconstruction) and subsequent regular maintenance, the overall durability of the original materials can be increased, as can the remaining service life of the arch bridges as a whole. This will thus preserve a unique testimony to the technical prowess and skill of our predecessors.

* summary of information taken with the permission of the authors from the material of the Klokner Institute.



Loads on arch 2 with maximum concentration on the 2 central lanes

Troja footbridge [TSK]

The Troja footbridge connects the bank of Císařský ostrov with the bank of the Troja municipal district near the Troja chateau and the zoological garden. The new footbridge with a width of 4 metres is designed for pedestrians, cyclists and, if need be, for integrated rescue system vehicles of up to 3.5 tonnes.

The length of the footbridge is 256 metres and is located above the level of a 20-year flood. In case of flood conditions, it is possible to lower the railings on the lower outer segments. The main load-bearing structure of the bridge consists of a steel backbone made of a circular tube with a diameter of 914 mm. The walking and riding surface of the bridge is made of tropical AZOBE wood, including the railings with integrated LED lighting. The foundation of the pillars is designed to be deep on drilled piles with a diameter of 900 mm. The service life of the bridge has been designed to be 100 years.

The bridge will be monitored online for its whole service life by special sensors and its technical condition will be supervised non-stop. There are devices installed that read the tilt in the areas above the supports, which allows the twisting of the load-bearing structure to be monitored at these sites for individual loads and thus assess whether the bridge is behaving in accordance with the anticipated computational analysis. There are also meteorological sensors here to read the temperature, as well as laser meters for monitoring dilatation – i.e. the shortening and stretching of the bridge.



Troja footbridge after installation of the central segment



The new Troja footbridge after completion

Reconstruction of Negrelli Viaduct [SŽ]

This was the first major repair of this stone Empire viaduct from 1850 with a length of 1 150 metres, which up until the start of the 20th century was the longest railway bridge in Europe. Due to the fact that the viaduct reconstruction took place with maximum use of original materials and technology, its heritage value was successfully preserved. Work on the viaduct began in April 2017. A total of 100 brick, sandstone and granite arches were reconstructed, of those eight crossing the Vltava. A total of 19 arches had to be completely taken apart and reassembled. For seven of them it turned out that they were in worse condition than was originally anticipated. The railway track bed and superstructure both underwent modernisation, which means that the track speed will have increased from 40 to 60 km/h and the ride will be calmer and smoother. Anti-vibration mats were also used, which help reduce the noise levels in the immediate vicinity of the viaduct. The newest bridge structures from the last century on the streets Prvního pluku and Křížíkova were also replaced. Replacing the existing signalling and communication equipment with modern electronic devices resulted in increased safety and fluidity of the double-track line, which can now handle as many as 14 pairs of trains per hour. The bridge is an integral part of the flood protection system, as the bridge pillars now include a construction which can be fit with mobile barriers in case of impending danger.



Reconstruction of Negrelli Viaduct



The viaduct's sandstone arches following repairs

Diagnosis and repair of part of Hlávkův most [TSK]

A detailed diagnostic study was conducted on Hlávkův most in 2018 and 2019. The main objective was to establish the bridge's load capacity, assess its structural condition and test the options for repairing it in terms of feasibility and durability. The final report also included a plan for managing and monitoring bridges until reconstruction and a structural historical study.

The results of the study state that with properly conducted repairs, and in particular subsequent regular maintenance (regularly renewing the impregnation, conducting local repairs, etc.) the original materials of the bridges could last 50 years or more.

Based on the results of the complete diagnostic, TSK decided to replace the most damaged transition plates on Hlávkův most. In terms of the bridge complex, this specifically concerned beam bridge V 011 over the navigation channel. The length of the repaired part was roughly 107 metres and was located in the left lane heading into the centre. The carriageway layers were disassembled, the damaged prefabricated plates demolished, the beam bridge brackets rehabilitated, new plates installed and the fusible asphalt insulation strips were re-insulated.

K Výtopně bridge [TSK]

The extensive works included demolition and construction of a new X 088 K Výtopně bridge, which connects the street K Výtopně on the Zbraslav side with the ramp onto the street Strakonická, over which the bridge passes. A total reconstruction was elected due to the impossibility of salvaging the lower and load-bearing structure of the original bridge. The demolition of the load-bearing structure only lasted eighteen hours, during which Strakonická had to be closed entirely. The proposed service life of the new structure is 100 years.

It is a prestressed beam structure with a clearance of 33.5 m and a width of 9.6 m without a central pillar. The lower structure consists of the foundation swaths based on piles. The load-bearing structure is formed of five prefabricated prestressed reinforced concrete girders and reinforced concrete coupling slabs made of C 30/37 concrete reinforced with B500B steel.

The bridge deck ends with low cross-pieces on the supports. Both sides of the road have reinforced concrete monolithic ledges with prefab faces. There is a steel railing on the ledges of 1.1 metres in height with a vertical filling.

The rain sewerage of the bridge leads to drainage basin with a spillway to the drainage gutter of the motor road and subsequently through the street drains into the sewer.



Bridge on the street K Výtopně

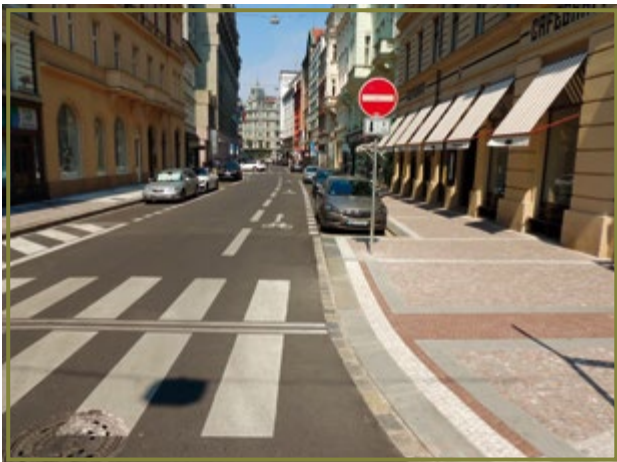
Set of works on the Jižní spojka [TSK]

Due to deformation of the road surface, work on this road entailed milling 100 mm of the slow lane and subsequently replacing it with the same thickness of a combination of bituminous cover with a surface from poured asphalt (60 mm ACL 225 and 40 mm MA 16PMB). Furthermore, damaged guardrails were repaired and road markings added. The segments Vídeňská – 5. května (ZAPA) and NN4315 – Sulická were done on the westbound side. Continuous maintenance was also carried out on three on/off ramps from the Jižní spojka (Chodovská, V Podzámčí and Modřanská). The construction work comprised milling the existing carriageway to 100 mm, rehabilitating the base layers and re-laying a new surface.



Ongoing maintenance of Modřanská

Overview of other road construction, refurbishment and repairs in 2020	
Name [investor]	Description
Refurbishing of Modřanská [TSK]	<ul style="list-style-type: none"> After a break for the winter, refurbishing of the street Modřanská continued in the section Údolní – Branická. As part of ongoing maintenance, the road was resurfaced, damaged street drains were replaced and sewers repaired primarily using trenchless technology. Furthermore there was local levelling of kerbs that stuck out in terms of height or direction, repairs to bus stops and adjacent boarding areas and rectification of surface evidence of underground infrastructure. Work was coordinated with structural modifications and refurbishing of traffic signals at the intersection with Údolní and the intersection with the Barrandovský most ramps. Work at this intersection included for example changing the position of the central island, building a new connecting lane from the Barrandovský most ramp onto Modřanská heading towards the centre, adding a sidewalk including barrier-free modifications and shifting the street drains and poles.
Branická noise [TSK]	<ul style="list-style-type: none"> Following up on the stage from the previous year, during which parking spots were installed and the sidewalk repaired, refurbishing of the street Branická continued. The work included replacement of the existing road surface made of large granite paving stones, which caused excessive noise, with a surface made of a compacted asphalt mix. In selected segments (residential zone, raised intersection surface, parking bays, driveways and loading/unloading parking spots), a paved surface was retained. The existing sidewalk surface made of poured asphalt was replaced with stone mosaic. New trees were planted, benches installed and drainage modified. Work was coordinated with the works of other investors (reconstruction of public lighting, laying of new infrastructure by individual infrastructure managers). It was not possible to drive through the renovated segment during construction, with only local access preserved.
Reconstruction of bridge Y 002 Na Zlíchově [TSK]	<ul style="list-style-type: none"> This was reconstruction of the bridge that takes the local road and tram track between Smíchov and Hlubočepy across railway track no. 171. Construction work included renovating the bridge and the associated moving of the collector and technical infrastructure leading along the bridge structure. During reconstruction of the bridge superstructure, the insulation and carriageway layers were replaced and the expansion joints and other bridge accessories refurbished. The bottom structure was also rehabilitated. The work was coordinated with an overhaul of the tram tracks. At the same time the bridge has been prepared for the tram track and sidewalks to connect to the future Dvorecký most.
Refurbishing of Chodovská [TSK]	<ul style="list-style-type: none"> In light of the scope of the work, it has been divided into several stages that will continue into the coming year. In 2020, repairs were done on the section U Plynárny – Jižní spojka. Construction commenced with repairs to the connectors under the tram track carried out using microtunnelling. The construction of the existing sidewalk was also repaired. The new road surface is made of compacted asphalt mixture. The project also included repairs to 58 sewer drains. Repairs were predominantly made by the trenchless method, which is effective and less time-consuming than through excavation. The work also included modification to bus stops.
Renovation of Karlovo náměstí circuit [TSK]	<ul style="list-style-type: none"> The first stage of renovations on the roads and sidewalks around the circumference of Karlovo náměstí took place, primarily comprising repairs to the intersection Karlovo náměstí x Resslerova. The project was done in coordination with modifications to the traffic signals. The construction work also included modifications to the corners of the intersection, barrier-free pedestrian crossings were installed and the traffic space was reorganised horizontally. The carriageway has an asphalt surface and the sidewalks use mosaic paving. Drainage was also modified. Thanks to this project, the intersection can be traversed by pedestrians barrier-free in all directions and the underpasses do not need to be used to get across it.
Refurbishing of Bucharova [TSK]	<ul style="list-style-type: none"> In 2020, a significant part of the reconstruction work on Bucharova in the segment Jeremiášova – Šafránkova took place, following up on work in the previous year and to be completed in the coming year. The project saw milling with subsequent replacement of the bituminous layer. Kerbs were flattened, bus stop surfaces repaired, street drains rectified, problems with roads sinking removed and new road markings added. The work is coordinated with PVS and DPP.
Refurbishing of Koněvova [TSK]	<ul style="list-style-type: none"> In 2020, the phase of repairs to the segment Husitská – Rokycanova took place. Work included changing the position of the sidewalk kerbs, modifying the width of the main traffic area and installing parking bays, thereby eliminating the dangerous practice of parking on sidewalks. The carriageway is asphalt, the parking bays made of large granite paving stones and the sidewalks stone mosaic. The work included modifying the drainage, shifting the underground infrastructure, landscaping and new furniture.
Refurbishing of Jungmannova [TSK]	<ul style="list-style-type: none"> Work began in 2019 on the section Palackého – Vodičkova. After a break for the winter, work continued along the whole length of the street in 2020 and included new construction of the carriageway and sidewalks, installation of kerbs, rehabilitation of the subgrade at sites of sinking, and repairs to damaged street drains and their sewer connections. The road surface is bituminous, the sidewalks made of mosaic paving, and entryways granite paving. New greenery was planted.
Ongoing maintenance of Jana Želivského [TSK]	<ul style="list-style-type: none"> Ongoing maintenance of the street Jana Želivského in the segment Koněvova – Oišanská consisted of milling the surface to a depth of 100 mm and subsequently replacing it to the same depth with a surface layer of silent asphalt, which reduced noise by 3-5 dB. Surface signs of the underground infrastructure were also rectified and the street drains repaired.
Refurbishing of Evropská [TSK]	<ul style="list-style-type: none"> Refurbishing in 2020 took place in the segment Horoměřická – Thákurova. The carriageway was repaired according to the diagnostic, which meant removing the asphalt layers and laying down new layers with a total thickness of 50–150 mm. Also as part of the works, new road markings were added and the measuring points and holes from the drills from the metro being drilled were removed.
Repairs to part of Jiráskův most [TSK]	<ul style="list-style-type: none"> Repairs took place to the structural part of the sidewalks in both directions of the bridge. The railings were cleaned and rehabilitated. The damaged carpet expansion joints from the individual panels were removed and replaced with new ones, which were installed onto a concrete and steel bed. The expansion joints were installed at the existing vertical and horizontal slope.



Jungmannova following complete refurbishing



New road surfaces on Evropská



Karlovo náměstí intersection after the overhaul



New Praha-Eden railway stop

Overview of most important refurbishments and repairs in public transport in 2020

Name [investor]	Description
Tram track refurbishment Starostrašnická – V Olšínách [DPP]	<ul style="list-style-type: none"> From the Vinice intersection up to in between the entrances to the Strašnice depot, the track was replaced with a classic construction with a grooved rail with concrete or wooden sleepers and asphalt covering. For the rest it was replaced with a new construction of a fixed track with grooved rail with flexible fastening on a concrete slab. The surface was asphalt, by the Strašnická stop paved. Anti-vibration mats were added. On the street V Olšínách, the track was set up on reinforced concrete sleepers on a gravel bed using grooveless rails and a grass-covered surface. TSK built new boarding platforms at the Vozovna Strašnice stops in the form of extended sidewalks.
Tram track refurbishment on Nádražní [DPP]	<ul style="list-style-type: none"> The tram track underwent refurbishing in the segment Smíchovské nádraží – Křížová. On a section of approx. 900 metres, the tram track was shifted west towards the railroad track, thereby separating tram traffic from road traffic. The construction work included removing the original large-scale panels and replacing them with a new construction with an open superstructure. The carriageways, sidewalks and boarding platforms at the Lihovar stops were also refurbished in coordination with TSK. The narrow neck of Nádražní was also expanded, so now the tram track and two lanes for other traffic fit next to each other.
Tram track refurbishment Hlubočepy – Barrandov [DPP]	<ul style="list-style-type: none"> After 16 years of continuous operation since construction, repairs were made to the tram tracks in the segment Hlubočepy – Sídliště Barrandov. For the majority of the stretch, grooveless rails were used, while on the bridgeheads of the flyovers, more comfortable railway-type joints were used and the expansion joints were refurbished. The stop structures and underpass portals were cleaned and repaired, as were the surfaces on the access ramps, stairs and stops. The lighting was modernised and energy-saving LED lights are now used on the overhead line gates and stops.
Optimisation of track segment Praha-Hostivař – Praha hl. n. [SZ]	<ul style="list-style-type: none"> Track 221 was moved as part of the work and is now routed along the south edge of the former Praha-Vršovice marshalling yard, and now has four tracks. The stop Praha-Eden was built to replace the decommissioned Praha-Strašnice stop. Thanks to the straightening of the track, which shortened it by 232 metres, and thanks to the speed increasing to 120 km/h, the ride time has been reduced by up to three minutes. In the coming year the station Praha-Záhradní Město will be opened, and renovations to the Praha-Vršovice station and other work will be completed.

<p>Tram track refurbishment on Na Veselí and Soudní [DPP]</p>	<ul style="list-style-type: none"> • The existing large-format panels were replaced with a fixed track with W-tram fastenings. At the same time, anti-vibration mats and rail lubricators were installed. The track constructions and curves in front of the Pankrác depot were replaced. The Na Veselí stop is now barrier-free. • As part of refurbishing of adjacent sections of existing tracks, around 250 metres of double tram track was constructed, which at the end leads to a dead end, where the final stop Pankrác has been built.
<p>Tram track refurbishment on Sokolovská [DPP]</p>	<ul style="list-style-type: none"> • Refurbishment took place in the section Poliklinika Vysočany – Náměstí OSN. The original track made of large-scale panels was replaced with a concrete slab with W-tram fastenings, and in part with a construction on reinforced concrete sleepers with asphalt covering. The stop Nádraží Vysočany was also shortened heading into the centre (TSK), the island heading into the centre was refurbished, the drainage was modified using gutter drainage channels and some overhead line poles were replaced.
<p>Renovation of the Opatov metro station [DPP]</p>	<ul style="list-style-type: none"> • As part of modernisation, new drop ceilings, wiring and ventilation were installed and the hydroinsulation of the ceiling panel was repaired, with it first being necessary to remove all the layers of soil up to the boarding platform ceiling. It was the first station in the Prague metro to have LED lighting technology installed. The wall and floor tiles were repaired and cleaned. Two new lifts were built. The first is incorporated into part of the fixed staircase, while the second provides transport from the vestibule level to the level of the bus stops on Chilská.
<p>Tram track refurbishment on Karlovo náměstí [DPP]</p>	<ul style="list-style-type: none"> • The project took place in three stages: the branching off Spálená, the branching off Ječná and replacing part of the track construction on Tylovo náměstí off Ječná, and the branching from Moráň and replacing the track crossing at Moráň. The track on the street Na Moráni was also repaired, with four turns replaced and two cuts made.
<p>Other repairs and refurbishments in public transport</p>	<ul style="list-style-type: none"> • Metro: On the C line, the end-of-life wooden sleepers were replaced with reinforced concrete ones during several closures. Repairs to the Na Knížecí vestibule began at Anděl metro station. • Trams: Construction of the Sídliště Barrandov – Holyně track began with an initial forty metres. • Railway: Optimisation of the track section Mstětice (not incl.) – Praha-Vysočany on track 232 began. Optimisation of track 171 in the section Praha-Smíchov – Praha-Radotín began.



Reconstructed tram track in street V Olšínách



A completely new arrangement of Nádražní street with side leadership TT

The City of Prague Technical Administration of Roads, as the administrator of most roads and road accessories in the city, is responsible for keeping them in satisfactory working order. It therefore provides for all necessary road repairs, cleaning, and winter and summer maintenance and operation.

These activities are financed by the City of Prague from the current and capital expenditure budget, and in some cases with contributions from SFDI or the municipal districts.

In 2020, CZK 4 089 186 000 was spent via TSK on repairs, maintenance, operations and summer and winter maintenance. Capital expenditures totalled CZK 1 626 692 000.

12 FINANCING OF TRANSPORTATION IN PRAGUE

In light of the fact that the budget closure for the previous year is only approved after the deadline for the Transportation Yearbook, this chapter summarises the budget closure for 2019 and the parameters of the approved budget plan for 2020, which are supplemented by the preliminary balance sheet data on public transport for 2020.

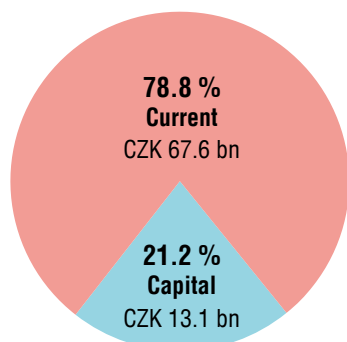
12.1 City of Prague municipal budget closure for 2019 (approved 2 June 2020)

The final budget for the year 2019 was adopted with Prague City Assembly Resolution No. 18/70 of 2 June 2020. The total revenue in 2019 was CZK 95.4 billion, the total expenditure CZK 80.7 billion (the amount of the current, operating, expenditure was CZK 67.6 billion, the capital, investment, expenditure was CZK 13.1 billion).

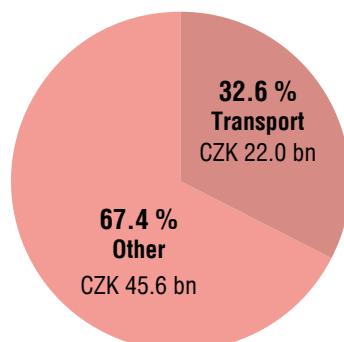
Development of total revenue and expenditure in budgets of the City of Prague (bn CZK)									
	2011	2012	2013	2014	2015	2016	2017	2018	2019
revenue	63.8	63.0	63.3	70.0	70.8	74.2	77.8	88.6	95.4
expenditure	65.7	61.2	58.8	68.1	58.3	62.0	70.3	82.0	80.7
of those current	46.1	43.9	45.4	46.8	48.2	51.2	57.9	64.6	67.6
of those capital	19.6	17.3	13.4	21.3	10.1	10.8	12.4	17.4	13.1

Distribution of total expenditure in the municipal budget in 2019

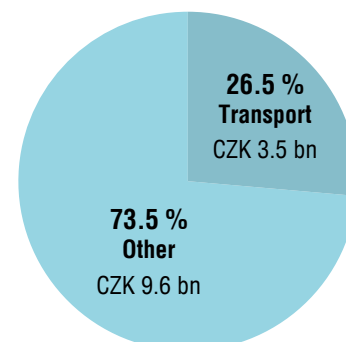
distribution of total expenditure



current expenses – traffic share



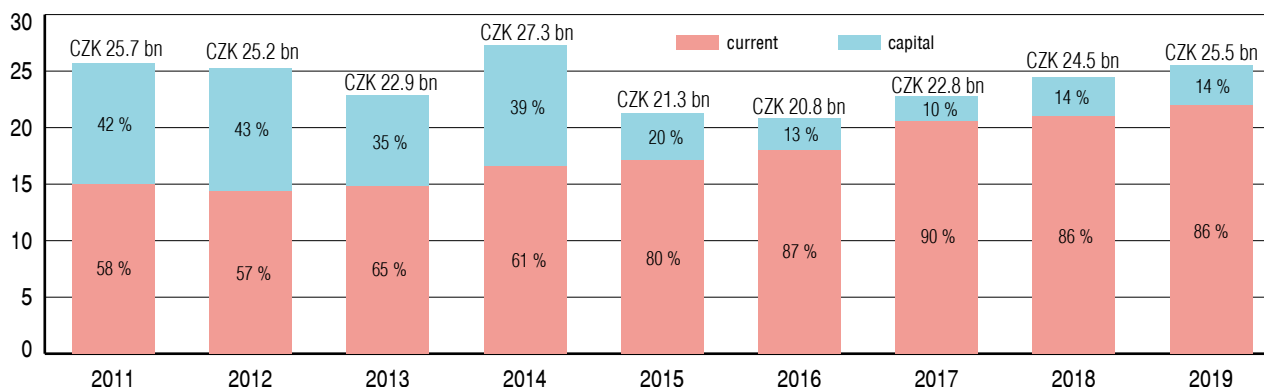
capital expenditures – share of transport



In 2019, transport continued to be the highest budget item, totalling CZK 25.5 billion (31.6 % of the City of Prague budget). According to the CSO statistical yearbook, the percentages of other budget items were as follows: 30.6% education, 11.8% general public administration, 5.6 % social affairs, 5.1 % culture, physical education and hobbies, 4.9 % environment, 3.9 % housing and municipal services, 3.6 % defence and security, 1.5 % health, 0.8 % water management, 0.1 % industry, trade, services, 0.1 % agriculture and 0.4 % other.

Of the CZK 25.5 billion earmarked for transport, CZK 22.0 billion (86.5 %) went to current expenditures and CZK 3.5 billion (13.5 %) to capital expenditures. With a comparable amount of annual transport budget, the share of current expenditures for transport compared to capital expenditures has risen since 2011 from 58 % to over 86 %.

Development of structure of transport expenditures in Prague municipal budgets



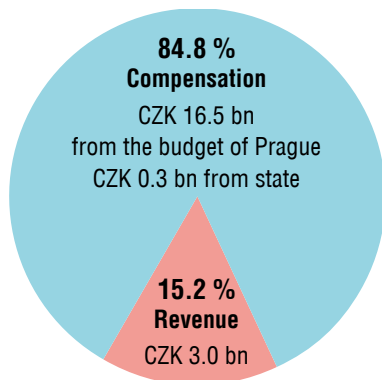
12.2 Approved City of Prague budget for 2019 (of 12 December 2018)

The budget for the year 2020 was approved by Prague City Assembly on 12 December 2019 and contained expenditures totalling CZK 81.6 billion, of that CZK 64.8 billion current and CZK 16.8 billion capital. The 2020 budget amount for transport included expenditures of CZK 27.0 billion. With 33.1 %, transport was the second largest item under the Prague budget headings (23.3 % education, youth and sport, 11.3 % treasury administration, 11.0 % internal administration, 5.2 % urban infrastructure, 4.5 % health and social affairs, 4.2 % security, 3.1 % culture and tourism, 3.1 % economy and 1.1 % municipal development).

The current expenditures in transport for 2020 were planned at CZK 21.6 billion. Aside from the subsidy for PID (CZK 16.8 billion), CZK 4.4 billion in current expenditures was earmarked for road administration (e.g. CZK 1.0 billion for winter maintenance, CZK 1.3 billion for regular maintenance, i.e. maintenance of telematic devices, traffic signals, bridges, roads and sidewalks, traffic signage, accessibility modifications, road safety measures and repairs to PID stops, and CZK 0.85 billion budgeted for summer maintenance).

Capital expenditures in transport of CZK 5.4 billion were proposed in the 2020 draft budget. Under this, CZK 250 million was earmarked for construction of the P+R Zličín III structure, CZK 180 million for renovation and handicapped access for the Opatov metro station, CZK 140 million for restoring the Troja footbridge and CZK 108 million for new lifts into the metro at Karlovo náměstí.

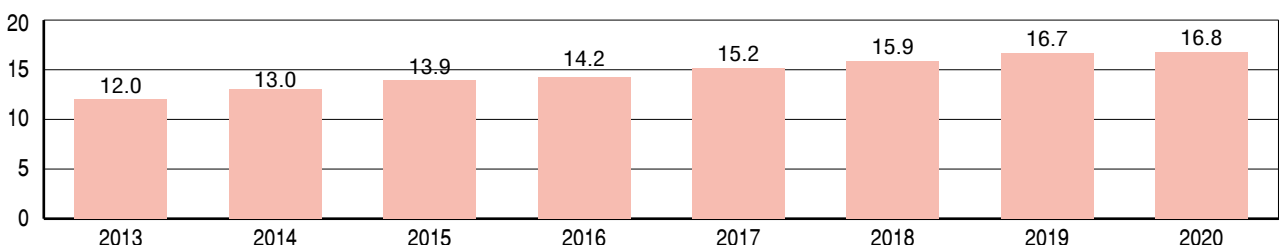
Coverage of PID operating costs (2020)



The Trojan footbridge in the 2020 budget claimed CZK 140 million

Costs for operating Prague Integrated Public Transport (PID) within Prague totalled CZK 19.8 billion in 2020. Fare revenue covered CZK 3.0 billion (15.2 % of costs). The decline in revenue due to the coronavirus crisis of over CZK 1 billion compared to the previous year was approximately balanced out by a slight reduction in commissioned transport (by about 12.4 million VKT). Under current expenditures, the City of Prague subsidy for operation of public transport totalled CZK 16.8 billion. Of this amount, CZK 14.7 billion went to the Prague Public Transport Company, CZK 0.9 billion served to ensure the operation of other bus lines within the city not run by that company, CZK 1.2 billion went to railway transport (here the city was helped by a state contribution for railway transport service of CZK 0.26 billion) and CZK 20 million was the subsidy for operating ferries.

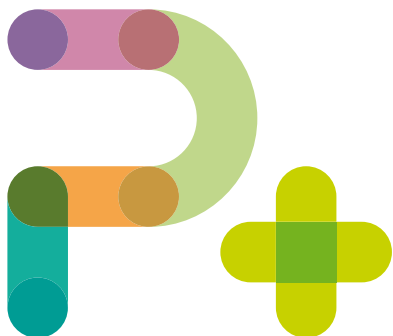
Development of subsidies for PID operation within Prague 2013–2020 (CZK bn)



The Prague Public Transport Company contributed CZK 3.13 billion of its own resources and CZK 0.97 billion in available funds (pre-financing before receiving a targeted subsidy from the city) to covering investment costs for the city's transport system. CZK 1.41 billion was used for renewing the Prague Public Transport Company's fleet, with CZK 0.58 billion spent on renewal of the bus fleet, CZK 0.8 billion on another instalment for the bill-of-exchange programme used to purchase 15T tram cars in the past and CZK 34.2 million was the cost of continuing with the project of modernising KT8D5 tram cars. The company spent the most of the standard city budget subsidies, CZK 1.12 billion, on continuing work on the zero phase of the I.D metro line.

13 SUSTAINABLE MOBILITY PLAN FOR PRAGUE AND SURROUNDINGS

The Sustainable Mobility Plan for Prague and Surroundings (also referred to as P+), which has been drawn up in accordance with the methodology for producing Sustainable Urban Mobility Plans (SUMP), was completed in 2019. After it was approved by the Prague City Assembly, it became the primary concept for the field of transport in the City of Prague, and indeed for the whole “Prague Metropolitan Area”. It addresses the organisation of public, automobile and non-motorised transport in the context of wider societal impacts.



Polad' Prahu

P+ consists of the Analysis (2017), Development Scenarios (2017), City of Prague Transport Policy (2017), with the main part being the Draft P+, which includes measures that have demonstrated their benefit to the approved transport policy. The expected financial framework, which takes into account those measures whose funding is under the jurisdiction of the City of Prague, totals CZK 113.4 billion.

The currently valid P+ Action Plan, which is the implementing document for the aforementioned materials, contains measures where the start of implementation or at least preparation is anticipated by the end of 2023. Implementation of the Action Plan measures is monitored at the level of individual tasks and is updated on an ongoing basis.

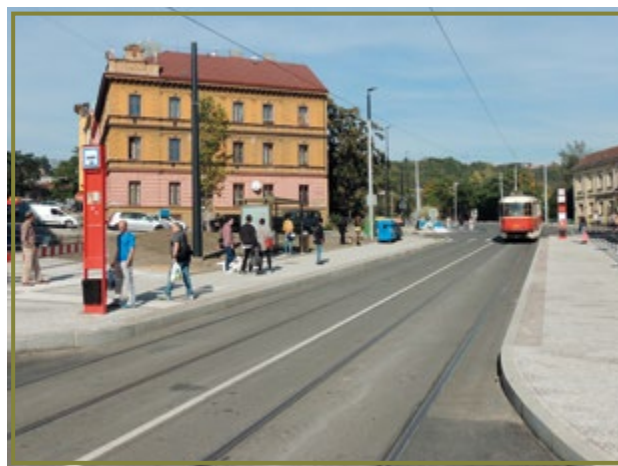
The events of last year also impacted the implementation phase of P+, with certain meetings having to be postponed or not being able to take place at all. The financial aspect of P+ in relation to the city budget and budget outlook were the primary focus. Preparation and realisation of individual measures did however continue, as can be seen in the table below, which shows the statistics for fulfilment of individual tasks (as of the end of 2020).

Eleven measures have already been fully completed, among them the PID Lítačka app, refurbishing the street Zenklova and tram tracks on Vinohradská, a pilot project for monitoring traffic in reserved lanes, a unified passenger handling system within PID and the Alternative Fuel Support Strategy.

State of completion of tasks under the Sustainable Mobility Plan for Prague and Surroundings		
Stage	Number of tasks	Percentage (%)
Waiting to commence	587	53
Being worked on	278	25
Completed	225	20
Problem has arisen	10	1
Called off	12	1
TOTAL	1 112	100

In 2021, it is expected that the process for updating P+ will begin. The reason for this is primarily new measures that have arisen with regard for developments in mobility where harmony with the transport policy has been demonstrated, as well as the necessity of addressing the aforementioned issue of funding, which is tied to tax changes with negative consequences for municipal budgets, including that of the City of Prague. New EU, Czech and Prague strategic materials must also be taken into account.

Detailed information on the documents and an interactive list of measures is available on the website www.poladprahu.cz. At the start of 2020, the website was launched with a new graphic design and content.



Reconstruction of Zenklova Street – one of the completed P+ projects

14 OTHER FORMS OF TRANSPORT

14.1 Air transport

Both passenger and freight air transport in Prague are primarily operated in Ruzyně at Václav Havel Airport Prague (hereinafter Prague Airport), which is located at the northwest edge of the city (public international airport with an external border). Other Prague airports are Letňany (grass-covered public airport), Kbely (military airport) and Točná (grass-covered private airport). Nearby Prague is also Vodochody (private international airport).

Prague Airport

In terms of the runway system, Prague Airport is equipped with three RWYs, two of which (RWY 12/30 and RWY 06/24) are in use. The total capacity of the runway system is approximately 200 000 aircraft movements (take-offs and landings) per year and 46 aircraft movements an hour.

Prague Airport in Ruzyně, like every other airport in the world, was significantly affected by the coronavirus pandemic, which impacted air transport more than any other kind. The greatest drop-off in number of passengers checked through and aircraft movements was recorded during the spring wave of the coronavirus. During the summer holidays the numbers went up, but in the autumn they began to fall again. According to the predictions of the ICAO (International Civil Aviation Organisation) and IATA (International Air Transport Association), with a highly favourable development in the pandemic, air travel will return to its pre-coronavirus level in five years.

The number of aircraft movements at Prague Airport reached a value of 54 163 in 2020, which is 100 614 movements fewer than in 2019 (decrease of 65 %). The greatest number of movements was atypically recorded in January, the lowest (1 213) in February. Despite the long-growing average number of passengers per movement, which had reached a value of 115 passengers/movement in 2019, this indicator declined 41 % in 2020 to a value of 68 passengers/movement.



Airbus A330-Neo



Airbus 330-300

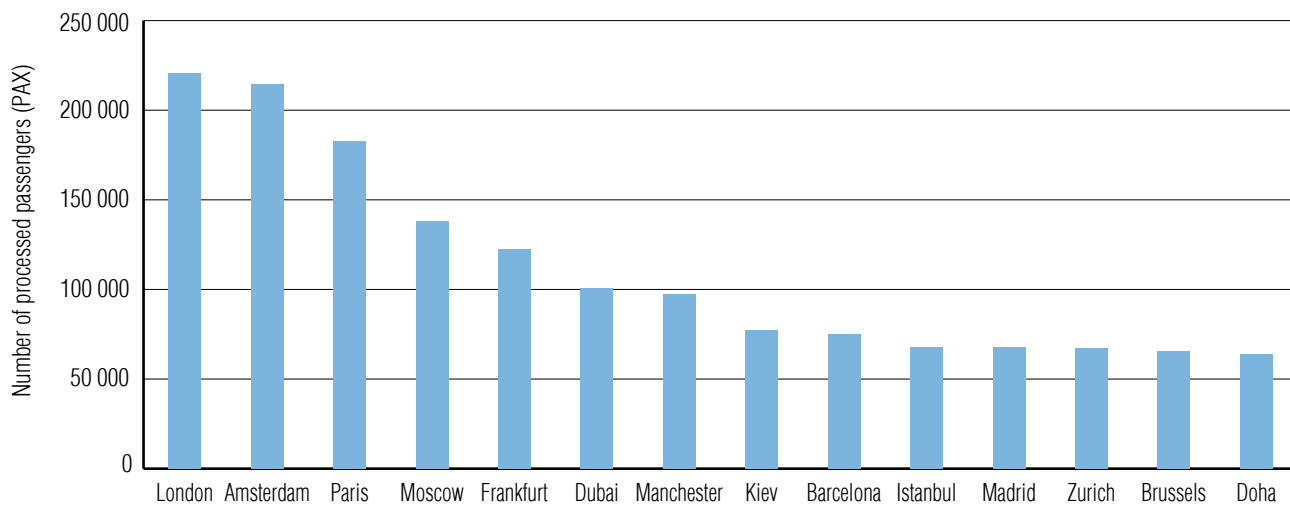
Prague Airport has three terminals for checking through passengers (PAX) both for departures and for arrivals. Terminal 1 serves to check through passengers flying to countries outside the Schengen Area (passport checks), Terminal 2 is intended for passengers flying to Schengen countries (no passport checks) and Terminal 3 dispatches private and VIP flights. The total capacity of the terminals at the present time is 17 000 000 passengers a year. With the current capacities of the individual subsystems, Prague Airport was in 2019 nearly at the point of maximum utilisation of the overall capacity of the terminals.

Number of processed passengers, carriers and destinations at Prague Airport

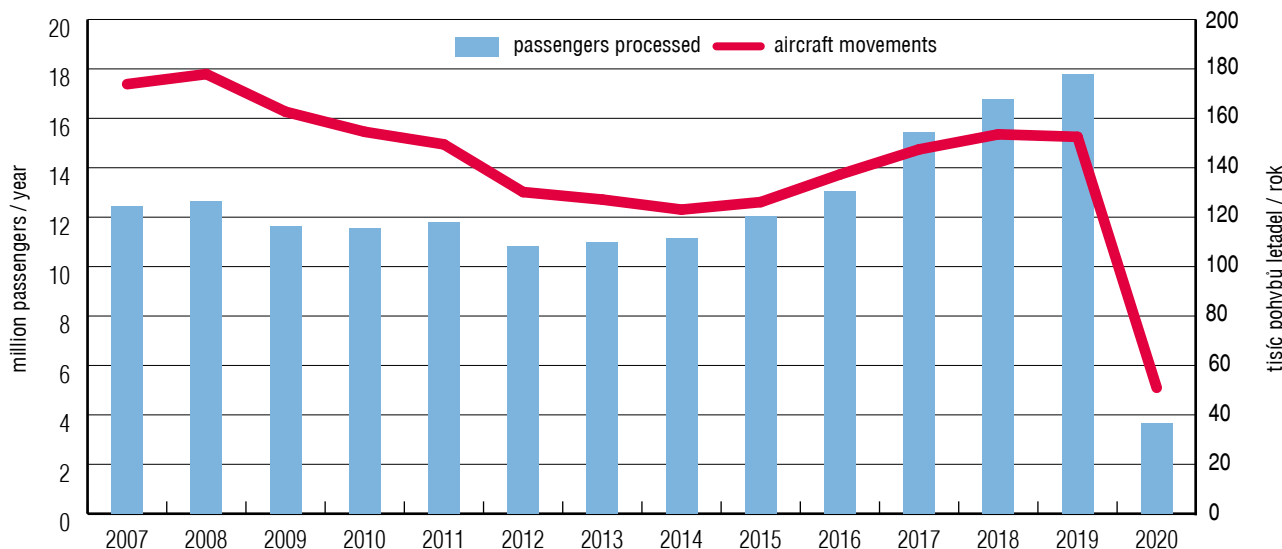
In 2020 a total of 3 665 871 passengers were checked through at Prague Airport (of those 96.5 % on regular lines), which represents a decrease of 79 % compared to 2019. The share of classic airline companies making use of the services of Prague's airport in Ruzyně was 63 %, while low-cost companies accounted for 37 %. A full 98 % of passengers flying out had Prague Airport as the departure point of their journey, termed "local passengers". The most passengers were checked through in January (1 051 029 PAX), the least in April (5 031 PAX due to closed borders). Compared to 2019, the monthly maximum was 47 % lower.

As part of regular air transport, 3 536 364 passengers were checked through, while on non-regular lines the number was 129 507. The month with the highest number of passengers checked through in 2020 was January. The top day was Friday and the times 9:30-13:00, 17:00-19:00 and 20:45-22:00. Passengers could make use of the services of a total of 59 carriers on regular lines in 2020 (10 less than in 2019).

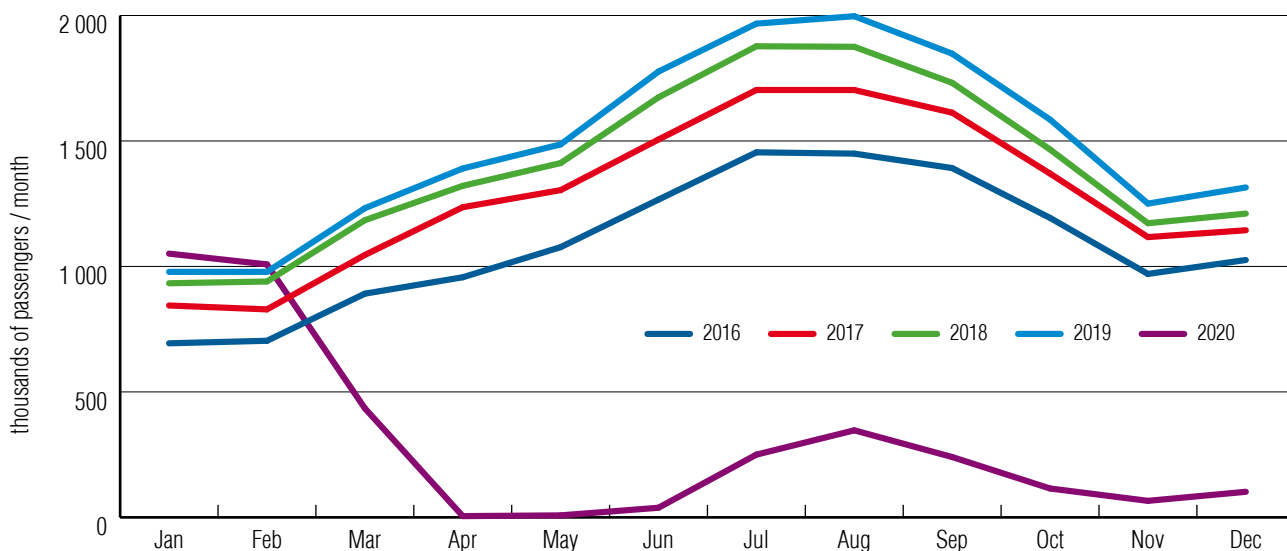
Highest demand destinations from Prague Airport in 2020



Development of volume at Prague Airport (number of passengers and aircraft movements)



Month number of passengers checked at Prague Airport in 2016–2020



Freight transport at Prague Airport

Two cargo terminals are located at Prague Airport for processing freight (Menzies Aviation CZECH s. r. o., SkyPort). Each of these cargo terminals has a capacity of 100 000 t/year. In 2020 air freight with a total volume of 52 443 tonnes was handled at Prague Airport. Freight transport was 29 325 tonnes lower than in 2019 (decrease of 35.9 %). The most freight was handled in January (6 821 tonnes), the least in June (3 430 tonnes). The monthly maximum was 11 % lower in 2019 than in 2018.



B777F



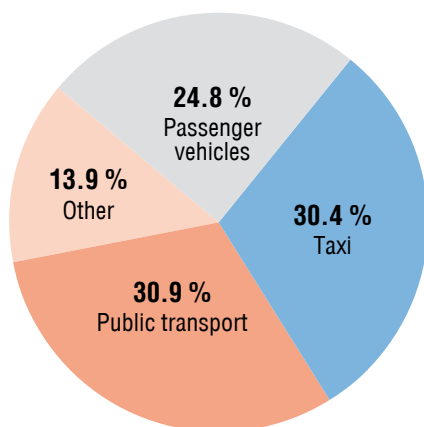
Boeing757 UPS

Connecting transport to/from Prague Airport

The airport is located approximately 11 km from the centre of Prague. It is served primarily by two express urban bus lines, 100 and 119, which run to the metro lines A (Nádraží Vevešlavín) and B (Zličín). In connection with the coronavirus epidemic, operation of both these lines was considerably limited during 2020 (by 50-75 % on the 119 after 11 March, by 50 % on the 100 after 21 March). The special bus line AE (Airport Express: Prague Main Station – Airport), intended primarily for passengers who are continuing on from Prague by rail around the country, stopped running on 17 March 2020 and it is not expected to be renewed before spring 2022. The operation of other long-distance and regional bus lines that travelled to the airport was also limited in 2020.

There is also taxi service available for travelling to or from the airport, both by car or minibus. A number of car rental services also operate there. In 2020, 22.2 % of passengers used their own or a company car to get to the airport, 30.4 % of people used a taxi and 2.6 % of passengers came in a rented vehicle. 30.9 % of passengers made use of public transport connections to get to the airport in 2020 and the remaining 13.9 % used a different method of transport (especially shared transport or non-public transport buses).

All trips to and from the airport (2020)



AE line out of service from 17 March 2020

In 2020 there were a total of 6 872 parking spots available at Václav Havel Airport Prague. Available to the public are short-term parking with a capacity of 583 spots (EXPRESS, PC COMFORT and PA SMART) and long-term parking, offering a total of 3 718 spots (PC COMFORT and PA SMART). For airport employees and partners there are 2 571 parking spots reserved. Other parking options are available at commercial lots in the surroundings of the airport.

14.2 Water transport

Water transport in Prague provides for the transportation of persons and cargo along the Vltava, of which 30.9 km flows within the boundaries of Prague. There are five locks in Prague (Modřany, Smíchov, Mánes, Štvanice, Podbaba). The capacity of the waterway is determined by the capacity of the Podbaba (5.2 million t/year) and Smíchov (2.8 million t/year) locks.

In 2020, water transport, just like all other types of transport, was affected by the government measures to limit the spread of COVID 19. Thanks to the easing of restrictions in the summer months, passenger boat transport was operated, but it was considerably affected by the reduced number of foreign tourists, who make up a majority of the clientele.

Development of number of boats passed through locks in Prague 2000-2020

Year	Lock				
	Modřany	Smíchov	Mánes	Štvanice	Podbaba
2000	1 898	21 716	3 747	5 775	1 897
2005	2 530	24 576	2 329	7 740	1 799
2010	2 414	25 797	2 720	8 950	2 335
2015	3 570	24 622	3 855	8 880	3 763
2018	3 491	25 517	4 525	10 525	3 323
2019	2 797	22 228	4 324	12 370	4 021
2020	3 286	10 844	2 724	4 594	2 953

Passenger boat transport along the Vltava is predominantly for tourist and social purposes. Several companies operate year-round, specialising in various types of sightseeing tours around Prague and a wide range of other services. Regular transport service is provided by the Prague ferries, which are part of Prague Integrated Public Transport (PID).



Boats at Bohemia Bridge



Bella Bohemia - The first completely electrical ship is in Prague since 2019

The oldest operator of water transport along the Vltava in Prague is Pražská paroplavební společnost, a. s. (PPS), which was founded in 1865. Today this company forms a consortium with the company Prague Boats, s. r. o., which was created with the partition of the company Evropská vodní doprava (EVD). Prague Boats is the operator of the boats for both companies.

Boat operation is year-round, either at regular time intervals or according to the individual wishes of those ordering. Various sightseeing tours are also organised along the Vltava, to the Zoo, as well as day trips to Slapy and Mělník. PPS runs the Prague ferries P7 in Holešovice.

Development of number of persons transported by two largest carriers (thousands/year)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Prague Boats	196	199	230	179	145	193	205	209	246	283	298	322	329	345	386	126
PPS	86	115	229	208	94	91	107	98	149	162	186	189	192	507	608	303

Another company, AQUAVIA Praha, s. r. o., organises social events on three boats – Moravia, Czechie and Klára. Pražské Benátky, s.r.o. runs canal sight-seeing cruises along the Vltava year-round. Boats leave from

the “Judita” docks every 15-20 minutes. The company also operates the Prague ferries P1, P2, P4, P5, P6 and the Vyšehrad ferry, which is not part of PID. A number of smaller companies also operate tours and social events based on individual orders. There are docks for these companies on both banks of the Vltava in the centre of the city, for example at Na Františku, Kampa and Dvořákovo nábřeží.

Various domestic and foreign operators also carry out freight transport on the river. One of the largest operators is Evropská vodní doprava – Sped, s. r. o., which runs domestic and international transport of bulk cargo, heavy loads, containers, liquids, etc. There are 4 harbours within the city – Radotín, Smíchov, Holešovice and Libeň – which serve for the transshipment of various types of cargo. The operator is České přístavy, a. s. In addition to these ports, temporary transshipment stations and mobile floating ramps are also used for handling freight.



Podbaba lock



Štvanice lock

During the year, modernisation of the lock by Štvanice island and its surroundings continued.

Development of volume of goods passed through the locks in Prague (tonnes/year)

Year	Lock				
	Modřany	Smíchov	Mánes	Štvanice	Podbaba
2000	108 168	197 740	238	201 712	370 037
2005	56 759	59 378	690	106 749	302 726
2010	3 476	5 868	829	6 698	165 166
2015	145	345	41	440	313 900
2018	45 720	43 980	2 834	44 768	200 333
2019	39 354	96 888	259	105 299	301 241
2020	3 468	5 412	757	3 882	150 236

Marked growth in the volume of material transported through the locks in Prague in 2018 and 2019 was caused in part by the transport of dredged sediment in the Radotín harbour, which was carried out in spring 2018 by Povodí Vltavy, and also by the transport of dredged sediment on the Vltava Waterway conducted by the Directorate of Waterways of the Czech Republic, which began in October 2018 and continued in 2019.

Development of volume of bulk cargo at Prague harbours (tones/year)

Year	Harbour					
	Radotín	Smíchov	Holešovice	Libeň	Jiné	Prague unspecified
2005	36 408	11 396	99 308	2 934	-	-
2010	0	364	53 207	0	-	-
2015	0	0	64 060	1 622	133 947	98 550
2018	51 632	0	30 567	0	99 164	36 993
2019	50 602	117 293	3 346	0	275 286	42 499
2020	5 181	0	2 444	0	157 756	16 004

Operators of domestic water transport sometimes also report a different location from which they haul earth dug up during construction work. Carriers can also report Prague as a place of port without further specification because in the international numbering system only Prague is listed.

14.3 Freight rail transport

In 2020, 21 846 freight trains were recorded beginning and ending within Prague, which is a 20 % decrease compared to 2019. The most heavily used starting and ending station for freight trains was, traditionally, Praha-Libeň, followed by Praha-Uhříněves, at which the METRANS container terminal is located (most unloaded/loaded cars and delivered/shipped tonnes of goods). The largest number of transit freight trains pass through the railway points Praha-Libeň, Praha-Holešovice and the Bubeneč siding.

Number of freight trains beginning and ending in Prague by month in 2020

Month	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	XI.	XII.	TOTAL
Beginning	866	870	942	875	907	956	980	929	911	1030	968	847	11 081
Ending	864	882	924	823	876	881	913	919	884	1023	950	826	10 765

In December 2020, operation began on a new segment of track Praha-Vršovice – Praha-Eden – Praha-Zahradní Město – Praha-Hostivař, with the Praha-Eden stop currently just provisional.

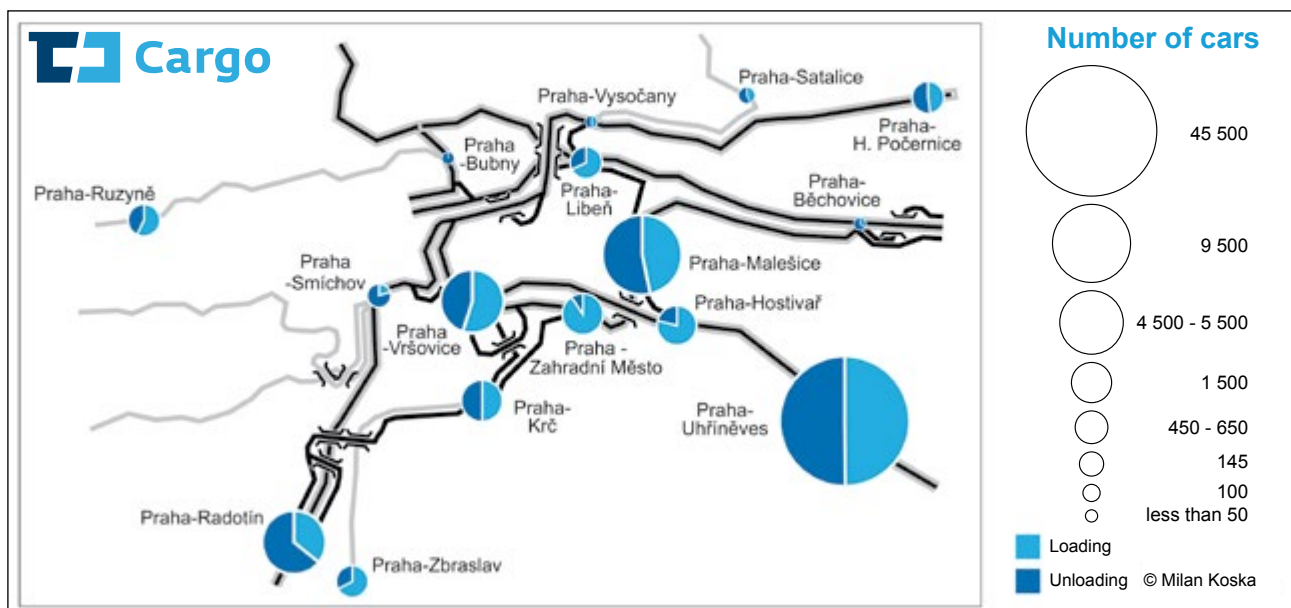
Cleaning up from the bark beetle catastrophe continued last year. The station Praha-Zbraslav was used for loading harvested timber within Prague. Over the whole course of 2020, 442 cars were loaded here, which is by far the greatest amount over the past few years.

The COVID-19 pandemic had a major impact on the volume of rail transport in 2020. In particular transoceanic freight container transport saw a decline, which in the first half of the year was reflected in the volume of Prague's most significant rail customer, the Metrans intermodal terminal in Uhříněves. Other transport took place more or less unchanged, naturally in the terms and context of the pandemic.

Transport of postal consignments between the Czech Post hubs in Praha-Malešice, Olomouc and Ostrava continued unchanged, being supplemented in both directions by transport of individual consignments from the company Lagermax. This segment of transport has generally been seeing slight growth in connection with the increasing number of sales taking place through online channels at the expense of traditional "brick-and-mortar" shops.

In terms of the number of ČD Cargo trains beginning and ending in Prague, the most important stations were Praha-Libeň (6 727 trains beginning and 6 813 ending), Praha-Malešice (2 302 trains beginning and 2 211 ending) and Praha-Uhříněves (1 981 trains beginning and 1 860 ending). In terms of the number of loaded and unloaded trains, the three most heavily trafficked stations were Praha-Uhříněves, Praha-Malešice and Praha-Vršovice. The three busiest stations by number of tonnes carted off and delivered were Praha-Uhříněves, Praha-Vršovice and Praha-Malešice.

Railway hub Prague – freight volume in most frequent stations





© TSK hl. m. Prahy, a.s., 2021

The texts, graphics and information contained herein may only be reproduced if the source is mentioned:
Technical Administration of Roads of the City of Prague – Department of Transport Engineering (TSK-ÚDI)

● **Yearbook prepared by:** TSK hl. m. Prahy, a.s. – Úsek dopravního inženýrství (TSK-ÚDI) ● **Authors:** Ing. Václav Bláha, Mgr. Jaroslav Břeň, Ing. Richard Burgr, Mgr. Eva Černá, Jiří Dytrch, Ing. Tomáš Havlíček, Ing. Pavel Hošek, Ing. Marek Karban, Ing. Eva Kosteasová, Ing. Jan Kreml, Ing. Ondřej Krouský, Ing. Milan Kříž, Ing. Adéla Langerová, Ing. Luka Lenhardt, Mgr. Miloš Marek, Bc. Pavel Pernica, Stanislav Pfeifer, Tomáš Plicka, Ing. Jan Polák, Ing. Ladislav Sechter, Ing. Monika Sejková, Ing. Břetislav Syrovátka, Marie Šedivá, Ing. Ladislav Štědrý, Ing. Jitka Tomsová, Ing. Martin Veverka, Ing. Vojtěch Veselý, Jiřina Vondráčková, Ing. Jiří Zeman, Ing. Květoslav Znamenáček ● **External collaboration:** Ing. Martin Šubrt, Bc. Jiří Vecko ● **Editing:** Ing. Vladimír Kadlec ● **Sources:** CDV, v. v. i., ClicPark s.r.o., Česká pošta, s.p., České dráhy, a. s., Český statistický úřad, ČD Cargo, a.s., ČSAD Praha holding, a.s., Dopravní podnik hl. m. Prahy, akciová společnost, ELTODO, a.s., Krajský úřad Středočeského kraje, Leo Express Global a.s., Letiště Praha, a.s., METRANS, a.s., Magistrát hl. m. Prahy, úřady MČ hl. m. Prahy, Ministerstvo dopravy České republiky, Policejní prezidium ČR, Povodí Vltavy, státní podnik, PPS, a. s., PRAGUE BOATS, s. r. o., RegioJet a.s., Regionální organizátor pražské integrované dopravy (ROPID), Ředitelství silnic a dálnic ČR, Saba Parking CZ a.s., Správa železnic, státní organizace, SWARCO TRAFFIC CZ s.r.o., www.cd.cz, www.dpp.cz, www.florenc.cz, www.idos.cz, www.ivykony.cz, www.kr-stredocesky.cz, www.mestemnakole.cz, www.metrostav.cz, www.praha.eu, www.ropid.cz, www.szdc.cz, www.tunelblanka.cz

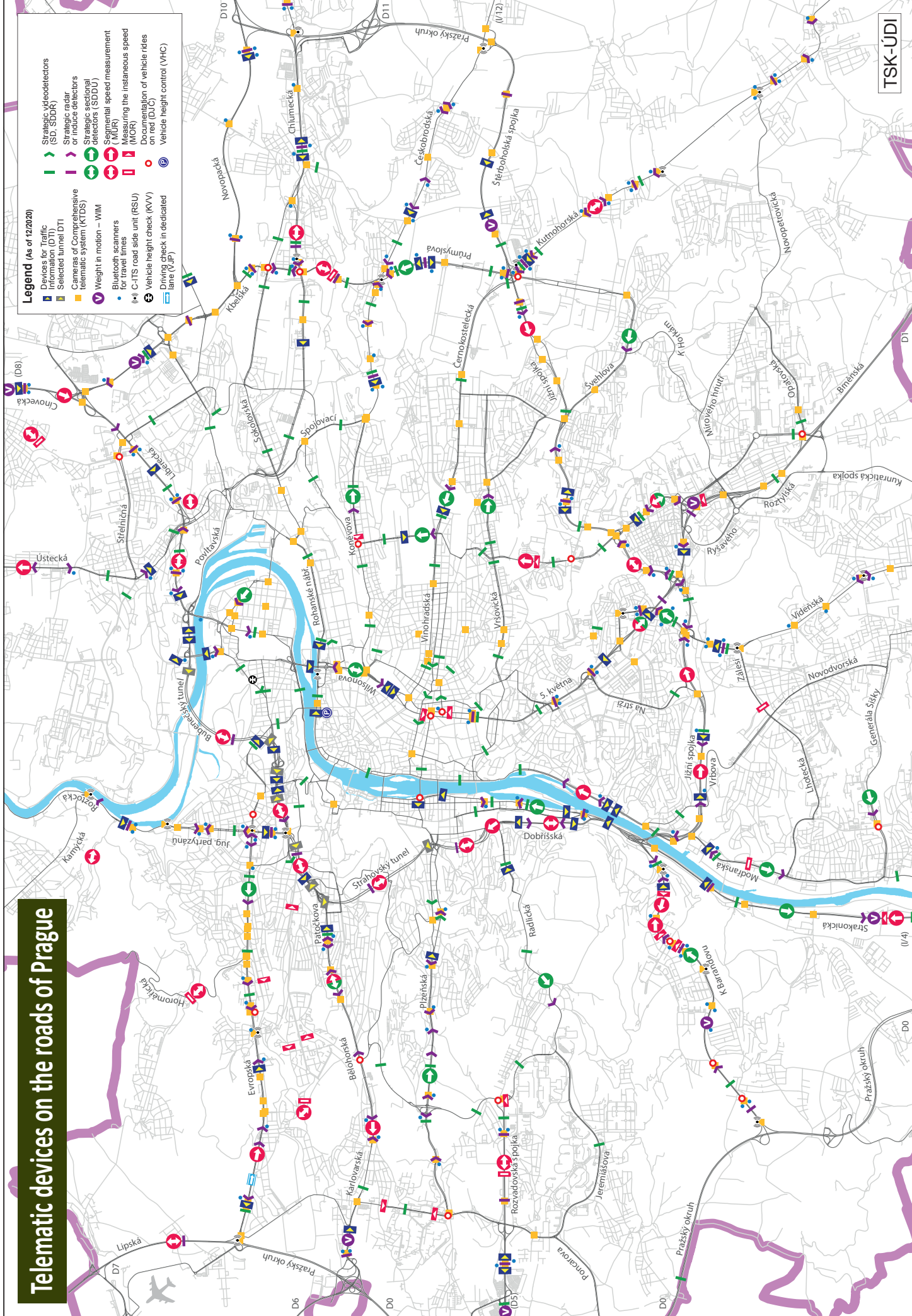
● **Photographs:** TSK-ÚDI, Ing. Martin Šubrt, Jan Malý (titulní strana), Marek Horák (15.1), Michal Roh (15.3)

● **Published by TSK ● Prague 2021**

Telematic devices on the roads of Prague

Legend (As of 12/2020)

- Devices for Traffic Information (DTI)
- Selected tunnel DTI
- Cameras of Comprehensive telematic system (KTDS)
- Weight in motion - WIM
- Bluetooth scanners for travel times
- C-ITS road side unit (RSU)
- Vehicle height check (KVV)
- Driving check in dedicated lane (VJP)
- Strategic videodetectors (SD, SDO)
- Strategic radar or inductive detectors
- Strategic sectional detectors (SDDU)
- Instantaneous speed measurement (VJP)
- Measuring the instantaneous speed (MOR)
- Documentation of vehicle rides on rest (DJC)
- Vehicle height control (VHC)





**TECHNICKÁ SPRÁVA KOMUNIKACÍ
HLAVNÍHO MĚSTA PRAHY, A.S.
Úsek dopravního inženýrství
110 00 Praha 1, Řásnovka 8
www.tsk-praha.cz**