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The Underlying Trends in Road and Rail Freight Traffic Flows across Ukraine-Poland and Ukraine-Slovakia Border

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Road border crossing points (BCPs) for freight at Poland and Slovakia border

BCP	working hours	type	type of transportation	Number of lanes (in/out)	planned capacity of freight vehicles, per day	Inspectors	Road	Transport Corridors
POLAND								
1. Yahodyn-Dorohusk	24/7	international	passenger, cargo	13/13	800	Phytosanitary, Veterinary	M-07 / E373	TRACECA, Via Carpatia
2. Rava-Ruska-Hrebenne	24/7	international	passenger, cargo	12\12	250	Phytosanitary, Veterinary, Sanitary and epidemiological	M-09 / E372	Via Carpatia
3. Krakivets-Korczowa	24/7	international	passenger, cargo	10\10	500	Phytosanitary, Veterinary	M-10 / E-40	Pan-European #3, Core TEN-T (North Sea – Baltic & Baltic - Black - Aegean Seas) TRACECA
4. Shehyni-Medyka	24/7	international	passenger, cargo	9\6	120	Phytosanitary, Veterinary, Sanitary and epidemiological	M-11	Pan-European #3, TRACECA
5. Smilnytsya-Kroscienko	24/7	international	passenger, cargo (up to 7.5 t)	5\6	100	Sanitary and epidemiological	T-1401	-
SLOVAKIA								
1. Uzhorod-Vyšné Nemecké	24/7	international	passenger, cargo	7\7	500	Phytosanitary, Veterinary	M-08 / E50	Pan-European #5, Core TEN-T (Rhine-Danube), TRACECA

Rail border crossing points (BCPs) for freight at Poland and Slovakia border

BCP	working hours	type	type of transportation	Gauge (mm)	designed capacity of freight cars, per day	Inspectors	Transport Corridors
POLAND							
1. Yahodyn-Dorohusk	24/7	international	passenger, cargo	1435 and 1520	250	Phytosanitary, Veterinary	TRACECA, Via Carpatia
2. Volodymyr-Volynskyy (Izov)-Hrubieszów	24/7	international	cargo	1520	1000	Phytosanitary, Veterinary	TRACECA
3. Rava-Ruska-Werchata	24/7	international	cargo	1520	n/a	-	-
4. Mostyska-Przemysł	24/7	international	passenger, cargo	1435 and 1520	40	n/a	Pan-European #3, Core TEN-T (North Sea – Baltic & Baltic - Black - Aegean Seas) TRACECA
SLOVAKIA							
1. Chop - Cierna nad Tisou	24/7	international	passenger, cargo	1435 and 1520	2000	Phytosanitary, Veterinary	Core TEN-T (Rhine-Danube), TRACECA
2. Pavlovo - Matovska Vojkovce	24/7	international	cargo	1520	990	n/a	Pan-European #5, TRACECA

Main Roads and Nodes in Border Regions of Ukraine

Volynska oblast

- Kovel is one of the major rail node in Western Ukraine from it railway tracks diverge in 6 directions
- 1435 mm (narrow) gauge track extends to a shipment yard at Kovel (59 km east of Yahodyn).
- from “Yahodyn” 1520 mm gauge track extends 20 km to the Chelm
- 1520 mm gauge line is called “Broad-Gauge Steel Line” between Sławków near Katowice and Volodymyr-Volynskyy in Ukraine (≈ 500 km)
- **M-07** "Yahodyn - Kovel - Kyiv". Part of European route E373 - from Lublin (Poland) to Kyiv.
- **M-19** "Domanove (border with Belarus) - Kovel - Chernivtsi - Porubne" (direction to Romania). *Part of European route E85* - from Lithuania runs to Greece
- **H-22** "Ustyluh (border with Poland) - Lutsk – Rivne”

Lvivska oblast

- Lviv is an important transport node
- “Mostyska”. Ukrainian Railways works broad gauge freight to yards within Poland.
- The 1435 mm gauge track ending at a transshipment facility 3 km east of Mostyska 2 station
- Pan-European transport corridors - #3 and #5. Core network TEN-T “North Sea – Baltic” & “Baltic - Black - Aegean Seas”
- **M-06** "Kyiv-Chop" (border with Slovakia and Hungary)
- **M-09** "Lviv – Rava-Ruska”
- **M-10** "Lviv – Krakivets", *Part of European route E40*
- **M-11** "Lviv – Shehyni”
- **M-12** "Stryi-Ternopil-Kropyvnytskyi-Znamyanka“

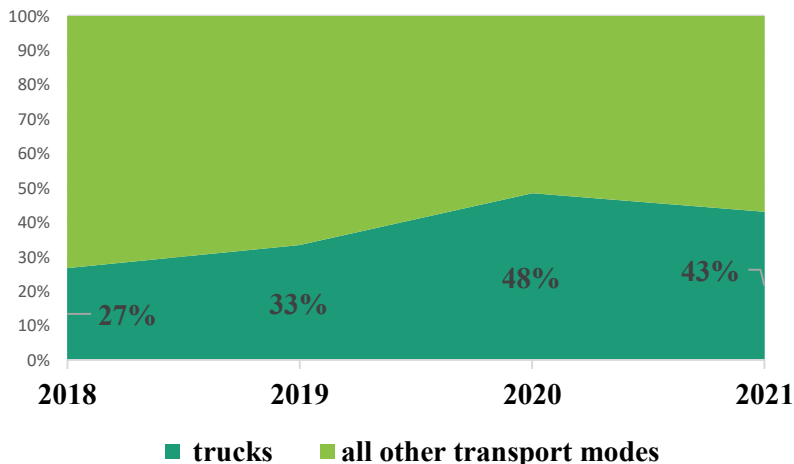
Zakarpatska oblast

- **M-06** “Kyiv-Chop”, **M-06/E58** – Uzhorod, **E50**,
- Pan-European #5
- Core network TEN-T “Rhine-Danube” – road (Uzhorod) and rail (Chop)

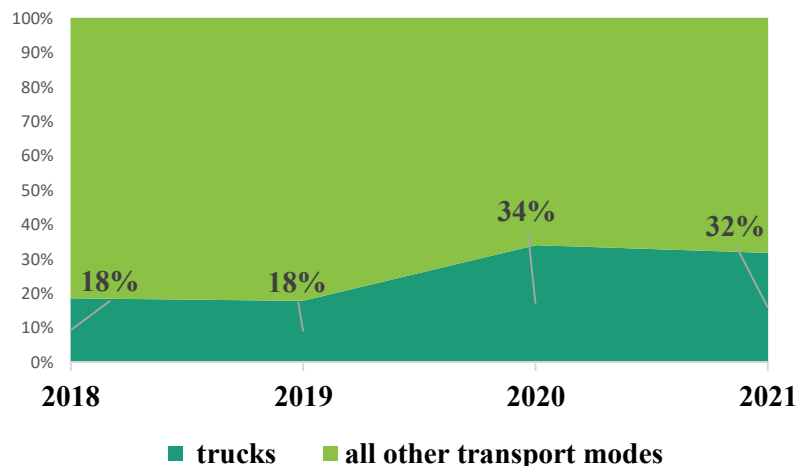
Main trends of freight transportation through the border with Poland and Slovakia in 2018-2021

Split of trucks (%) in total volume of road transport traffic (car, bus, truck) crossing the checkpoint

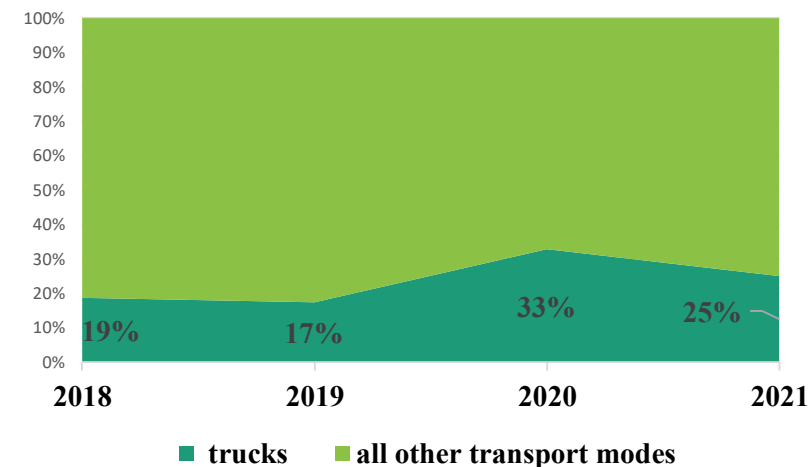
Yahodyn (PL)



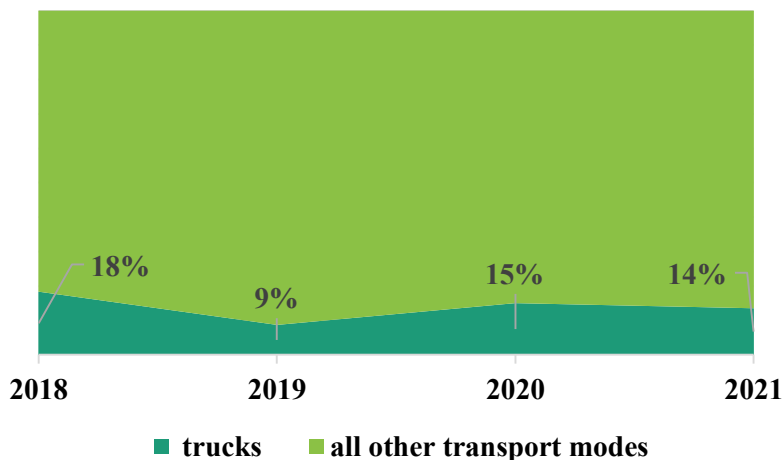
Rava-Ruska (PL)



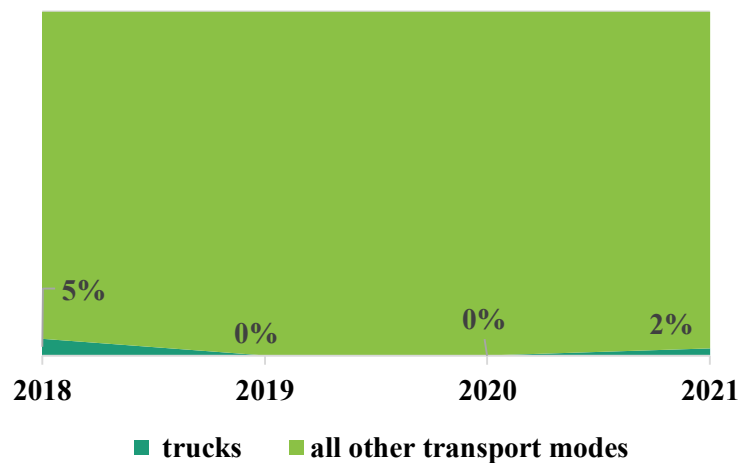
Krakivets (PL)



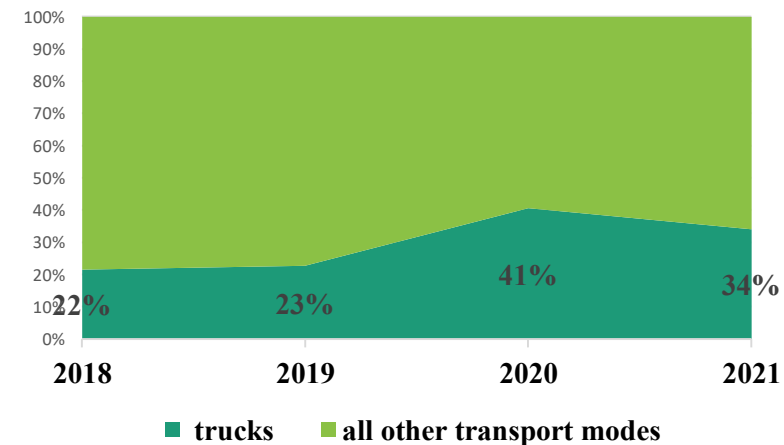
Shehyni (PL)



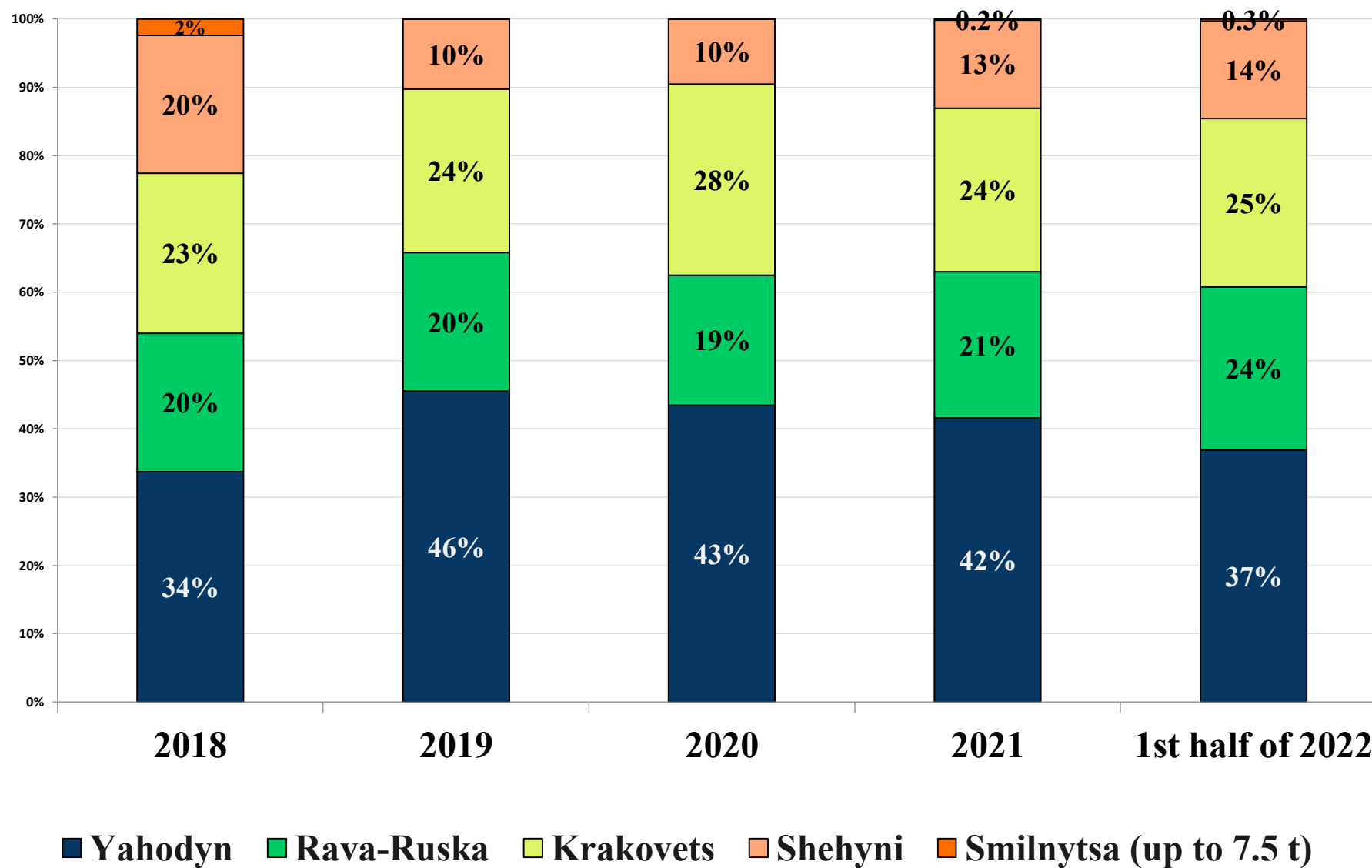
Smilnytsa (up to 7.5 t) (PL)



Uzhorod (SK)

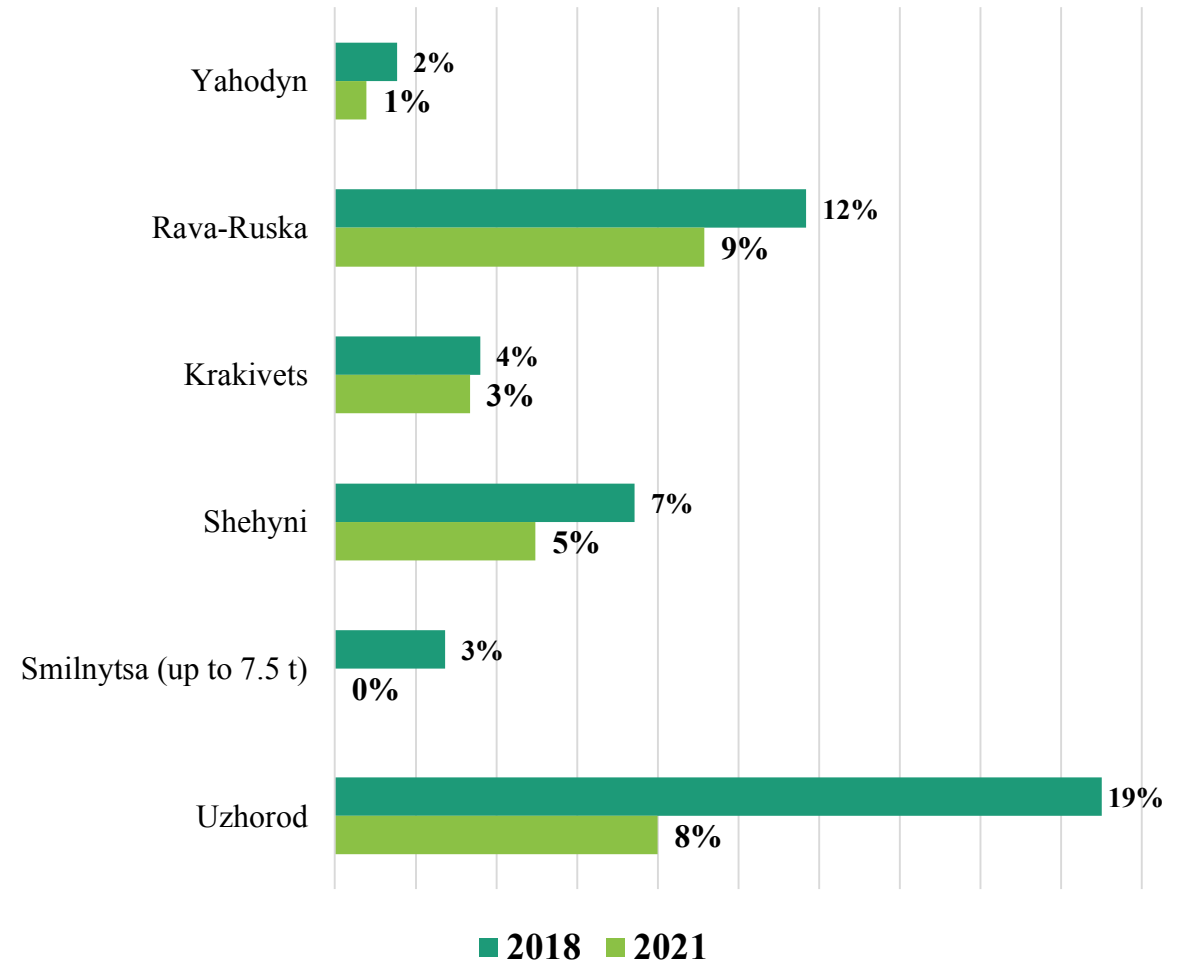


Share of each BCPs in passage trucks cross the border with Poland, %

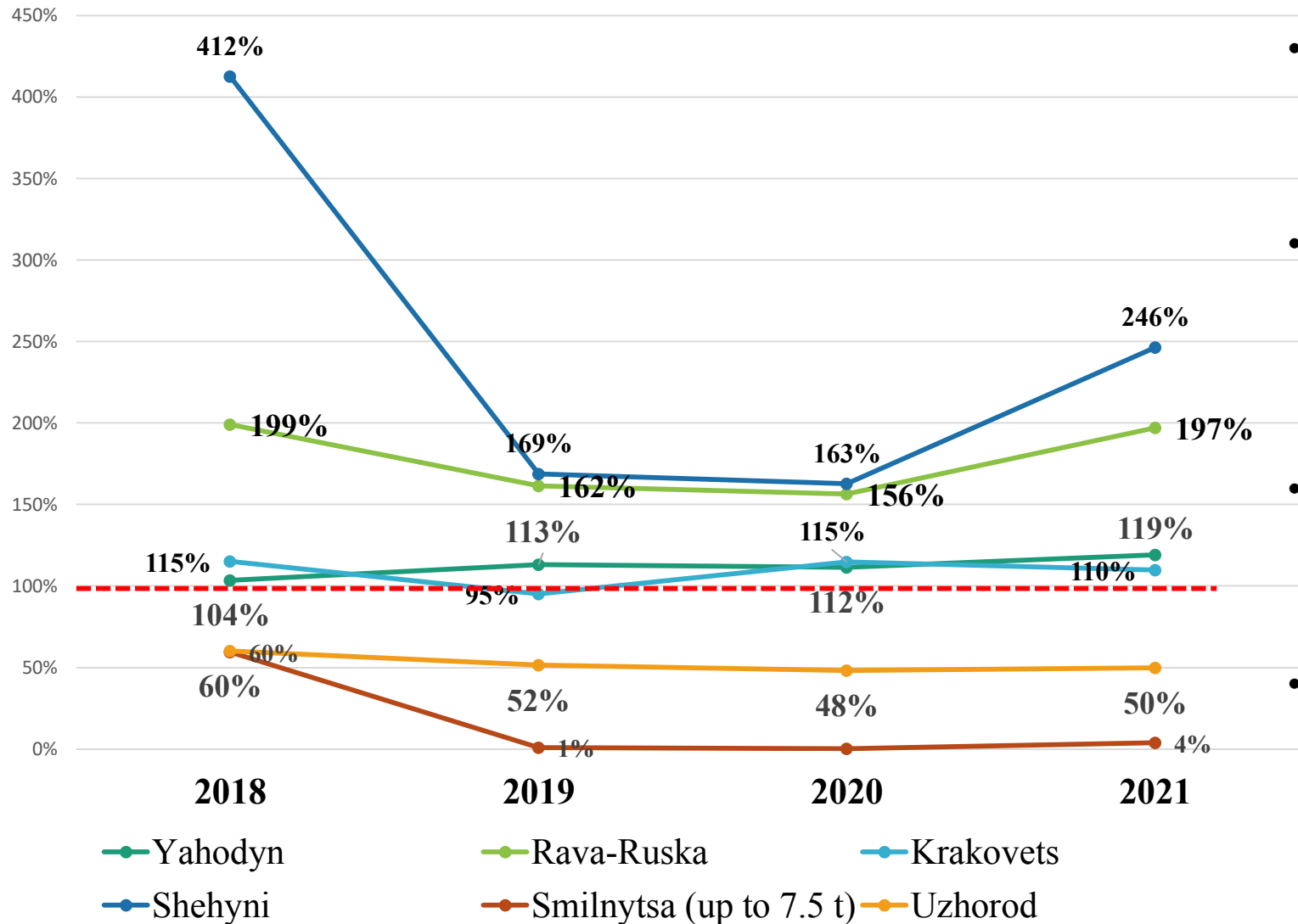


How many transit trucks cross BCPs?

- The share of transit trucks in “Yahodyn” is near 1% of the passage of all freight transport (2021)
- The highest share was in “Rava-Ruska” in 2018 - 12% (border with Poland). It dropped down to 9% in 2021
- It can be concluded that export-import goods are transported by trucks through the Poland-Ukraine border
- The share of transit freight vehicles in all freight transport in 2018 was 19%. In 2021 - 8% (Uzhorod).
- “Uzhorod” - In 2018, 29% of all trucks that crossed the border in the direction "to Ukraine" were in transit. It is gradually decreasing as of 2021 up to 12% (direction "to Ukraine"). Although the trend remains for transit flow in the direction "to Ukraine" prevails
- The number of transit trucks crossing Poland-Ukraine border decrease as well as Slovakia-Ukraine border

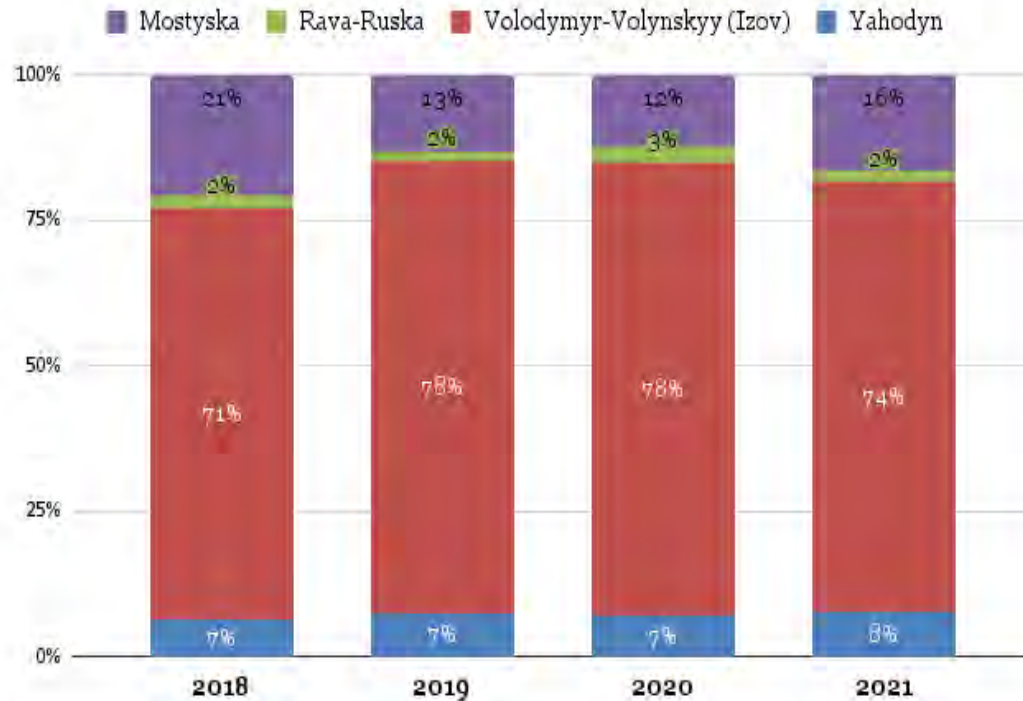


Average load coefficient (trucks per day) for each BCP



- If average load coefficient equals 100% it means that BCP passage of freight vehicles the same as designed capacity of checkpoint.
- For instance, designed capacity of “Uzhorod” - 500 freight vehicles per day. In 2021 in average “Uzhorod” passed 249 freight vehicles per day. So, average load coefficient is 50%
- 4 out of 5 BCPs with Poland characterized by an average load coefficient more than 100% (2018-2021)
- Average load coefficient in “Uzhorod” varied from 60% to 50% in 2018-2021

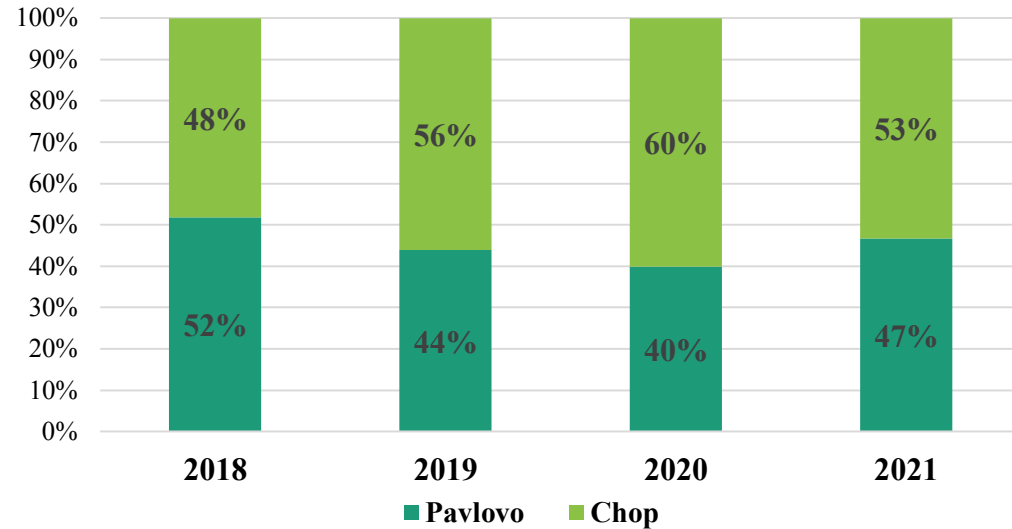
Flow of freight cars and cargo volume through the border with Poland



Share of each BCPs in passage of freight cars, % (2018-2021)

- The annual number of freight cars that crossed all 4 BCP are decreased from 2018 to 2020
- In 2021 the number of freight cars slightly increased with the exception of Rava-Ruska where the number of freight cars decreased
- “Volodymyr-Volynskyy” (Izov) is the major BCP by volume of freight transportation. $\frac{2}{3}$ of all freight cars as well as cargo volume pass through it
- Proportion of freight cars in both direction (“in Ukraine” and “out of Ukraine”) is almost equal
- Loaded freight trains prevails in outbound traffic. In 2018-2020 more than 90% of all cargo that crossed the border moved “from Ukraine”
- The share of transit freight cars has not exceed 20% in each BCP (from the total flow of freight cars) and has characterized by a decrease until 2021

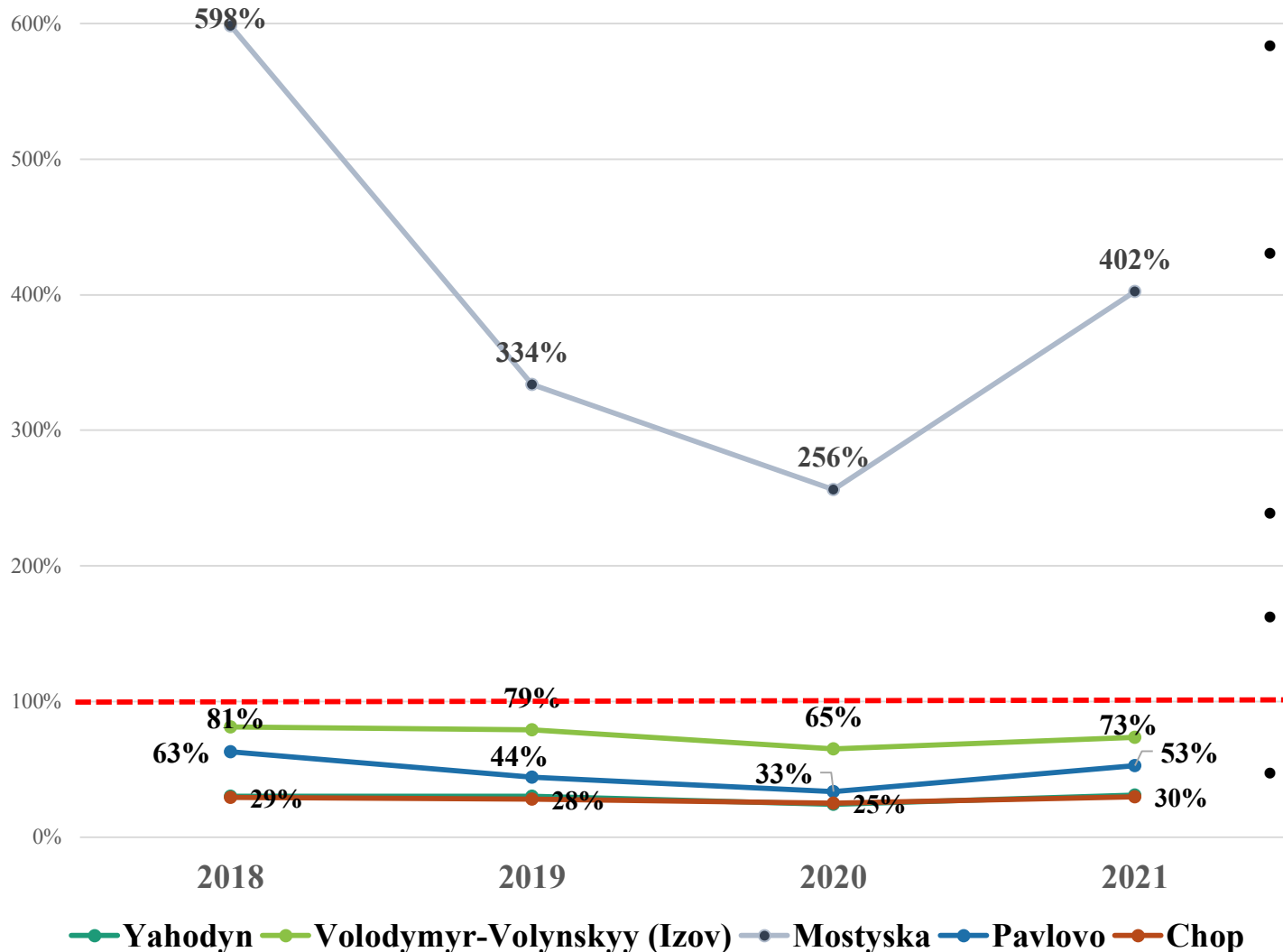
Flow of freight cars and cargo volume through the **border with Slovakia**



Share of each BCPs in passage of freight cars, % (2018-2021)

- The annual number of freight cars having crossed two BCP with Slovakia decreased from 2018 to 2020. The volume of cargo also decreased during this period
- In 2021, an increase in rail transportation was observed
- Freight cars and cargo volume are distributed proportionally between the 2 checkpoints – “Chop” and “Pavlovo”
- The distribution of freight cars in outbound and inbound traffic is the same (50% on 50%) at both BCPs
- In cargo structure dominates outbound traffic in “Chop” as well as “Pavlovo” (> 90% of cargo volume moves in direction “out of Ukraine”)
- Share of transit freight cars in total flow of freight cars in “Pavlovo” was between 40 and 59%, in “Chop” not exceed 10%

Average load coefficient (freight cars per day) for each BCP



- If average load coefficient equals 100% it means that BCP passage of freight cars the same as designed capacity of checkpoint.
- For instance, designed capacity of “Chop” - 2000 freight cars per day. In 2021 in average “Chop” passed 595 freight cars per day. So, average load coefficient is 30%
- Only “Mostyska” has an average load coefficient more than 100% (2018-2021)
- Average load coefficient in “Volodymyr-Volynskyy (Izov)” varied from 81% to 73% in 2018-2021
- “Yahodyn” and “Chop” have the least average load coefficient – near 30%

What is change in the 1 half of 2022?

the 1st half of 2021 vs 1st half of 2022

Road freight traffic

- The number of freight vehicles having been passed through the border in the first half of 2022 decreased compared to the previous period and amounted to 89% of the first half of 2021 at the border with Poland
- The number of trucks decreased, because economic activity in Ukraine declined due to the war, many enterprises did not work in the first few months and therefore did not carry out export-import operations (border with Poland)
- At the same time, a slight decrease in crossing the border (freight vehicles and cargo) due to the reduction of export-import operations was compensated by humanitarian cargo
- In “Uzhorod” number of freight vehicles having been crossed the border increased. The cargo volume doubled. Inbound as well as outbound cargo traffic increased. However, the share of transit in the inbound traffic decreased sharply.

Rail freight traffic

At the border with Poland

- In the 1st half of 2022 the number of freight cars moved through the border increased (with the exception of “Rava-Ruska”)
- Cargo volume growth in 1.8 times (Yahodyn), 1.2 times (Volodymyr-Volynskyy (Izov)), 1.6 times (Mostyska). Cargo volume in “Rava-Ruska” slightly decreased
- In the 1st half of 2022 transit freight cars as well as cargo declined sharply. In the 1st half of 2021 through the border with Poland moved 16 thousand transit freight cars and in the 1st half of 2022 only – 4 thousand freight cars in transit (for all BCP together). In addition, the volume of transit cargo fell threefold

At the border with Slovakia

- The number of freight cars moving through the border increased in “Pavlovo” and in “Chop (Strazh)”
- The volume of cargo through the “Chop (Strazh)” in direction “to Ukraine” increased in 1.7 times. The volume of cargo “out of Ukraine” remained unchanged. Generally, the volume of transit cargo fell threefold.
- The volume of cargo through the “Pavlovo” in direction “out of Ukraine” stayed almost constant. The volume of cargo in direction “to Ukraine” dropped down and amounted 61% of the volume in previous period. Moreover, the volume of transit cargo fell in 2.8 times in the 1st half of 2022 compared to the 1st half of 2021

Where are the bottlenecks and how to deal with them?

Border crossing time consists of **waiting time** + **crossing time**



WAITING TIME - time to enter Border Crossing Point

CROSSING TIME
time in Border Crossing Point for checks and procedures

Crossing time varies and depends on types of control - border, customs, sanitary and epidemiological, phytosanitary, veterinary, ecological (radiological)

In case of the loaded truck it can be on average from 26 min up to 3 hours

Can waiting time be reduced by efficient traffic management?

- Segregation of BCPs for freight and passengers traffic 
- Managing the existing number of lanes to accommodate flow during peak times
- Automatization of procedures (weighing of trucks, vehicle recognition and radiation detection etc).
- Approach road capacity (provide parking capacity for trucks nearby where their approach to the BCP can be controlled)
- Road-side facilities (service stations, rest areas, etc)
- Pre-arrival information (information on BCP conditions on road-side facilities or via internet services. So, the drivers can make a decision on changing their route or waiting at a service station without creating additional queues on road near the border)
- Introduction of e-queue management service 

From September 1, 2022 to December 31, 2022, the movement of trucks with a maximum weight of more than 7.5 t was carried out through 4 BCPs: "Rava-Ruska", "Krakivets", "Shehyni", "Yahodyn". The passage of cars and buses at these BCPs remains unchanged, with the exception of "Yahodyn", where the passage of cars is temporarily not carried out.

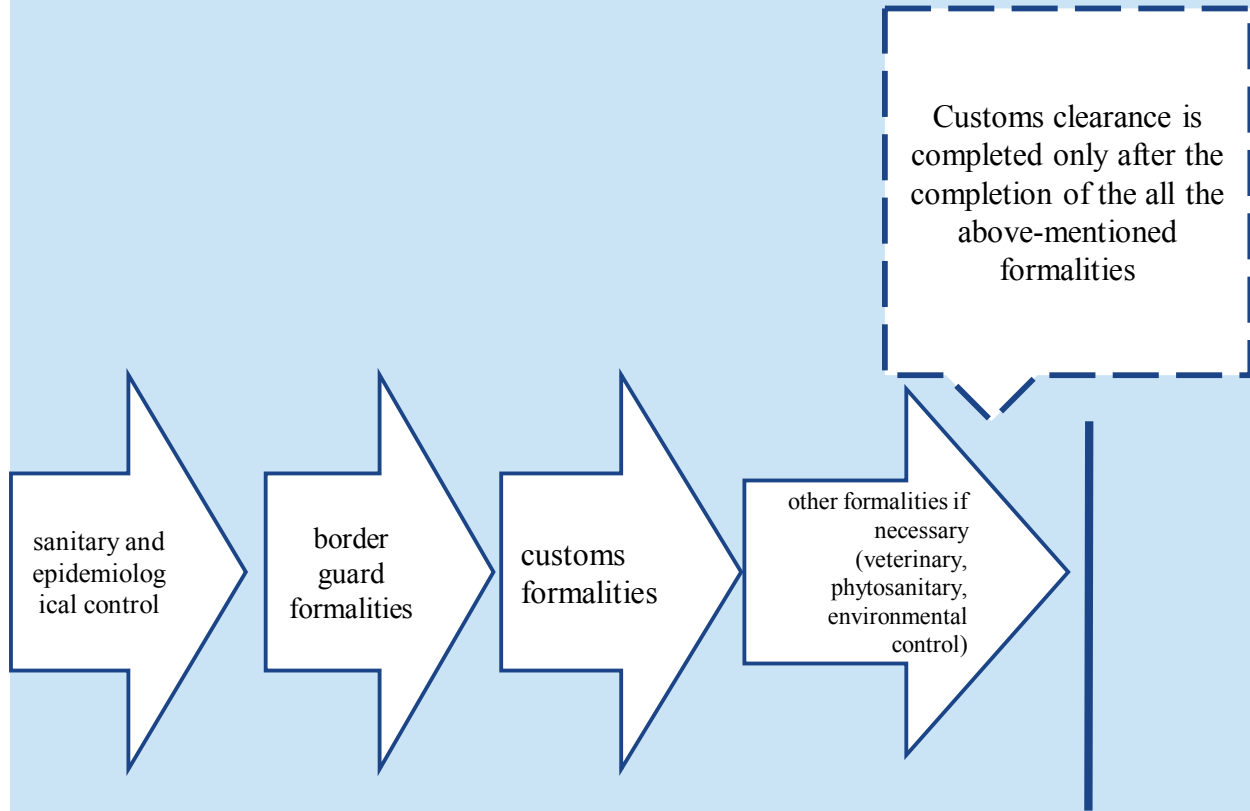
The Ministry of Infrastructure of Ukraine announced the start of implementation of the project Electronic Border Crossing Queue. The service should be launched in 2022 in "Uzhorod" and will be available only for trucks

*Also, from **12 December 2022** e-queue will begin to operate in "Yahodyn". It will be possible to register for the e-queue at border crossings on the website (echerha.gov.ua)*

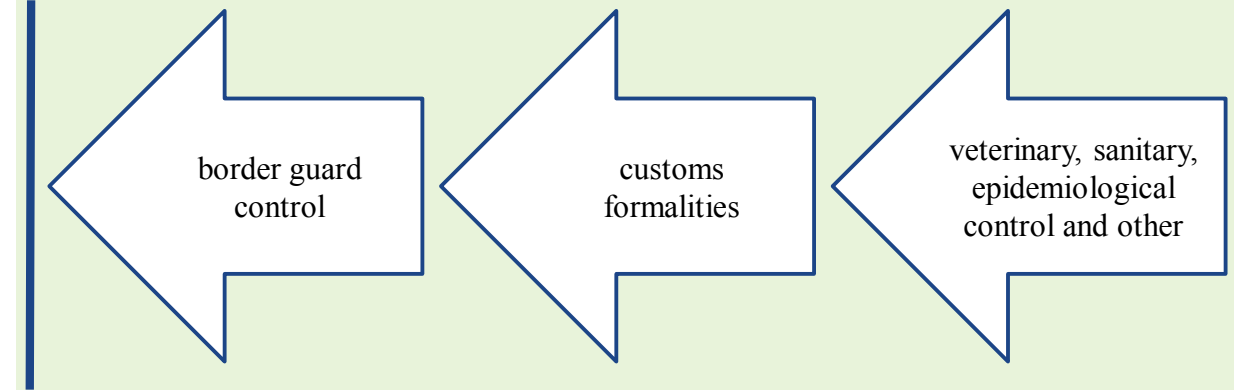
Sequence of control types

according to Technological scheme crossing the border of Ukraine transport vehicles, persons, their hand luggage, goods and other objects that are moved by them (an example of the checkpoint “Mostyska”)

• Entrance in Ukraine



• Departure from Ukraine



Ways of reduction the CROSSING TIME

- **Physical infrastructure improvements** (modernization and upgrade of BCP's facilities and equipment – for instance, extra lanes, X-ray scanner, dynamic scales, buildings, lightening, weighbridge, banking services, park of locomotives, bogie exchange facilities, transshipment of cargo - reloading facilities and equipment etc.)
- **Spatial reorganization of BCP** (for instance, separate lane for transit transport, for empty trucks etc.)
- **Improved operations and staff issues** (coordinated working hours by all agencies, especially when there is a change of shift, increase number of working stuff at the border during rush hours)
- **Joint border operations** (“+” reduces the check time, optimizes resources, requires less equipment and space “-” difficulties mainly in the incompatibility of Schengen and Ukrainian legislation)
- **Concept of Integrated border management** (coordination and cooperation among all authorities involved in border management and trade (border police, custom office, veterinary, phytosanitary inspectors and others)
- **Simplification of procedures and required documentation, IT solutions** (for instance, using them electronically, electronic data interchange)
- **Standardization and harmonization through the international cooperation and agreements** (e.g. New Computerized Transit System (NCTS))

In summer 2022, BCP “Krakivets-Korczowa” was upgraded. In particular, pavilions for customs and passport control were modernized, the number of truck lanes was increased from 4 to 10 etc.

It is discussed with Polish side possibility not to carry out sanitary and phytosanitary controls (SPS measures) in import direction, if truck moves through Poland in transit mode

It is considered the possibility of increasing the number of employees of phytosanitary and veterinary services in Poland at checkpoints on the Polish-Ukrainian border

It is discussed the possibility to arrange several checkpoints where only empty trucks will pass

Ukrainian side will consider the possibility of sorting of trucks leaving with export products depending on the type of cargo