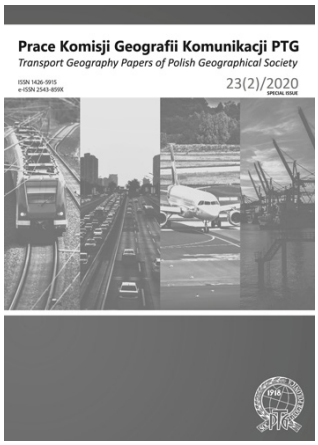

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THE INFLUENCE OF COVID-19 ON REGIONAL RAILWAY SERVICES IN ITALY AND POLAND

Wpływ COVID-19 na regionalne usługi kolejowe we Włoszech i w Polsce

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Abstract: The aim of the paper is to compare the scale of regional train cancellation in Italy and Poland in the aftermath of COVID-19 pandemic and to answer the question whether different approaches to public transport limitation can be observed at national and regional scales in different European countries. The article is a preliminary study and as such contains the first observations and initial conclusions. From the analysis it results that the influence of COVID-19 on regional railway transport in both Italy and Poland is strong but much different. In Italy the scale of cancellation is generally larger and so are the differences between the regions. In both analysed countries the lines which have turned out to be mostly affected by suspension are urban and suburban connections with dense train traffic. It would seem that in Italy exactly as in Poland the train cancellations are more the result of the character of the operated rail system, the different approaches to regional rail transport and of the tendency to cut costs than of the actual epidemic situation in the regions.

Keywords: rail transport, regional railways, Italy, Poland, COVID-19

Introduction

The appearance of COVID-19 in Europe at the beginning of 2020 has influenced a great part of economic and social life of the entire continent blocking or at least putting large-scale limits on most activities. Transport has quickly resulted to be strongly affected by the closures of schools, universities and workplaces and suspension of de facto the entire leisure travel. This applies in particular to public transport which has additionally suffered from being perceived as less safe than private car or bicycle.

The aim of the paper is to compare the scale of regional train cancellation in Italy and Poland in the aftermath of COVID-19 pandemic and to answer the question whether different approaches to public transport limitation can be observed at national and regional scales in different European countries. The article is a preliminary study and as such contains the first observations and initial conclusions.

The reasons for the choice of Italy and Poland for the study are connected with both the characteristics of these two countries and the features of COVID-19 diffusion. The former arguments apply to similarities in geography and railways systems of Italy and Poland. In fact, the surface of both countries is similar (302 073 km^2 of Italy and 312 696 km^2 of Poland) and so is their administrative division with 20 and 16 regions respectively. Both nations are characterized by large-scale regional disparities in economic development with the differences mainly between North and South (Italy) and South-West and North-East (Poland). The total length of railways networks is also quite similar – 16 781 km in Italy and 19 235 km in Poland according to Eurostat (2020). In both countries regional railway transport is organized and financed by regional governments and is operated mainly by the national railway carrier (in Italy the only national operator Ferrovie dello Stato Italiane – Trenitalia, in Poland the national regional rail operator Polregio) but also by some regional companies active in single regions (e.g. Trenord in Lombardy and Koleje Mazowieckie in Mazovia).

1. Methods

The cancellation of regional railway services in Italy and Poland has been analysed on the example of chosen lines of regional character in both countries. The selection of these lines has been carried out on the basis of regional railway lines classification proposed by the authors (tab. 1).

Tab. 1. The classification of regional railway lines in Italy and Poland.

Type	Description	Number of analysed lines in Italy	Number of analysed lines in Poland
A	urban and suburban lines	16	9
B	lines linking the capital of the region (or its largest centre) with the second or third largest city of the region	18	16
C	lines linking the capital of the region with another important centre (outside the urban region)	14	16
D	more peripheral regional line not linking the capital city of the region	30	22
E	regional line crossing the region boundaries	10	8
F	line of tourist importance	16	5
Total number of lines		73	64

Remark: the total number of lines results lower than the sum of the lines of types A-F because some lines (especially in Italy) have been classified as representing two or even three types at the same time

Source: own elaboration of the authors.

On each selected line the number of direct regional trains operating on working days both according to regular schedule and according to special COVID-19 schedule introduced in March-April 2020 has been calculated. This calculation has been based on the comparison of the Italian and Polish railway timetables published for the entire period December 2019 – December 2020 with the search engine for rail connections offered by the webpages of Italian and Polish state railways (FS-Trenitalia and PKP).

2. The spread of COVID-19 in Italy and Poland

The first case of coronavirus in Italy was identified on 31 January and in Poland on 4 March 2020. In both countries the governments decided to put large-scale limits on social and economic life.

In Italy the state of emergency was declared already on 31 January. A quarantine was introduced at the beginning only in most affected communities in Lombardy and Veneto, then in the entire country. The Italian schools and universities were closed on 4 March and exactly a week later all shops except for grocer's and pharmacies followed. On 21 March all businesses and industrial activities in Italy declared for not necessary were stopped (www.governo.it, 2020). In Poland the state of epidemic emergency was introduced on 14 March and six days later the state of epidemic followed. The closure of schools, kindergartens was decided even earlier – on 11 March whereas the teaching activities at the universities were stopped only a day later. On 13 all shops apart from grocer's and pharmacies as well as restaurants were closed (www.gov.pl, 2020).

Not only the time of appearance of COVID-19 but also its speed and regional diffusion have turned out to be very different between the two countries. At the moment of writing (23 April 2020) in Italy the total number of all cases sums up to 189,973, whereas the number of active cases is 106,848. The number of deaths is 25,549. The issue which is particularly interesting from the point of view of the present article is geographical spread of COVID. As for 23 April 33,873 active cases (i.e. 31% of all in Italy) are registered in Lombardy, 15,152 in Piedmont and 12,845 Emilia-Romagna. These Northern regions are the only ones where the number of active cases is higher than 10,000. Central and Southern Italy has been affected much less; in fact the number of active cases in Tuscany is 6,171, in Lazio 4,486, in Campania 2,987 and in Sicily 2,301 (all data from: www.salute.gov.it, 2020). In Poland as for 23 April the total number of all cases (which is equal to the active cases) sums up to 10,511 and the number of deaths is 454, hence the scale of epidemic is completely different than in Italy. The regions with most active cases are Mazovia (the region of the capital city Warsaw) with 2,166 patients (almost 21% of all cases in Poland), Silesia (1,646) and Lower Silesia (1,211) (all data according from: www.gov.pl, 2020). Mazovia is situated in Central-Eastern Poland, Silesia in the South and Lower Silesia in South-West, so – unlike in Italy – no particular zone of the country can be identified as most infected. Regions with the highest numbers of active cases seem to be those which are among the most populous and where large cities are present (Warsaw, Katowice urban area, Wrocław).

3. Decrease in the number of passengers

From the beginning of the pandemic passenger railway transport companies have started recording decreases in the number of passengers, the scale of which cannot be compared with any situation over the last decades. In fact, in April 2020 the Polish Office of Rail Transport (UTK) observed a decrease in the number of passengers (in both regional and long-distance traffic) of 70 to over 90% (Kwinta, 2020). The minister of infrastructure Andrzej Adamczyk evaluates the decrease in regional rail transport to 80-90% (Adamczyk – mamy nadzieję…, 2020). A good illustration are the calculations of the regional railway operator Koleje Wielkopolskie active in the region of Greater Poland which observed the fall in the average number of passengers from 40,000 to 6,000 per day (Czubiński, 2020). In Italy already at the beginning of March 2002 Trenord – the regional rail operator in Lombardy registered a decrease from 820,000 to 350,000 passengers per day (Grassia, 2020).

4. Results

The scale of regional trains cancellation in Italy has turned out to be very diverse in different regions (tab. 2). What is more, there does not seem to be a clear dependence from the epidemic situation. In fact, the largest scale of the offer reduction does not apply to the regions which are most affected by COVID-19 like Lombardy, Piedmont or Emilia-Romagna, but to Southern regions with relatively moderate numbers of active cases. The region which situation raises particular doubts is Sicily where merely 7% of trains foreseen on analysed lines is now in operation. This is connected with the fact that in this region both densely used urban lines and local connections with just few trains per day have been suspended. In fact, all trains operating every 30 minutes down the urban line connecting Notarbolo and Giachery stations in Palermo have been cancelled, exactly like the only two trains connecting the island's second largest city Catania with the town of Caltagirone.

Tab. 2. The share of regional trains in Italy running at present (23 April 2020) of all scheduled trains in regular timetable in different regions (calculated on the example of 73 lines).

Region	Share	Region	Share
Liguria	100%	Tuscany	43%
Aosta Valley	95%	Umbria	42%
Trentino-South Tyrol	77%	Friuli-Venezia Giulia	36%
Veneto	70%	Marche	36%
Emilia-Romagna	63%	Lazio	33%
Campania	55%	Molise	31%
Apulia	52%	Calabria	26%
Lombardy	49%	Sardinia	22%
Basilicata	47%	Abruzzo	19%
Piedmont	43%	Sicily	7%

Source: own elaboration of the authors based on: In treno. Orario tutt'Italia..., 2019 and www.trenitalia.com, 2020

The scale of cancellation in other regions of the South has not been so vast but even so due to numerous cases of drastic reduction of the timetable (from 20-30 pairs to merely 3-8 pairs on lines A, making these important connections similar to local lines) in regions like Abruzzo, Sardinia or Calabria the regional railway offer has certainly seen a large scaling down. This has not happened in Northern regions which are most affected by COVID-19. Undoubtedly, Lombardy and Piedmont which are the first two regions as far the number of active coronavirus patients is concerned, have been affected by large-scale cancellation of regional trains which has left fewer than half of the offer. However, especially in Lombardy which is characterized by a particularly dense rail traffic even of local lines (more than 10 pairs per day on lines like Pavia – Alessandria or Colico – Chiavenna and over 20-30 on lines like Milan – Como or Milan – Mortara lines according to the normal schedules) even after the cancellation the timetable foresee at least 6-8 pairs of trains on local lines and over 15 pairs on suburban connections. In fact, the scale of cancellation seems to be connected rather with the approach of regional governments to rail transport than with the pandemic itself. A good illustration of this seems to be the comparison of the scale of regional train reduction in two Northern regions: Friuli-Venezia Giulia and Liguria. In the former only 36% of scheduled trains are in operation on analysed lines whereas in the latter as much as 100%. As for 23 April in Friuli-Venezia Giulia there are 1,1135 active patients and in Liguria 3,466 which stands for 0.0009% and 0.0022% of population respectively.

It is also interesting to compare the scale of reduction on different types of lines (tab. 3). Most affected by cancellations are urban and suburban lines which are characterized by very dense rail traffic and high share of commuters who have stopped travelling in the aftermath of mass suspension of industry and services on the entire territory of Italy. However, the second most affected line type are more peripheral local connections which would suggest that the reasons for closures should be searched rather in cost cutting than in antivirus policy of the regions. Interestingly, lines classified as important for tourism have resulted to be less affected by closures. However, it should be emphasised that in such an attractive country as Italy which is full of scenic railway sections passing through mountains or down the seaside all lines of F type have also other – often even more important – functions. In fact, a section like the Adriatic coast line Rimini-Ancona-Pescara serves numerous seaside resorts but is also a crucial regional and intercity connection with intense suburban traffic round larger cities.

Tab. 3. The share of regional trains in Italy and in Poland running at present (23 April 2020) of all scheduled trains in regular timetable according to types of line (calculated on the example of 73 and 64 lines respectively).

Type of line	Share	
	Italy	Poland
A – urban and suburban	45%	50%
B – linking the capital of the region (or its largest centre) with the second or third largest city	53%	75%
C – linking the capital of the region with another important centre (outside the urban region)	54%	77%
D – more peripheral regional line not linking the capital city	46%	74%
E – regional line crossing the region boundaries	58%	81%
F – line of tourist importance	59%	43%

Source: own elaboration of the authors based on: In treno. Orario tutt'Italia..., 2019; www.trenitalia.com, 2020; Sieciowy rozkład jazdy… and 2019 and www.pkp.pl, 2020.

Polish regions and regional railway operators have reacted to the pandemic and its consequences for travel demand in a different way than Italy. All 16 voivodeships have seen a reduction of regional train offer, but its scale has resulted to be generally much more limited than in Italy (tab. 4). Only in two regions the share of running regional trains if compared with the regular schedule is slightly lower than 50%; in most voivodeships it is higher than 60%, however it should be emphasised than regional railways in Poland are generally characterised by lower traffic intensity than in Italy.

Tab. 4. The share of regional trains in Poland running at present (23 April 2020) of all scheduled trains in regular timetable in different regions (calculated on the example of 64 lines).

Region	Share	Region	Share
Podlaskie	89%	Lower Silesia	68%
Świętokrzyskie	86%	Kuyavia-Pomerania	67%
Warmia-Masuria	86%	Łódź	66%
Lubusz	77%	Subcarpathia	63%
Mazovia	77%	Lublin	59%
Greater Poland	72%	Lesser Poland	51%
Opole	71%	Pomerania	49%
Silesia	71%	West Pomerania	45%

Source: own elaboration of the authors based on: Sieciowy rozkład jazdy…, 2019 and www.pkp.pl, 2020.

Similarly to Italy, no clear connection between the number of COVID-19 cases and the scale of regional rail offer reduction can be seen. In fact, regions with the highest number of coronavirus cases have maintained over 2/3 of their normal train offer. Unlike in Italy it would be difficult to identify the regions with largest reduction with a certain part of the country. The three voivodeships which have decided to cancel about half of all regional trains are Pomerania and West Pomerania and located in the North of Poland and Lesser Poland in the South. They are characterized by generally medium-sized railway networks but which much differences in traffic intensity. Whereas Pomerania stands out as having the busiest railway lines in Poland with as many as 113 pairs of trains per day (metropolitan railway between large coastal cities Gdańsk and Gdynia in the Tricity metropolitan regions), West Pomerania has a much more balanced train offer on both suburban and peripheral lines and in Lesser Poland far most traffic concentrates on merely few lines round Kraków. By contrast, an unequivocal common feature of the regions which have decided to maintain over 80% seems to be easier to identify. All these three regions – Podlaskie, Świętokrzyskie and Warmia-Mazuria are rather peripheral regions without large cities and with poorly developed railway networks operated by low number of trains. In fact, on most regional lines – in particular in Podlaskie and Warmia-Mazuria – the regular schedule foresees not more than 5-6 pairs of trains per day, a number that seems to have been considered too low to be able to reduce significantly.

The differences in the scale of cancellation between different types of lines are much greater in Poland than in Italy (tab. 3). Generally almost all types of lines have resulted less affected than in Italy. The only exception – and the only case of over 50%-reduction – are lines of tourist importance. In fact, these are the only types of lines in Poland on which cancellation of all trains have been decided. This is the case on two short lines connecting Baltic sea resorts Ustka in Pomerania and Sławno in West Pomerania. A question arises, to which extent their closure has been caused by their tourist character and to which by the fact that they are local and rather peripheral connections (that used to remain closed for more years in the past). A feature which seems to be characteristic for Poland is certainly the tendency to cancel trains in particular on urban and suburban lines with dense train traffic on which even suspension of half of trains does not result in a very poor offer. Apart from (sub)urban and tourist lines the scale of cancellation on all other types is rather similar. Interestingly, the highest share of remaining trains has been observed on local lines which cross region boundaries. These are usually relatively long lines (over 50 km, in some cases even over 100 km) which are not characterized by a particularly reach train offer.

Conclusions

The influence of COVID-19 on regional railway transport in both Italy and Poland is strong. Due to large-scale limitation of industry and services, closures of schools and universities as well as a complete stop of leisure travel the demand for public transport has seen the greatest scaling down over the last decades.

However, significant differences between Italy and Poland can be observed. Firstly, the scale of cancellation in Italy is generally larger; in 13 regions (of 20) over 50% of regional trains have been cancelled, whereas in Poland this has happened only in 2 regions (of 16). Secondly, the differences between the regions are greater in Italy than in Poland. In the former country we have the exceptional case of Sicily where merely 7% of scheduled regional trains are in operation at the moment, but in Liguria the figure is as high as 100%. In Poland the difference between the "best" and the "worst" regions is the one between 45% (West Pomerania) to 89% (Podlaskie). Thirdly, whereas in Italy there are Southern regions to have registered far largest cancellations, in Poland no clear geographic spread of the phenomenon can be observed.

In both analysed countries lines which have turned out to be mostly affected are urban and suburban connections with dense train traffic. This is probably because here typical commuter trains, in particular those operating in peak hours have been cancelled, but the train offer still remains rich. However, in Italy the differences between several types of lines are much smaller than in Poland. This fact may be connected with generally smaller train density in Poland. Interestingly, the only type of line which has been affected by train cancellation more in Poland than in Italy are lines of tourist importance. They are also the only among the analysed connections in Poland on which all trains have been suspended. However, this seems to be caused more by their peripheral character than by their tourist function.

It would seem that in both countries the train cancellations are more the result of the character of the operated rail system, of the different approaches to regional rail transport and of the tendency to cut costs than of the actual epidemic situation in the regions. The phenomenon that generally more cancellations have been made on lines with high traffic density seems to be connected with the fact that relatively high number of trains scheduled have made it possible to suspend a higher number of them. In other words, the cuts of services have taken place where they have been possible to make. However, this "model" seems to have been put into practice in two different ways. In Poland the largest COVID-19 scaling-down of the regional railway offer has taken place mostly in voivodeships which had good or at least average train offer and consequently the smallest cancellations can be observed in peripheral regions in which there were too few trains to be suspended. In Italy, by contrast, Norther regions characterised by dense regional traffic intensity have generally decided to introduce small scale reductions whereas the largest share of cancelled trains has been noticed in more peripheral Southern regions some of which (like Sicily) have stopped almost the entire service, both on lines with dense traffic and not.

It goes without saying that the problem of train cancellation connected with COVID-19 is very dynamic and that further analysis are strongly recommended, in particular in order to discuss prospects of future functioning of transport in the next phases of the pandemic.

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