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### INTRODUCTION

The development of information and information technologies has a significant impact on the functioning of society. This information has become the most important resource of enterprises, its lack or excess can have a significant impact on the individual or functioning of the organization. Technological progress in the field of IT as well as growing requirements regarding access to information and increasing demand for advanced IT services and applications mean that for many people constant access to the Internet is a necessity.

Working on the go, being up to date or simply browsing social media? Internet on the train seems to be a basic need. It is important before the trip to check which trains you can count on, and in which offline.

If you are going somewhere by train, be prepared that at 99% at some point in the trip you will not have access to the network. It simply will not reach. In many places, especially those away from cities, the signal is weak and can simply disappear. And it does not depend on whether you are driving an express from Warsaw to Krakow or a regional connection. On the other hand, regardless of whether it is a data packet or a Wi-fi train, in many places and in many trains access to the network will make the journey seem shorter.

### ACCESS TO THE NETWORK ON THE TRAIN

#### Internet at PKP intercity

In long-distance trains, especially in the most expensive connections of the highest categories, such as Expressy Intercity (EIC), you can count on the Internet. PKP Intercity cooperates with an external company as an Internet provider and therefore access to wireless Internet is possible. This is slightly different in cheaper Intercity (IC) trains, which are quite comfortable and new, and most importantly – they cost the same as TLK trains (Jędrzejczyk W, Kucęba R. 2016). Here the Internet provides a different provider and you do not have to express so many consents to data processing. Works quite well, but there are places in Poland, where the coverage is very weak.

Free Internet can not be expected on TLK trains - you only have to count on yourself. A certain paradox is also the fact that a certain problem with the Internet network can

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be found, if you are going on a Pendolino train. Admittedly, PKP Intercity began to install Wi-Fi routers with Alstom on board its flagship trains, but it will last until the end of 2019. Not all Pendolino trains now have Wi-fi. Secondly, Pendolino trains are constructed in such a way that they suppress signals from mobile phones – hard for a good range, which sometimes disappears completely and hard even for the possibility of talking over the phone (Gryszczyńska A., Szpor G., 2017).

### **POLREGIO – internet on many routes**

On some regional trains there is free Internet. Mostly it is, if they are new trains, driving in some regions of Poland. There is no rule, but if you can count on a free network, you'll find out at KOLEO thanks to the train marking system. If such a service is on the train, the wi-fi symbol will be displayed in the description. And so, for example, it is on all POLREGIO trains running between Świnoujście, Szczecin and Poznań. You can also count on the Internet on the train on some trains from Krakow, especially those going east towards Tarnów, Rzeszów, and Nowy Sącz and Krynica. Free Internet is also on trains from Krakow to Katowice ([https://www.ea.com/pl-pl/bezpiecze\\_stwo-w-sieci](https://www.ea.com/pl-pl/bezpiecze_stwo-w-sieci), 10.05.2019). According to Internet maniacs from Leszno, the Internet is on Regio trains, driving from Poznań to Wrocław and further towards Szklarska Poręba and Kotlina Kłodzka. If you need access to the network, it is best if you check it before traveling in KOLEO in the description of the train. It changes from time to time and maybe now POLREGIO.

### **Regional carriers**

All those who need access to the network on the train, you can recommend the trains of this carrier. The Internet is in every ŁKA train, it has a stable, strong signal. Free Internet in every train of the Łódź Agglomeration Railway (<https://www.intercity.pl/pl/site/o-nas/dzial-prasowy/aktualnosci/bezplatne-wi-fi-we-wszystkich-pociagach-eic-ppk-intercity.html> 14.05.2019). You can only count on free access to trains running on non-electrified lines. New trains driving, among others to the Gdańsk Port Lotniczy station, towards Kartuz, Kościerzyna – they have Wi-fi. You can hit free Wi-Fi in several new electric trains going from Gdansk towards Wejherowo. You can use the free Internet in this SKM Trójmiasto train.

Also on the trains of other regional carriers there is no clear rule whether you will have access to the network. In a nutshell, the newer the train, the more likely it is that the Internet will be in it (<https://www.pcworld.pl/porada/Jak-zadbac-o-bezpieczenstwo-w-Interecie-15-podstawowych-zasad,363415.html> 14.05.2019). For example, the older Arriva RP trains obviously do not have such facilities. Meanwhile, in the newest, produced in Poland, you will also have access to an entertainment center in addition to the Internet.

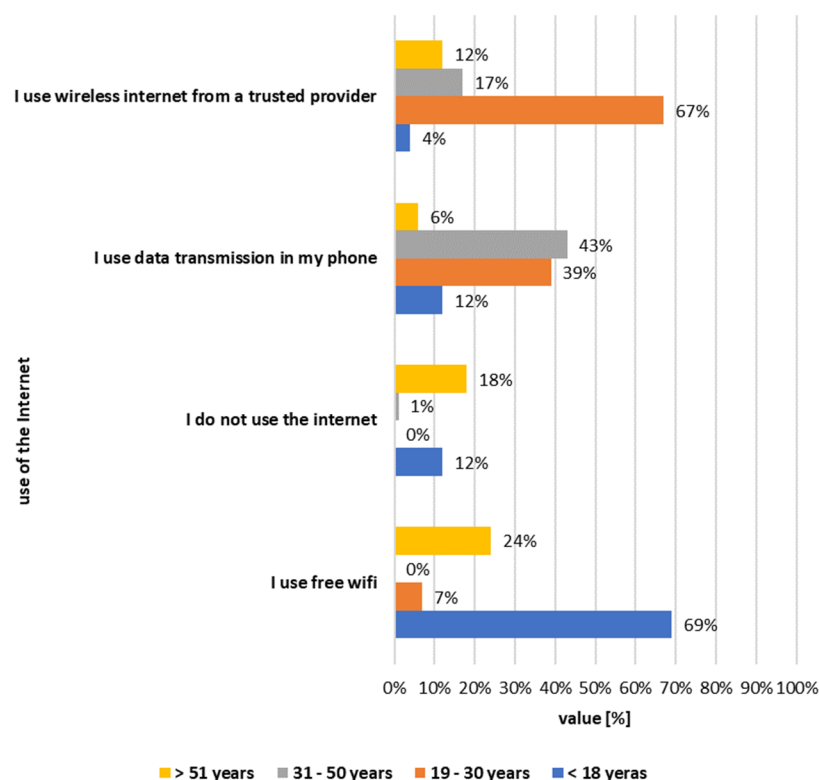
Free Internet and access to the entertainment center on the latest arriva RP trains. The Internet is not on the trains of the Wielkopolska Railways or in slightly older trains of the Małopolska Railways. The network happens in Silesian Railways. It is in newer trains of the Lower Silesian Railways and in these modernized Koleje Mazowieckie. As you can see, it's hard for one rule or standard, even within one carrier.

## USING THE WI-FI NETWORK

WiFi networks in trains or other public places are a very convenient way to use the Internet (Liderman K., 2012). Unfortunately, most often their configuration means that people with bad intentions may try to eavesdrop on other users within the same network. This is not a difficult task – for criminals, an ordinary computer and online software are enough for criminals.

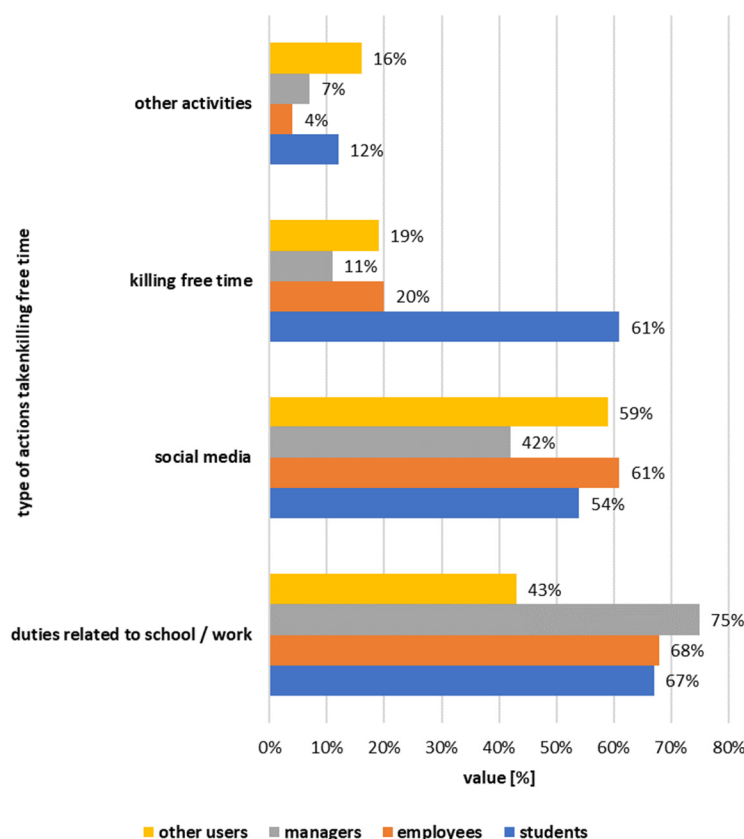
If a computer or phone connects to a website, without using encryption (which you can learn from the presence of a green padlock in the address bar), other people can eavesdrop on the content of transmitted communication in a relatively simple way and learn about passwords or email content. Fortunately, most of the major service providers are already protecting the transmission of information, by encrypting it between the device and the website you visit (Lemańska-Majdzik A., Smolağ K. 2016). The use of banks, social networks or e-mail in a foreign WiFi network is safe as long as you see a green padlock in the browser's address bar. Its lack is a serious warning signal - in such a situation, do not risk and do not give your password on such a website.

Passengers due to lack of markings on trains and contradictory information provided by infolines and employees window. Among passengers, a survey was conducted regarding the use of the Internet during travel (Figure 1). This is a survey to examine passengers' awareness of Internet access, related risks. Data on incident events come from direct interview.



**Fig. 1 T Internet usage by travelers on trains**

Most often, free Internet is used by people under 18, but none of the surveyed groups indicated an answer at 0%, which would also be used by others. The next element studied was the purpose of using the Internet (Figure 2).



**Fig. 2 Activities taken on the Internet while traveling**

Data from PKP Intercity indicate that over 17 thousand people have used the free network within 3 months. On average, passengers sit on the global network for less than an hour. During each session they download about 240 MB of data. So far, everyone using Wi-Fi in Pendolino stores has already downloaded 4.3 TB of data. There is also a record. One of the passengers during the trip took up 7 GB of data. PKP Intercity is still successively installing network infrastructure in the next Pendolino trains. The whole process is to end in November this year. Then all those traveling on these fast and modern trains will be able to enjoy fast and stable access to the global network.

### SECURITY RULES FOR WI-FI USERS

Nowadays, free public Wi-Fi networks can be found almost everywhere – on the street, in the subway and on the bus, places such as hotels or restaurants, more and more often on trains. Usually, to use the network, you do not need to have a password – you just have to connect to it and already. In practice, it is very convenient, but unfortunately this situation is also on the hands of cybercriminals.

Because these free networks are becoming more and more widespread, cybercriminals also follow the trend – but here internet access is not completely free. Because it is sometimes difficult to distinguish between them, it is best to connect to the Internet only at home or via a cellular network. This is the safest way, though not entirely comfortable or practical in all situations and circumstances. So let's think about how we can protect ourselves against threats (<https://gadzetomania.pl/336,wi-fi-w-pociagach-pkp-intercity-pewnie-ze-chce-jest-tylko-jedno-ale> 11.05.2019).

1. Never trust open Wi-Fi networks that do not require a password. Criminals often create the same to get personal user data.
2. Networks that require a password are also not completely secure. The scammer can easily get it and create a fake Wi-Fi hotspot with the same name.
3. Turn off the Wi-Fi function when you are not using it. Thanks to this you will protect your data and extend the operating time of the device without having to recharge. Check if your device has automatic connection to unknown Wi-Fi networks enabled, and if so - disable this option. Such a procedure will protect you from being tracked by various organizations.

Imagine that you are in a shopping center and have Wi-Fi turned on. Did you know that your phone searches for all available networks and sends them your unique MAC address? Any Wi-Fi access point that receives a request from your phone may register this data.

Based on the information gathered, marketing specialists often create maps of customers' movements to find out what goods attract them. For example, if you stop at a perfumery to tie shoelaces, you may soon receive some ads for expensive eau de toilette.

4. Emergency needs. When using a free Wi-Fi network, do not check the status of your bank account or log in to any other important services. For this purpose, use cellular transmission better.

5. Only HTTPS. Some sites offer a secure https connection that encrypts all communication between you and the server (eg Google, Wikipedia, Facebook). If you can, activate this setting in all important services.

6. Advice for users of Google Chrome, Firefox and Opera. If you travel a lot and use the Internet from your laptop in cafes, hotels and other public places, install a special plug-in in your browser that will provide you with secure Internet access. We recommend HTTPS Everywhere of Electronic Frontier Foundation (EFF). By default, it provides a secure connection to sites such as Yahoo, Ebay or Amazon. What's more, you can manually add your own network resources.

7. Consider using a virtual private network (VPN). This is a good way to protect your data, because the VPN service encrypts everything you send.

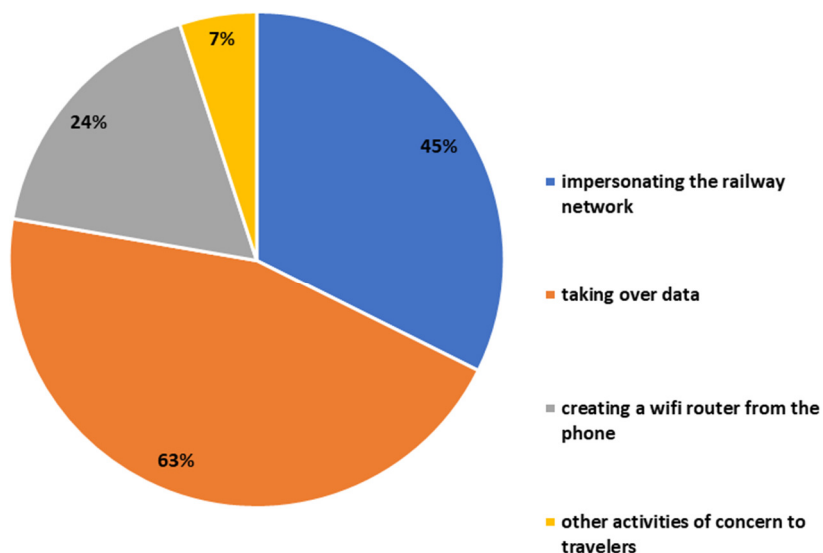
Usually, the option of using a VPN is paid, but you can search for something free - you may like services such as ProXPN, Cyber Ghost, Your Freedom and HotSpot Shield. If you are bothering about the speed limit, you can opt for paid offers. The price usually oscillates around a dozen or so zlotys per month.

8. Install a decent security solution. The antivirus program will notify you when you connect to an unknown network and will not allow your passwords to leak.

The possibility of using the WiFi network outside the home is a big saving, especially outside the country, but this way of connecting to the Internet involves the risk of being overheard. Read how to use the network safely outside places such as home or work ([https://www.ea.com/pl-pl/bezpiecze\\_stwo-w-sieci](https://www.ea.com/pl-pl/bezpiecze_stwo-w-sieci) 10.05.2019).

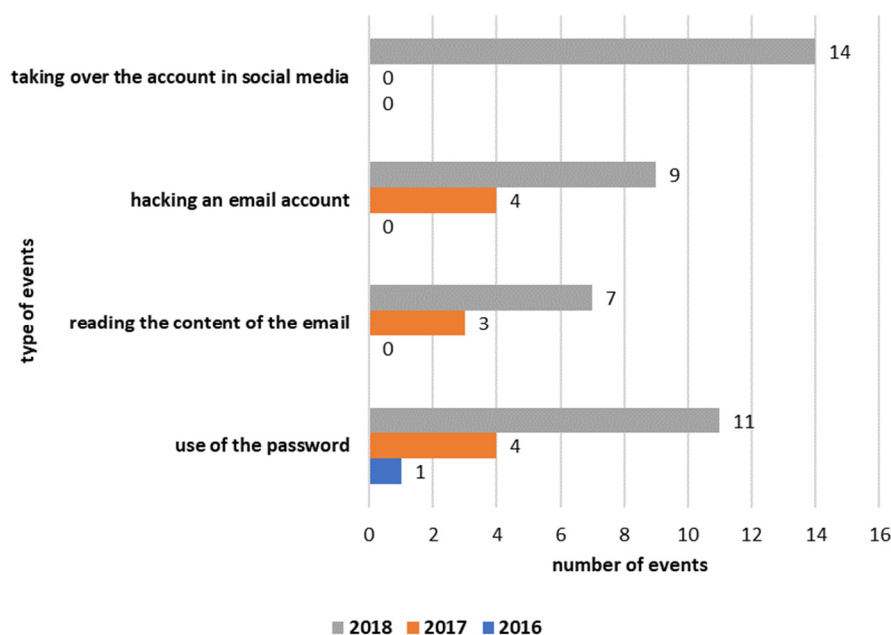
### **THREATS TO INTERNET USE ON TRAINS**

The respondents often suggested that they are worried about using the public Internet. The most common concerns are presented in Figure 3.



**Fig. 3 Causes of anxiety of passengers in connection with the use of the Internet**

The increasing number of hacker activities causes that train passengers are also worried about the data they process on their smartphones, tablets and computers. They are most concerned about taking over data as detailed in Figure 4.



**Fig. 4 Events that have occurred among respondents in connection with the use of the Internet on the train**

The growing number of events is disturbing, it may indicate the scale of the problem passengers have to deal with. Appropriate measures are necessary to improve safety. It is this aspect that will be the next step in the research.

**CONCLUSION**

Passengers' safety is the basic task of the carrier, regardless of the distance and the form of travel offered. The implementation of such a goal is possible, among others thanks to providing a secure connection to the Internet. It should also be emphasized

that the role of the Internet in terms of travel comfort is increasingly taken into account by travelers, but also dependent on the Internet provider. The respondents are travelers who, many times because of their profession or school they attend, are aware of the possibilities of the Internet and the risks it may cause. The study is a preliminary analysis to determine the determinants of the Internet safety of rail passengers.

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**Abstract.** The article presents a solution for a free Internet rail passenger used on trains. Attention is paid to the state of connections their security for users. The article contains the results of a survey conducted among two hundred railway passengers and instructional activities aimed at maintaining network security.

**Keywords:** Internet on the train, Internet, free Wi-fi on the train