What if AI-powered passenger locator forms could help stop the spread of Covid-19?

Asking passengers to complete a passenger locator form (PLF) prior to their flights has been seen in recent months as an efficient way to help public health authorities trace travellers potentially exposed to Covid-19 in airports and ports and at other border check points. This digital identification form, which has increasingly been viewed as an essential travel document, could become a key health measure in the context of contact tracing and targeted testing, helping Member States perform risk assessments of arrivals. The accelerating use of this hybrid contact-tracing system in several European airports raises issues of transparency, accountability and privacy that need to be addressed in an efficient and responsible manner.

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Several Member States have developed a screening procedure that allows them both to perform targeted testing and strengthen their contact-tracing efforts. According to this procedure, travellers are obliged to fill out a form online at least 24 hours before entering the country. This standardised form has been developed jointly by the World Health Organization (WHO), the International Civil Aviation Organization (ICAO) and the International Air Transport Association (IATA). The form contains essential location information about the traveller's visit including personal and travel details, such as their country of origin and the countries they have visited in the last 15 days, the accommodation they will stay in and their family status. Once the PLF is completed, the details of the tracking form are processed by special software for the creation of risk profiles and the categorisation of travellers. Data are evaluated by machine-learning algorithms that produce a unique quick response (QR) code. This code is sent to the passenger, who shows it either in print or on their smartphone upon their arrival in the country. The availability of machine learning as a special kind of artificial intelligence (AI) application is essential for the widespread and effective use of PLFs.

The availability of passenger locator data is crucial for the success and effectiveness of contact-tracing operations and the strengthening of countries' capacity to combat Covid-19 at points of entry. The ICAO Guidelines for States concerning the management of communicable disease posing a serious public health risk state that the PLF 'provides an appropriate method of rapidly collecting traveller contact information'. In comparison to other contact-tracing methods and static controls, the main advantage of this screening model lies in its capacity to facilitate targeted screening of travellers at borders and analyse real-time data to allocate resources. The selection of who should be tested is based on an algorithmic analysis of the data contained in the PLFs. This AI-based system should take into account, for instance, the passenger's risk profile, the number of tests available and Covid-19 hospital beds available, the number of flights arriving and the epidemiological situation and transmission patterns in the country of departure.

What are the main advantages of this newly introduced system compared with other contact-tracing applications? Can countries rely on this particular system to control the spread of the disease despite the technical limitations? Does this sampling tool deter people from travelling abroad or even strike the right balance between the need to restore economic activities while protecting the health of passengers and local people alike? What kind of legal safeguards are needed for the responsible deployment of this screening tool, whose operation is based on the processing of travellers' data by newly formed algorithmic models?

Potential impacts and developments

Several EU countries have recently introduced targeted Covid-19 testing of foreign travellers arriving at their borders. The form is currently required in most EU countries. Greece was the first country to use dynamic machine-learning algorithms to create a real-time dashboard to organise its diagnostic testing system at its

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borders. This is done through an AI system called EVA, which uses real-time data and optimisation techniques to perform risk predictions and allocate testing resources within the framework of Greece's current Covid-19 screening capacity. Given the limited laboratory testing capacity of several airports, the lack of available large-scale testing kits and of health providers who could administer the tests and validate the results within a limited time-frame, this smart processing of PLFs may facilitate efficient resource management. The screening system can also supplement traditional contact-tracing procedures, as the data contained in the form can help authorities trace the contacts of all travellers, should a fellow passenger be confirmed as having tested positive for Covid-19.

At the same time, the processing of the data contained in PLFs raises several issues about their compliance with the relevant data protection standards and whether and how informed consent requirements can be met given that it is mandatory to complete this form when travelling to certain countries. In addition to the challenges associated with the management of huge quantities of travellers' data, the efficiency of the PLF system may be undermined by incorrect phone numbers and other false or inaccurate information provided by travellers. How can travellers who provide inaccurate contact details be traced? Furthermore, the performance of targeted testing on the basis of data collected and processed using algorithmic models that are still under development carries the risk of errors. This could, for instance, pose the risk of public identification or stigmatisation of confirmed or suspected individuals. Finally, the usefulness of the system's deployment from a public health perspective will depend not only on its actual technical effectiveness but also on whether its use can be combined with efficient diagnostic tests, other contact-tracing tools and comprehensive monitoring schemes.

Anticipatory policy-making

Public health authorities should collect and process the personal data from the PLFs for targeted testing in accordance with Regulation 2016/679, and the privacy framework and recommendation on health data governance of the Organisation for Economic Co-operation and Development. The European Centre for Disease Prevention and Control has issued Considerations relating to passenger locator data, entry and exit screening and health declarations and proposes collecting a minimum data set, the rest of the data to be obtained during the contact-tracing interview. As United Nations experts have stressed, 'emergency responses to the coronavirus must be proportionate, necessary and non-discriminatory'. The proportionate use of location data should consider the medical relevance of the data collected and safeguard its effective anonymisation and storage limitation, so as to prevent accidental disclosure of names of possibly infected persons.

Given the transnational nature of this public health emergency, as passengers travel across Europe, the data contained in PLFs and the results of testing and contact-tracing efforts could be collected in a common European database. The Joint European roadmap towards lifting Covid-19 containment measures recognises that coordinated action between Member States should include actions to gather harmonised data, harmonise protocols, and share reference standards. The Commission's recommendation on a common Union toolbox for the use of technology and data to combat the Covid-19 crisis strongly advocates the development of a common methodology on monitoring and sharing assessments of the effectiveness of contact-tracing applications. The European Commission recently announced that it is preparing, in collaboration with EASA and the EU Healthy Gateways joint action, to launch a common EU digital PLF as one of a number of measures to facilitate safe travel in the post-Covid-19 era, to be available by the end of 2020 or at the latest on 10 January 2021. EU-wide initiatives may enhance the overall efficacy of the PLF system as an EU screening tool and minimise possible overlaps and inconsistencies.

However, the gradual deployment of this tool in European airports should be treated with caution given the limited scientific knowledge and technical experience in relation to the effectiveness, thoroughness and credibility of algorithmic decision-making systems of this kind. There are questions about the type and quality of data used for the development and operation of the algorithms, and the rigour of the testing and operational protocols used for their design and deployment. Thus, there is an immediate need for algorithmic impact assessments to improve the quality, explainability and transparency of these screening procedures. As decisions about who should get tested in an airport are important from both public health and privacy perspectives, contact-tracing and targeted testing based on PLFs should be subject to thorough validation and accountability requirements so as to gain public trust and acceptance. Last but not least, the deployment of this screening system should remain part of a wider public health emergency response that needs to consider the essential nature of air travel in the context of Covid-19 and be constantly monitored by public health and data protection authorities alike given the novelty of the technology being used.