STATEMENT OF

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For a Hearing on:

"Climbing Again: Stakeholder Views on Resuming Air Travel in the COVID-19 Era"

Before

House Homeland Security Subcommittee on Transportation & Maritime Security

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Chairman Correa, Ranking Member Lesko, and Members of the Subcommittee:

Thank you for the opportunity to testify on behalf of the American Civil Liberties Union (ACLU)[i] and for holding this hearing on, "Climbing Again: Stakeholder Views on Resuming Air Travel in the COVID-19 Era."

COVID-19 has upended commercial air travel – raising serious questions about how and whether it can be safely resumed during the pandemic. At this stage, the Centers for Disease Control (CDC) continues to caution against air travel. For individuals who do travel, the CDC encourages keeping six feet apart from other people and adopting various health precautions.[ii] Given this, the best way to make air travel safer is likely to reduce how crowded airplanes and airports are, facilitate basic health precautions like hand washing and mask wearing, and make it easy for individuals to voluntarily change their travel plans if they are exhibiting COVID-19 symptoms or may have been exposed to the disease.

Government agencies, airlines, and airports are also exploring a variety of new surveillance, health, and screening measures designed to minimize contact during travel, prevent individuals who might be infected from traveling, and limit transmission during travel. Some of these measures, like a face mask requirement, reflect the guidance of public health professionals and, if implemented correctly, will likely have a minimal impact on individuals' rights. Other proposals, like those to expand facial recognition technology or implement remote fever detection[iii], have dubious public health value, raise significant privacy and civil liberties concerns, and should be rejected.

We must be vigilant to ensure that the pandemic is not exploited opportunistically to entrench discriminatory and privacy-invasive practices in aviation. In addition, we must ensure that any new measures adopted do not undermine overall public health efforts by giving individuals a false sense of security or engendering public distrust. Thus, any new aviation measure adopted in response to COVID-19 must:

(1) Be consistent with the recommendations of public health professionals and meet efficacy benchmarks;

(2) Ensure equitable treatment and prevent against improper encroachments on the right to travel;

(3) Require that any new personal or health data collected be available only to public health agencies for public health purposes, and prohibiting use for any other reasons, including law enforcement, immigration enforcement, security/risk assessments, public benefit determinations, or commercial purposes;

(4) Have a clear end date that does not extend beyond the pandemic; and

(5) Require proactive transparency and accountability measures.

1) **Public Health Effectiveness**

No new surveillance, technology, or screening measure should be deployed unless it is recommended by public health agencies, developed in concert with public health professionals, and likely effective. For example, if reports are accurate and the CDC recommended against thermal checks at airports as a "poorly designed control and detection strategy," they should not be deployed.[iv] Similarly, we should be wary of relying on technologies, like technology assisted contact tracing, which public health professionals have emphasized are not yet proven to be effective.[v] It is particularly important that public health professionals be a central part of any aviation response because our understanding of COVID-19 continues to evolve, and measures that seem like a good idea today may need to be modified as we learn more.

To help ensure effectiveness, any proposed aviation measure should be evaluated independently by the CDC and other relevant public health experts on an ongoing basis. Protocols around the use of such measures should be developed in concert with these agencies to reflect public health best practices. In addition, there should be clear public benchmarks for what standards must be met for a measure to be considered effective, which identify limitations, factors that impact effectiveness, cost, and an evaluation of whether there are better alternatives. Information about whether any measure meets these benchmarks should be released publicly, so that the public and policymakers can evaluate them.

2) **Equity and Protecting the Right to Travel**

As former Supreme Court Justice William Douglas observed, "[f]reedom of movement is the very essence of our free society, setting us apart."[vi] The Supreme Court has repeatedly recognized that the right to travel is protected under the Fifth Amendment as a liberty interest that cannot be denied without due process of law.[vii] Moreover, freedom of movement allows access to information and encourages the free exchange of ideas and opinions, thus implicating the First Amendment.

Given the rights at stake, no measure adopted should be as a basis to deny an individual the right to fly in an arbitrary, unreasonable, or discriminatory manner. Additionally, the information used to determine whether someone can fly must be transparent and fully available to the individual, and there must be the opportunity to rebut or appeal such a determination in a fair process. For example, using temperature checks as the sole basis for barring people from traveling would be inherently overbroad, as it would sweep in individuals who might have fevers for reasons unrelated to any communicable disease, including COVID-19. This would likely disproportionately affect individuals with chronic illnesses, including those who may travel in order to seek critical medical care. Thus, at most, an elevated temperature should merely trigger further examination, providing individuals the ability to provide additional information regarding whether they are at risk of having the disease or may have a temperature for other reasons.

3) **Limited Public Health Purpose**

Public health experts caution that a law enforcement approach to combating disease is less effective than relying on voluntary measures and compliance. That is because an enforcement approach often sparks counterproductive resistance and evasion and tends to sour the

relationship between citizens and their government at a time when trust is of paramount importance. Good public health measures leverage people's own incentives to report disease and help stop its spread.[viii]

Encouraging self-monitoring and adoption of voluntary measures is particularly important in the aviation context. Individuals themselves are best positioned to know whether they have experienced COVID-19 symptoms, have had large number of exposures to other individuals, or have traveled in a high-risk area. In addition, there are likely ample ways to circumvent screening and surveillance measures that may be designed to identify people with the disease. For example, individuals can take medication to suppress COVID-19 symptoms, such as a fever or a cough. Given this, the best measures will be those that encourage individuals to self-monitor and simply stay home if they may have the disease. This includes providing clear guidance about what factors an individual should consider before flying, and making it easy for them to change or cancel their travel plans if needed without penalty. In addition, for employees, it includes providing paid sick leave, so that individuals can take time off without suffering financially.

To maintain public trust, any other surveillance or screening measure must do two things. One, it should not collect additional personal data, unless such collection is fully transparent and necessary to protect public health. Two, any data collected must be stored and used solely by public health agencies for public health purposes. Such information should not be stored in DHS databases where it can be accessed for other purposes, including immigration, law enforcement, risk/screening assessments, or public benefit determinations. The last thing we want is people being fearful of disclosing medical or other critical facts out of fear that such information could be used against them in another context.

Proposals that do not limit information use and collection in such ways are a clear signal that a measure is being opportunistically deployed and is not strictly necessary for public health. For example, earlier this month, TSA announced an expansion of its Credential Authentication Technology device equipped with a camera (CAT-C) program, permitting it to network with the Secure Flight System, a passenger prescreening program. Although the TSA has been working on this program since at least 2007, the Privacy Impact Assessment (PIA) cited COVID-19 as a partial justification for the expansion, indicating it would reduce disease transmission by eliminating handling of documents.

Justifying the expansion of the CAT-C program with COVID-19 is both opportunistic and dangerous. As an initial matter, there are many less costly and less invasive ways to reduce transmission of the disease on travel documents. This includes installation of clear glass or simply telling travelers to hold a document up for verification, instead of handing it to an agent. In addition, the PIA glossed over a multitude of other concerns with the CAT-C program, including demographic differences in accuracy cited by the National Institute of Standards and Technology.[ix] According to NIST, leading facial recognition algorithms were more likely to have false positives or negatives for certain demographics, including Asians, African Americans, and women.[x] In addition to this, the expansion raises further concerns that TSA has expanded use of facial recognition without clear Congressional authorization or regulations, and has opened the door to networking with additional DHS databases used for law and immigration enforcement. The expansion of CAT-C is unnecessary to combat COVID-19, and opportunistically relying on the disease as justification will decrease public trust in any other legitimate measures put forward.

4) Clear end-date

Any new technology, surveillance, or screening measure implemented specifically to respond to the pandemic should come with a clear end-date. We do not want COVID-19 to repeat post 9/11 mistakes– where we rushed to adopt many new and concerning security measures that cost billions, were ineffective, violated individual's rights, and have been difficult to undo. For example, it took five years for the Transportation Security Administration (TSA) to partially abandon its Computer Assisted Passenger Prescreening System II (CAPP II), which would have allowed the government to tap into commercial databases to perform background checks on all Americans who fly. The program was impractical, unwise, and ineffective.[xi] Nevertheless, facets of problematic components of CAPPS II continue today in other TSA programs.

To avoid similar problems, any new DHS program or regulation adopted in response to the pandemic should include a clear sunset date, including deletion of any data collected, that corresponds to the end of the COVID-19 pandemic. The end data of the pandemic should be dictated by public health agencies and experts, and based on periodic evaluations and clear criteria. If such programs require expenditures or activities that have not been previously authorized, they should only be deployed with explicit Congressional approval that includes such a sunset. To the extent a measure proves to have other non-COVID related benefits, such as making travel quicker or more convenient, it should be evaluated separately for effectiveness, explicitly approved by Congress, and evaluated to ensure it does not improperly impinge on travelers' rights.

5) Transparency and Accountability

In order for individuals to resume air travel, they must have full confidence and trust in any measures adopted to make travel safer. This will require the following additional transparency and accountability measures, designed to ensure efficacy, cost-effectiveness, and protection of travelers' rights.

One, the government and private sector should adopt a proactive transparency policy, fully disclosing information about what measures are being adopted, why, and how. This should include proactive public release of any evidence or studies related to efficacy, including analysis of independent public health professionals. Two, any measure adopted should be evaluated by an independent overseer, such as the Government Accountability Office (GAO). No measure should be continued unless the GAO or other independent overseer finds that it is effective and being implemented in a manner that safeguards individuals' rights. Three, the government and private sector should adopt protocols to ensure that there is the opportunity for meaningful public engagement and consultation regarding any measure that is being considered, so potential pitfalls or concerns can be remedied. Four, any process should include a robust redress process, so that individuals can rebut or appeal determinations, or raise concerns regarding unfair or discriminatory treatment. Finally, any measure adopted must fully comply with existing laws, including those requiring appropriate privacy assessments and rulemaking. Agencies should not circumvent these processes, which are designed to reduce the risk of programs that are wasteful, ineffective, or antithetical to our values.

Conclusion

To resume air travel, consumers must have trust and confidence in the health measures adopted to ensure their safety. In addition, they must be encouraged and incentivized to self-monitor and take voluntary precautions to prevent disease transmission. Now is not the time for opportunistic efforts to advance unnecessary technology that engenders distrust and sparks resistance to overall compliance. Rather, it is the time for transparent and effective policies that address the pressing public health needs. Thus, to ensure that any aviation measures adopted are wise and appropriate, they must come with a clear sunset date; meet benchmarks for effectiveness established by public health professionals; limit data collection and use to public health; prevent against discriminatory and improper encroachments on the rights to travel; and require transparency and accountability.

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[i] For nearly 100 years, the ACLU has been our nation's guardian of liberty, working in courts, legislatures, and communities to defend and preserve the individual rights and liberties that the Constitution and laws of the United States guarantee everyone in this country. With more than three million members, activists, and supporters, the ACLU is a nationwide organization that fights tirelessly in all 50 states, Puerto Rico and Washington, D.C., to preserve American democracy and an open government

[ii] Centers for Disease Control and Prevention, Considerations for Travelers—Coronavirus in the US (May 28, 2020), https://www.cdc.gov/coronavirus/2019-ncov/travelers/travel-in-the-us.html.

[iii] Attached is a comprehensive ACLU white paper that provides more guidance specifically on implementing temperature checks. *See* ACLU, TEMPERATURE SCREENING AND CIVIL LIBERTIES DURING AN EPIDEMIC (May 19, 2020), https://www.aclu.org/aclu-white-paper-temperature-screening-and-civil-liberties-during-epidemic.

[iv] Brett Murphy and Letitia Stein, *CDC scientists overruled in White House push to restart airport fever screenings for COVID-19*, USA TODAY, May 9, 2020, https://www.usatoday.com/story/news/investigations/2020/05/09/white-house-push-airport-fever-screenings-overrules-cdc-scientists/3097158001/.

[v] World Health Organization, DIGITAL TOOLS FOR COVID-19 CONTACT TRACING (June 2, 2020), https://www.who.int/publications/i/item/WHO-2019-nCoV-Contact_Tracing-Tools_Annex-2020.1.

[vi] Aptheker v. Secretary of State, 378 U.S. 500, 520 (1964) (Douglas, J., concurring).

[vii] See Regan v. Wald, 468 U.S. 222 (1984); Zemel v. Rusk, 381 U.S. 1, 14 (1965); Aptheker v. Secretary of State, 378 U.S. 500, 505-06 (1964); Kent v. Dulles, 357 U.S. 116, 125 (1958).

[viii] ACLU, LIMITS OF LOCATION TRACKING IN AN EPIDEMIC (April 8, 2020), https://www.aclu.org/sites/default/files/field_document/limits_of_location_tracking_in_an_epidemic.pdf; *See also* ACLU, PANDEMIC PREPAREDNESS: THE NEED FOR A PUBLIC HEALTH NOT A LAW ENFORCEMENT/NATIONAL SECURITY APPROACH (Jan. 2008), https://www.aclu.org/sites/default/files/pdfs/privacy/pemic_report.pdf.

[ix] National Institute of Standards and Technology, U.S. Dep't of Commerce, FACE RECOGNITION VENDOR TEST (FRVT) PART 3: DEMOGRAPHIC EFFECTS, (Dec. 2019), https://nvlpubs.nist.gov/nistpubs/ir/2019/NIST.IR.8280.pdf.

[x] Id.

[xi] Jay Stanley, *Airline Passenger Profiling: Back From the Grave?*, ACLU (Feb. 8, 2011) https://www.aclu.org/blog/national-security/airline-passenger-profiling-back-grave.

Appendix

Temperature Screening and Civil Liberties During an Epidemic

By Jay Stanley
May 19, 2020

As Americans look beyond the current coronavirus lockdowns, there has been a lot of discussion about the role of technology in a new, more open phase of the pandemic response. Many experts envision a world where widespread testing is combined with careful disease surveillance and contact tracing in an effort to suppress transmission enough to allow some cautious semblance of normality until researchers are able to develop a vaccine. A range of proposals have been offered, including using cell phone data for contact tracing, which we have analyzed at length.

Another technology that is often mentioned is remote or "standoff" fever detection. Some companies have already begun screening their workers for fevers, and restaurants their customers. Manufacturers report being swamped by sales and inquiries. In China, temperature screening checkpoints have been set up everywhere from markets to subway and building entrances to highway roadblocks.

What are we to think about the use of this technology to fight coronavirus transmission from a privacy and civil liberties standpoint?

Effectiveness

The first question is always effectiveness. If a technology can't deliver what it promises, it should not be deployed. If it works poorly, that fact should be taken into account when it is weighed against privacy or other values. Temperature screening should only be done if, where, and in ways that public health experts believe will actually meaningfully contribute to combatting the pandemic. Currently, experts say that there are sharp limits to its potential usefulness in detecting COVID-19.

First, elevated body temperature can be caused by many factors other than COVID-19,

including exercise, emotional state, and other illnesses. As one medical article put it, "One has to keep in mind that screening for fever and screening for a virus are two different issues." In these instances, fever detection will be *over*-inclusive.

Second, body temperature measurement will do nothing to detect infected people who don't have a fever. COVID-19, unlike some other diseases such as Ebola, is contagious well before symptoms appear, and many infected people — perhaps even most — never do get any symptoms, much less fever. In addition, there is a lot of variation in people's body temperatures; what is a fever for one person could be a normal temperature for another. Finally, even those who do have fevers caused by COVID-19 can suppress them by taking antipyretic medicine like aspirin or ibuprofen. In these instances, fever detection will be *under*-inclusive.

Third, standoff fever detectors are of highly questionable accuracy. In addition to internal (usually oral or anal) thermometers, which are regarded as the gold standard of accurate temperature measurement, there are three primary kinds of thermometers:

1. "Tympanic" thermometers, which are inserted into the ear to measure heat in the tympanic membrane;
2. "Thermometer guns," or "non-contact infrared thermometer" (NCITs), which are held 3-15 cm away from the subject's skin, typically at the forehead; and
3. Standoff thermal cameras that try to detect body temperature from further away.

All of these devices have to be used correctly, which is not necessarily easy for those who aren't medical professionals. Assuming proper use, ear thermometers have proven to be reasonably accurate, but a number of studies have found that the other two, which measure surface skin rather than core body temperature, are of questionable accuracy. Skin temperature can be affected by such things as sunburn, alcohol consumption, moisture on the skin such as sweat, or hot or cold air temperatures.

As one industry analyst put it, "Some people who have elevated skin temperature (EST) may have elevated body temperature (EBT). Some of those people with EBT may have a fever. Some of those people with a fever may have coronavirus." But that is a narrow path to accuracy.

Nevertheless, products marketed as "fever detectors" (and sometimes even "coronavirus detectors") are flooding the market. In China, thermometer guns have been found "unreliable outside carefully controlled health care settings." Indeed, the FDA has published a long list of finicky requirements for their proper use. There are even more questions about thermal cameras. The flood of new products has been encouraged by the FDA, which announced that during the pandemic it would allow thermal cameras to be used as unapproved fever detection devices even though the agency considers them to be medical devices. The FDA did set some important qualifications, however. It said that such devices should:

- Only be used to measure one subject at a time;

- Only be used in conjunction with a more accurate backup means of measuring temperature; and
- Include a "prominent notice" reminding operators how "different environmental and system setup factors" can influence a device's accuracy. Those factors include where on the human body a temperature is measured as well as the "screening background, ambient temperature and humidity, [and] airflow" at the camera location.

The FDA's caution is backed up by testing carried out by the independent camera testing and review site IPVM, which found significant accuracy issues with cameras on the market. The difference in temperature between a healthy and febrile person — especially those with low-grade fevers who are more likely to be out and about — is quite minor. The typical precision claimed by the scores of companies now offering such products is 0.3 - 0.5 °C (0.54 - 0.9° F) — but the reviewers were "skeptical of actual field accuracy as these are likely overinflated," and found cameras on the market that were far less accurate. Camera positioning was also a problem since recording subjects from the side, or subjects who are moving, "significantly reduces" accuracy.

Like temperature guns, thermal cameras are also apparently very finicky with regards to calibration. Even in controlled environments, they are highly sensitive to room and climate conditions and often need hourly calibration reviews. Many of the most accurate thermal cameras utilize "blackbody devices" — essentially small heaters that maintain an exact temperature — which have to be mounted within a camera's view and at the same distance as the subject for proper calibration. Readings can be disrupted by hats, sunglasses, masks, and hair over the face. And, as IPVM notes in a dismissive review of one company's fever detecting sunglasses, "virtually none of the large providers of thermal fever cameras are recommending such outdoor, on the move applications" because there is an "engineering consensus" that such uses are "not reliable."

As IPVM, which has caught several companies making false marketing claims, sums up the situation:

> A core issue is there are no independent tests of thermal camera performance/accuracy and no independent standards to measure against. This has allowed manufacturers to tout products meant for body/fire detection as a fever solution, or falsely claim pinpoint accuracy at long distances.

By this point, given this litany of challenges, it should be apparent just how far-fetched is the concept of a "Coronavirus-detecting drone" like the Draganfly aircraft briefly considered by a Connecticut town. Given the FDA's stipulation that unapproved fever-detecting cameras only measure one person at a time, such a device may not even be legal. But the Draganfly and fever-detecting sunglasses are not the only unlikely products; companies are marketing less flashy devices that still purport to be able to scan dozens of people at once, in movement, and at long and varying distances.

The thermal cameras that are most accurate (which can cost two to four times as much as a typical $15,000 system) are designed to scan only a single person at a time (per the FDA's guidance), and to do so frontally, at close range, and on still subjects. Overall, however, there is a veritable gold rush of companies scrambling to put "fever detectors" on the market and cash in on the crisis. The result is accuracy levels that appear to be all over the map and a certain degree of snake oil.

The bottom line is that nobody should imagine that blanketing our public spaces with thermal sensors is going to serve as any kind of effective automated "COVID detection network," or that this technology is likely to contribute significantly to stemming the spread of the virus.

Some will argue that despite all these shortcomings, the possibility of detecting some cases is better than nothing, and that temperature screening could therefore have some role in suppressing the disease before a vaccine is developed. There may be some truth in that view, though such a possibility needs to be balanced against three significant risks:

1. If there are too many false positives, that could waste resources, annoy people (leading to circumvention), and create a "Boy Who Cried Wolf" effect, causing operators to ignore even true positives. All of that would reduce the effectiveness of temperature screening even further and potentially even be counterproductive.
2. Temperature screening that misses many actually infected people can create a false sense of security, lulling people into complacent sloppiness about more effective measures such as social distancing.
3. The overinclusive nature of temperature checks will lead to real consequences for people — for example someone who may not be able to shop for groceries or use the metro to get to work despite the fact that they pose no public health risk. These consequences could be especially serious where temperature screening is used at essential facilities such as courthouses — and may be outsized for poor, minority, or other underserved communities who have fewer alternative options and less ability to seek redress.

It is for reasons such as these that many public health experts are dubious about the benefits of temperature screening. Prominent epidemiologist Michael Osterholm says, "I don't think airport temperature checks have any major effect on stopping or even slowing down transmission." The University of California San Francisco hospitals don't do temperature screening because the experts there found that the time and expense was unjustified and creates a false sense of security. "It's something we should not be doing," they declared. An expert analysis of existing studies likewise found that temperature screening programs "are ineffective for detecting infected persons."

Privacy issues

Temperature checks also raise privacy issues. In most circumstances, a remote temperature check is not an enormous invasion of privacy, especially if individual records are not retained — as they should not be outside of health care contexts. But neither is it something that we would ordinarily want companies or government agencies to routinely collect. And lurking in the wings behind remote temperature readings are technologies like remote detection of heart rate, breathing rate, and heart rate variability, which studies have found can all be measured using digital cameras (on still subjects, at least for now). There have even been preliminary results on the measurement of blood oxygenation. That kind of data is a significant privacy risk that can reveal a person's medical conditions, from detection of arrhythmias and cardiovascular disease, to asthma and respiratory failures, physiological abnormalities, psychiatric conditions, and even the stage of a woman's ovulation cycle.

Already, Draganfly claims that its COVID-detecting drone can remotely detect heart and respiratory rates in addition to temperature. The TSA has proposed collecting passengers' physiological data in the context of a program (now apparently stalled) called FAST (aka "Project Hostile Intent"), which aimed to detect terrorists by measuring every passenger's heart rate and body temperature as well as things such as eye movement and facial patterns.

In addition, with so little still known about the disease, it's possible scientists could conclude that other metabolic signs are equal to or better than temperature in flagging possible COVID-19 cases. For example, anecdotal reports suggest that "silent hypoxia" often accompanies COVID cases; that might lead to the screening of people's blood oxygen levels using oximeters. It has even been suggested that people be tested for their sense of smell.

This crisis threatens to normalize such physiological surveillance, with the result that even after a vaccine is distributed and COVID-19 retreats as a public health threat, new infrastructures for the routine and suspicionless collection of such data will remain. We don't want to wake up to a post-COVID world where companies and government agencies think they can gather temperature or other health data about people whenever they want. Before the outbreak, the Department of Homeland Security had already been pushing the use of thermal cameras as body scanners in transit stations as a way to try to detect threats such as suicide bombers — a constitutionally problematic and certainly ineffective program that would alert over all kinds of private items that people carry in their clothes. But it's not hard to imagine a network of thermal cameras created to fight the coronavirus repurposed for these suspicionless thermal body searches.

Some companies are betting on the technology outlasting the crisis; as one manufacturer wrote, "We believe the demand for viable solutions like these will last far longer than most people think. Just like 9-11 and how it impacted and changed air-travel forever, this too will change the way we live and work for a long time to come."

That is precisely what we do *not* want to see.

Temperature checks as part of a disease surveillance effort

It is true that we may be facing a years-long battle to suppress the coronavirus before the advent of a vaccine, and efforts to quickly detect and quarantine COVID-19 cases could be crucial during that time. Such disease surveillance will be needed not only to save lives, but also to provide Americans with the widest possible freedom while they wait for a vaccine. The ideal way to track the disease would be through a fast, inexpensive, easy-to-administer, and widely available test for COVID-19.

Despite all of the technology's shortcomings, it's possible that some public health officials could judge that temperature screening is also worth doing in at least some contexts. Any such judgments should factor in the potential for significant or disparate disruptions in people's lives, for example by creating hour-long waits for transit stops in low-income neighborhoods. In addition, a lot of employers, stores, and other establishments will want to institute temperature screenings based either on similar judgments, out of a mistaken understanding of their effectiveness, or as a kind of "public health theater" meant to reassure customers who themselves hold such a misunderstanding.

Given the balance of factors involved, we do not think that "mass screening" thermal cameras should be used in any temperature screening. Even accurate temperature checks are of dubious usefulness in stopping the spread of the coronavirus. Among all means of trying to detect fever, remote detectors also appear to be the least accurate while at the same time the most likely to outlive the epidemic and end up being used for other purposes, like security screening, when COVID-19 is no longer a threat.

If public health experts decide that properly conducted temperature checks in certain appropriate times and locations would make sense as part of a disease surveillance effort, then that goal would be better served by deploying more accurate, direct detection devices such as clinical-grade tympanic thermometers. Any contact devices must of course be used in hygienic ways lest they spread the disease they are meant to stop. Thermometer guns and the best close-range, single-subject thermal cameras might also be used if their accuracy rates are found to be reasonable enough that their advantages over tympanic thermometers (speed and lack of direct contact) justify their use.

Like standoff detectors, such devices raise privacy issues because they gather people's physiological data, and they can be mildly more intrusive. Unlike a standoff sensor, more accurate devices have a low throughput rate and will require people to line up and actively participate in allowing their body to be physically measured. At the same time, they do not involve remote checks that can be done without a subject's knowledge, permission, or participation. For that reason, and precisely because they are slightly more intrusive and inconvenient, the use of more accurate devices is far less likely to outlast the pandemic.

Because they are less accurate, standoff fever detectors are also more likely to lead to discriminatory treatment for people of color and members of marginalized communities. What we have found with other imprecise technologies is that they tend to devolve into racial profiling in the hands of at least some of their operators. Examples include the TSA's SPOT program, and polygraphs, aka "lie detectors." This is because when risk-detection systems produce highly ambiguous or unreliable indicators, their operators begin filling that vacuum of reliability with their own judgments. Unreliable devices can also enable harassment or selective enforcement against people because of their appearance or political views.

One point that public health experts have long stressed is that voluntary measures to combat disease tend to be more effective than mandatory ones. This is because they leverage people's own incentives to report disease and receive help rather than creating an antagonistic relationship with the authorities that can spark resistance and evasion. For that reason, people should always have the right to leave rather than submit to a public temperature checkpoint. And employers and other establishments that want to perform temperature checks should consider offering self-serve temperature-checking facilities that allow employees to monitor themselves. People *want* to know if they may be sick; people *don't want* to spread a disease to their families or anyone else. And as we have seen, people who are antagonized by mandatory checks have many ways of intentionally defeating temperature screenings.

Finally, many people have fevers not related to infectious conditions. Some have low-grade fevers that may last weeks or longer, which can be caused by conditions such as cancer, urinary-tract infections, or even just stress. Where temperature screening is deployed, provisions will need to be made for them, especially if it is used at essential facilities. One thing that means is having a conversation with those who show up as positive, rather than summarily blocking them from entry. And anyone denied access to a critical service or function (such as applying for benefits, or appearing in court) because of a temperature screening should be given an alternate means of access to that service or function.

Summary of Recommendations

- Temperature screening should not be deployed unless public health experts say that it is a worthwhile measure notwithstanding the technology's problems. To the extent feasible, experts should gather data about the effectiveness of such checks, to determine if the tradeoffs are worth it.
- People should know when their temperature is going to be taken. Standoff thermal cameras should not be used.
- People should always have the right to leave rather than submit to a public temperature checkpoint.
- Personally identifiable data about individual readings should not be stored.
- No action concerning an individual should be taken based on a high reading from a remote temperature screening device unless it is confirmed by a reading from a

properly operated clinical-grade device, and provisions should be made for those with fevers not related to infectious illness.

- Anyone denied access to an essential service because of a temperature screening should be given an alternate means of access to that service.
- Hygienic self-serve or voluntary temperature-checking facilities are preferable to mandatory checks.

Conclusion

There's a lot of reason to doubt that temperature checks will help stop the spread of COVID-19, and they should not be deployed unless public health experts say conclusively that they will help. What we don't want is a world where inaccurate tests disrupt people's lives — especially those most vulnerable to such disruptions — waste time and other resources that could be better used in fighting the pandemic, and invade our privacy.

Cameron Chell, the CEO of drone company Draganfly, told a reporter, "Drones buzzing a few hundred feet away may seem intrusive, but it's certainly not as intrusive as having a line-up and someone sticking a sensor on your forehead." But how intrusive it *seems* is not as important as what data is collected about you, what is done with it, whether that data is accurate, and whether that data collection becomes permanent or even expands.

Many new products and approaches for combatting the coronavirus pandemic are being proposed. We need to skeptically scrutinize all such products and proposals, especially where they have implications for our privacy or other civil liberties. Temperature checks do have such implications, so they should be adopted only where their accuracy, and thus their benefits against COVID-19, are reasonably high, and where they are not likely to outlast the disease.

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