Jessica: Now, without further delay, let’s begin today’s webinar, COVID-19: A Plan to Restart the Economy. With that, I’ll hand it over to Tony Roth, Chief Investment Officer, Wilmington Trust. Tony, the floor is yours.

Tony Roth: Thank you, Jessica, and welcome, everybody. I’d like to have a special welcome to our clients from M&T Bank, M&T Securities, as well as Wilmington Trust. Today, we are very privileged to be able to have a conversation with Dr. Mark McClellan, one of the nation’s top experts on the mechanisms that we need in order to restart our economy. Dr. McClellan is both a physician and an economist. He is currently the Director of the Duke Margolis Center for Health Policy at Duke University and he is a former FDA Commissioner, as well as a former Administrator of the Center for Medicare and Medicaid Services, and in addition he served on President George W. Bush’s Council of Economic Advisors. Dr. McClellan, welcome, and thank you so much for being here today.

Mark McClellan: Tony, great to be here with you all today.

Tony Roth: I thought I would start with a bit of perspective from the markets, because I think they provide a very cautionary reference point right now in terms of how we should be thinking about the journey that we’re on with COVID-19. When we look at the markets right now, what we’re seeing is not withstanding the behavior today where the markets have sold off a bit, overall of late we’ve been seeing a fairly positive market, which I think has reflected the strong fiscal and monetary response from the federal government, as well as a lot of the data that we’re now getting that shows that all of our collective efforts to flatten the curve are working and that the number of cases and tragic deaths that we’re experiencing are really starting to plateau. But, in order for the economy to get back on its feet, it’s our view as investors that we need to see a lot more, particularly in the arenas of testing, monitoring, and potentially therapies, and
that’s a lot of what we’re going to dimension today. Now, before we launch into our
conversation, I did want to provide a caveat as I always do on these calls that M&T and
Wilmington Trust are politically unaffiliated. We have no particular view from a political
standpoint and while some of the things that are said today could potentially be interpreted as
criticism or even approval of different parts of the government, that’s certainly not our intention
in any way, shape, or form. Our sole aim is to really get to the facts and understand the path that
we’re likely to follow going forward so that we can do our best as investors.
So with that, doctor, you published, in fact you coauthored a paper in late March on the steps that
you feel the country needs to take in order to safely return to normal and you followed that with
a second paper on April 7th that focused specifically on getting from our current phase, which
you've called slowing the spread, mainly through the mitigations that we’re living under, to the
next phase, which is stepwise reopening of the economy. Can you take us through what are the
key elements we should be focused on in understanding whether we’re ready to go from step one
to step two?
Mark McClellan: Sure. I’ll go through the steps, but just a kind of foundational comment, Tony,
building on your remarks, which I agree with about the fragility of the markets and the fragility
of a lot of things right now given all the uncertainty that the coronavirus has created. We talk
about the first phase as being really a completely just response phase where we have no – had no
real tools effectively available to fight the virus, other than these very extreme isolation
measures. And these kinds of steps towards isolation happen with every outbreak. Usually
they’re more limited, you know, just schools or limited geographic areas. But we’ve taken these
to the extreme because this virus is significantly more serious in terms of how serious the
complications for people can be and also more transmissible than many of the other epidemics that we’ve encountered really in the past century. That's why this is such a huge event. And so, for getting past this first phase of containing the—stopping the spread of the virus, slowing down the spread of the virus, to the next phase, which is really all about containment and living with the virus and as much normalcy as possible before we reach the stage of having a vaccine and widespread immunity, it’s important to keep a couple of things in mind. Safety is definitely one of them, but the other is confidence, confidence that people will have – if we do reopen, they are not going to expose themselves or people that they love to undue risk, that they can do about the expanded daily activities with some level of confidence and, in turn, leading to more business confidence about decisions on hiring and investing in new capacity and adapting to a new way of doing business in this virus-era environment.

So, the question is really how to get there as effectively as possible. And one of our key criteria was actually getting the threat of the virus under control. We used a metric of declining number of cases for two weeks in a row. That's meant to be a proxy for the health care system having confidence that it can contain any further outbreaks without resorting to extreme measures, like some of the really tough scenes we’ve seen in some parts of the country over the past week or two.

A second big component related to reducing the number of cases and the health care system being ready—I guess that’s a third component—is the capacity to move from this reactive approach to infections to a more aggressive approach. The ability to test more widely and then trace the spread of every single case before it becomes a big chain of additional infection. So, that means identifying places where outbreaks are occurring early, identifying places that are at risk of outbreaks, think nursing homes and other areas where there’s a lot of concentration of
individuals and a high potential of spread, and being able to intervene by isolating in a more limited way those who are directly affected and their contacts so the spread dies out. And that leads to the fourth key feature here, which is the ability to monitor, to identify and then monitor people who have contacts with these confirmed cases.

So, all of that together, along with what would be a modified way of going about business when we do reopen, I think, will not only create a safer environment, but also create the conditions of confidence that we all need to get back towards more of a normal life.

Tony Roth: That all makes sense, perfect sense frankly. And I know that we can’t wait forever. Let me play devil’s advocate for a moment on that first criterion, which is having a sustained reduction of cases for 14 days. I know that 14 days is that same number that we use when people are isolated or quarantined after they’ve either been exposed to this or once they’ve recovered before they can go back out into expose – be exposed to other people.

But it occurs to me that you take a place as New York, as an example. So, they had been reporting as high as 5,000 cases a day at the peak. They’re down maybe around 4,000 now. If we get 14 days out and they’ve had this sustained reduction, but they’re still reporting, say, even 1,000 cases a day, is it still safe? Is that really safe at that point to start to open things back up? Because it means that the virus is still fairly prevalent. Wouldn't there need to be a factor that’s based on more of an absolute rather than just a relative comparison to how we’re doing?

Mark McClellan: Yeah. It’s a good point and we’ve heard a lot of other ideas and people have thought more comprehensively about what exactly this criterion around health system capacity being ready for reopening really means. And I think there are other metrics that could be used, such as substantial reserve capacity in the health care system on top of whatever reopening is happening in the health care system. And there are a lot of elective surgeries and other services
have gone by the wayside during this extreme isolation period. So, we need health care organizations that can not only withstand any potential surge with room to spare, but also go about more of their regular health care delivery, too.

And so, people are looking at different ways of refining this basic measure. I think the main thing, though, is that whatever set of metrics we’re using, they’re ones that health care organizations and the public will feel confident are going to enable the healthcare system to handle any recurrence of outbreaks that can occur. And I want to emphasize that all of these conditions go together. So, it’s not just the decline in cases. It’s not just having significant capacity ready to go for any new surge. But, it’s enabling the region to move from this defensive approach of just reacting to the cases that are there and hoping for the best with asking people to stay in place, to moving to this proactive approach of being able to identify every case, every outbreak when it begins, and contain it before it gets very far.

That’s what’s really hard to do when you have thousands of cases, a growing number of hospitalizations, health care organizations that are just not able to help support this kind of testing and tracing. So, for the, whatever metric that you use about reduction in cases and capacity, that needs to be accompanied by close attention to how ready the region is to move from that kind of defensive model of not being able to go out and identify new outbreaks, new cases, and track down the contacts to being able to do that. It’s really what’s key in this phase is getting as far as possible away from just responding to outbreaks and as far down the road as possible to test and trace every case that breaks out and also some – because so much asymptomatic transmission can occur with the virus, to have some proactive ability to monitor through testing and related activities high risk settings, like nursing homes, for outbreaks before they even really become symptomatic. So, it’s putting the two together and health care
organizations and communities are going to be better with the testing and tracing if they don’t
have so many cases that are coming in without this kind of control.

**Tony Roth:** Got it. So, it really speaks to the health of the hospital system at that stage. So, let’s
then move to probably what I think to a large degree is the main event, which is the conversation
around testing, which has gotten so much focus. And we do have a couple slides today. So, for
those of you that are looking at the WebEx, you can look at the WebEx there and you’ll see a
slide come up that shows the relationship between testing, which really uses a loose proxy here
for not just testing but also the contact tracing, etcetera, but the degree of activity that needs to go
around those kinds of controls versus therapeutics. And what you see is that when you’re at the
stage of the process where we think we are today where the therapeutic toolkit is relatively
ineffective still, unfortunately, you really need a lot of testing in order to go down this journey of
reopening.

And so, where do you think – how are we doing right now in terms of testing? How, if you look
at that chart and you see the large orange area where you need to have a lot of testing on the far
left there, how far off that Y axis are we in terms of our current testing capacity relative to where
we need to be? And if you think about countries like Spain and Germany, which, I think,
interestingly represent two very different situations, because Germany has, I understand, a lot of
testing ready to go. Spain started this week with their reentry and they’re not doing much testing
at all. How do we compare to those countries?

**Mark McClellan:** Yeah. So, let me unpack that a little bit. So, a lot there and people can look at
a chart and that does help. But, first off, before even getting into moving into the details here, let
me say a few words about testing.
So, part one of effective testing is actually having the test kits. And the U.S. capacity for delivering, for producing tests or enabling tests has gone up a lot. Back a month ago, it was pretty low. You know, we were seeing less than I think 100,000 tests all over the country. Now, I think we’re at a point where if you combine all the available sources, we’re probably up to maybe 800,000–900,000 tests per week, maybe even more than that.

And remember that the tests here that we’re talking about are tests for whether or not someone is actively infected, whether they’ve got pieces of virus that they’re shedding. And those tests include public health labs; hospital labs that have come online, the so-called PCR testing; labs in the commercial sector, so LabCorp, Quest, smaller commercial labs that have brought on more capacity; and then, a growing number of platforms, like the Abbott platform that’s gotten some attention in the past week, that can do point-of-care testing, tests on platforms that many physician offices and community settings have already that can deliver results in 15–20 minutes, so much, much less time. And there is more capacity coming online in all those areas over the next few weeks.

I think we’ll probably get up to two million tests per week, maybe more, within the next month. So, in terms of testing kit availability, the ability to do the tests themselves, that’s really getting up there. And, you know, 1.5–2 million may not be testing everywhere that some people would like to see but will go an awfully long way to enabling this kind of test and trace at the case level that I’ve talked about.

The second part of this, though is – yeah.

Tony Roth: And I just wanted to jump in and ask what about, you know, we hear so much about in addition to the tests there’s a whole supply chain around swabs, vials.

Mark McClellan: Yeah, exactly.
**Tony Roth:** And how are we doing there?

**Mark McClellan:** Exactly where I was going next. So, the other two pieces of affecting testing capacity and getting the test to the people who need it and getting the tests done are having an ability to deploy these tests where they’re needed in every community. And, you know, if we weren’t having to ramp this up so fast, this is something that markets would sort out. You know, people would open up new shops and so forth that could specialize in testing.

But, because we want to do this so quickly, it’s taking effort at the state and regional level to really look at where the gaps in test availability are. You know, we want, for this whole program to work, for anyone in any community to know quickly if they’ve got a symptom, if they’ve been exposed, where they can go to get a safe and rapid test. And at least with the technology we have now, these are test facilities that need special protection for the health care workers who are administering the test. So, it’s not something you can do just anywhere.

And we’re seeing more efforts around the country to make sure that that testing capacity is available. It takes cooperation between the labs and the health care organizations, the public health authorities, the state and regional government. So, that’s happening, but I can’t say it’s fully in place everywhere yet. There are some good digital tools to support this, Google/Apple, you know, tools that people can use on their smartphone, tools they can get through their health care plan or their provider that can facilitate all this. So, that’s happening and will continue to develop quickly in the coming days.

And the third piece, as you mentioned, is it’s not just the test itself, but the other materials that are essential to use along with the test. And we are continuing to see significant shortages in swabs and in some of the personal protective equipment. And just as we have been going through a first surge over this past month around key equipment for the surge phase, like
ventilators and ICU beds, this next phase, this containment phase, the surge is really going to be around testing capacity, which again I think is getting there or on track for being there in the next few weeks, plus the ability to deliver those tests, deploy them where they’re needed, and having ready access to the associated materials.

I know this is a front and center issue for the federal government to ramp up the supply of swabs, to find alternative types of swabs that can potentially be substituted and still yield reliable enough results. And we’re also seeing innovations in the tests themselves so that people can administer themselves. And some of you may have seen FDA emergency approval yesterday for the first spit test, which avoids the need for using a swab at all and if we can do that more widely, that home testing, self-administered testing, all of that is going to make it easier to get to this effective testing capacity around the country.

So, those three pieces do need to come together. They’re not there yet. And I think it’s important to remember this is going to be a state and regional execution activity backed up by the federal government and providing technical assistance, financial support, and helping to really drive up the national access to materials like swabs and pipettes to support this effort.

**Tony Roth:** And in terms of who we actually test, at this point we're not talking about, if I have it correct, doctor, just testing the people that we think may be demonstrating symptoms or may have been through the contact tracing, which I know we’re going to talk more about in a few moments, exposed in some way. Are we also sort of randomly testing people as well? Or what’s the population or the scope of the testing do you think? How would you define that for us?

**Mark McClellan:** I think it’s some of both. I think at this stage in the pandemic, testing everyone who has symptoms that could be COVID-19 is a really smart public health idea, because while most of those will turn out to be something else, not COVID-19, we don’t want to
miss a significant number of cases. And also, testing at that level will help us learn a lot more about just how widespread the virus might be in a community. It’ll help us provide a basis for determining, you know, can we refine these testing approaches to be a bit more targeted in the future and kind of use the tests as effectively as possible, learn the most from them. It’ll help us also learn about which tests are most accurate and have the most value for containing the epidemic.

But I think that’s the right aim for now. And, in addition, as you said, at least some populations where people may not have any symptoms at all. That definitely includes higher risk settings, as I’ve alluded to. It would also potentially include just some random samples from populations, you know, as we talk about reopening schools or reopening additional workplaces. I know this is something that both schools and businesses are viewing as a high priority. Especially as the testing capacity comes up and we get more capacity available, it allows for rapid screening as maybe a more routine process.

So, I think you’re going to see a lot more testing coming in the weeks ahead, including in asymptomatic or otherwise healthy-appearing populations where you don’t want to see a rapid outbreak occur because cases began spreading undetected.

Tony Roth: Yeah. And it also occurs to me that when you think about the idea of providing confidence for people, the notion that we’re testing on a somewhat random basis, whether I'm going back into a workplace or I'm going into a restaurant or something of that nature, if there’s some representation that can be made that some level of randomized testing of those folks around me has occurred, I think that really helps to go a long way from a confidence standpoint.

Mark McClellan: Yeah. There are other things, too, that I think will become as the public engages more on this and really starts, you know, coming to terms with what reopening means
for them and what would make them feel safe and comfortable in going out more, testing is a key part of it. But there are other steps, too. People watching their own symptoms and employers, schools being very vigilant about workers or students that have symptoms.

I expect to see a lot more temperature checks as well as part of this. And just as in the countries that are starting to reopen, I think face coverings, you know, cloth masks are going to come much more the norm as well. So, all of it comes together to create an atmosphere of more confidence about going out.

**Tony Roth:** And doctor, do you think that it’s important that – you mentioned masks – do you think that it’s important, doctor, that – and, for example, Governor Cuomo in New York today announced an edict – I’m not sure what the right legal term is – that everybody that goes out in the public in New York now has to have a face covering, etcetera. And I know that the face coverings, as I understand it, provide some benefit in terms of either both not touching your face, as well as, particularly for folks that are infected, if they’re coughing or sneezing, keeping the virus close to them and not having it project out into the environment. But, at some point is it going to be important when you think further out, months out, that we’re able to get to a place where the face coverings are more of a medical facemask or do you think that just the scarf or the bandanna or whatnot is really adequate for most people for the extended period?

**Mark McClellan:** Yeah. I think it’s going to depend on risk. Looking out months from now, we’re going to have a lot more testing in place. People are going to become more accustomed to seeing routine reports of whether there’s an outbreak or what may be an outbreak in their area and the appropriate standards may vary based on those kinds of conditions.

You know, I think it is no surprise and it’s a very prudent step for New York, especially in the New York City area, to be very aggressive about stuff like masks that can help reduce the
likelihood of someone transmitting the virus to someone else. And it does look like the cloth
masks, non-medical grade masks, help with that.

Hopefully when we are a bit further down the road in this containment phase, people won’t feel
like they need a respirator grade mask to go about their business. And I think if, you know, the
respirator grade masks are good for health care workers who are treating patients with COVID-
19, that is not the standard that we’re looking for in this, making the second phase a success.

Tony Roth: Right. And one of the listeners, by the way, writes in and lets us know that Cuomo’s
order makes the mask mandatory only when you can’t appropriately socially distance, which is
an important distinction. So, now –

Mark McClellan: Yeah. That's right.

Tony Roth: The other thing before we leave testing, and I do want to talk about the contact
tracing, because there’s so much to unpack there. But, can we just talk for a moment about the
serological testing, which is the testing that tells you if you’ve had it, from a couple of angles?
One is that it seems to be so important in that we went into this conversation around serological
testing thinking that everybody that had the disease was going to be immune. But now, the WHO
has come out and others that are really questioning whether or not that’s the case here. So, if you
have any thinking on that, I think we’d love to understand what your perspective might be.

And then, secondly, we seem to be – have gotten off on the wrong foot on the serological testing
where there’s a lot of tests out there that I guess the government’s worried that they may not be
high enough quality. So, any perspective you have on that as well, where you think we are in the
process of getting out good quality serological testing and as well as, of course, your thoughts on
how it fits into the mosaic here of how important it is, how it should be used. Just a few thoughts
on that topic would be terrific.
Mark McClellan: Yeah. It’s a good question. So, with this pandemic, you know, everybody has to become something of an epidemiologist. And I think they also need to have a good working knowledge of immunology as well. So, Tony, the tests that we’ve been talking about so far are all tests for the presence of the virus itself. That's also known as an antigen test or a test based on certain proteins being present.

What we’re talking about now is tests for antibodies. That means that you’ve been exposed to the virus and that you’ve developed some immunity to it. And while I know a lot of people have hopes for some kind of certification system where, you know, you get a test done and you get a card and you can be confident that you can go out and be exposed to people who may have the virus and not only not get it, but not transmit it. I think we’re a ways away from that and you hinted at the two main reasons why.

One reason is scientific. We just don’t have enough experience with the virus and a good enough understanding of how immunity develops when you're exposed to it to even know what a certain serologic test or this antibody test means. So, do people – does everyone who has been exposed to the virus have a strong immune response to it? It looks like based on the early data mostly, but not necessarily always. And what are the factors that determine whether it’s strong or not? Well, we’re still working that out.

If you have a strong reaction, does that persist over time? Well, if you look at earlier coronaviruses, the answer is sort of like a, at least a partial yes. With immunity, it might lead, I think, if you get a strong response now it would probably be with you at least for the rest of this year and early next year, which would go a long way.

But again, we haven’t really done those studies yet and making a decision about telling someone that you can be confident that you're not going to transmit it, you’re not going to get this again,
we need to have some level of caution and evidence around that. Hopefully, the studies will be
done over the coming weeks as we are able to track more people over a longer time period after
they’ve been recovered from the infection. Hopefully those studies will give us a more definitive
answer in the weeks ahead. But I still think that the science, basic science here is a little ways
off.

The second problem, as you mentioned, is that the tests on the market now basically were not
designed to do this. So, we said the government is concerned about their use for this purpose.
But, the government, the FDA actually, let all these tests on the market under an emergency
authorization, not for use to determine whether someone has short- or long-term immunity, but to
help with in this era when we were really short of tests, help with just determining who’s got
COVID-19 or not. So, it’s a support—not even to be used by themselves—a support for
identifying patients who were infected. That is a very different use than what we’re talking about
here and the tests were not designed to be reliable enough, you know, to pick up accurate enough
levels of antibodies for that other purpose.

So, the tests that are on the market now, I would not invest in them as a widespread, reliable way
of determining whether people are really immune or not. I think a great area for development as
the science comes along is tests that can give you a reliable, quantitative answer and can be done
very easily about just what kind of antibodies are there and those will be helpful down the road.

Down the road though means identifying some people who may be able to go back into riskier
jobs in the next few months. It doesn’t mean answer for, a replacement for, all of the testing for
the virus that I talked about before. If you look at places like Northern Italy and Spain and
Wuhan where there have been such heavy outbreaks in the population, we don’t know for sure,
but the best estimates we have now suggest that the vast majority of people, as bad as these
outbreaks seemed, the vast majority of people didn’t get exposed and therefore do not have immunity.

And if you look at the number of tests, cases in the U.S. today, we’ve got over 600,000, even if we’re missing nine out of ten, that’s still only a tiny fraction of the overall U.S. population. And so, we need to do some qualitative tests in the near-term, not ones that determine whether people really have long-term immunity, but at least give us an idea about whether people have been exposed. And there are easy blood tests available to do that, to get a better idea of what’s going on in each region of the country. And that’s something I’d want to know if I was a governor or a mayor about reopening and I know there are some efforts underway to try to get those answers. I do think the answers we’re going to see, though, are that in most regions of the country 90%–95% or more of people are not immune. And what that means is you can’t rely on what’s called herd immunity for a virus that is this contagious to help slow down spread. Instead, you need the other measures that we’ve already been talking about. But, it’s still an important thing to track.

**Tony Roth:** So, it’s still contrary to what we – what I had believed at the top of the call from watching everything on TV and reading the news, I thought that we were, you know, days if not weeks away from widespread, reliable serological testing on whether or not any one of us might have had it. It sounds like it’s further out than that. It’s probably months away to being widespread.

**Mark McClellan:** I'd say, right, that the tests that are available now I think are not bad rough indicators of whether you’ve been exposed or not. That's different from a reliable measure that could be a basis for certifying whether you’re going to be immune for the future. And I do think that’s weeks to a few months away, yeah.
Tony Roth: Okay. So, let’s talk about contact tracing, which is I think one of the areas where you and your team have been so innovative, doctor, in the work that you guys have done and the papers that you have published. Can you tell us what contact tracing effectively is and how it would work here in this country given the sort of libertarian and sort of, you know, privacy issues and everything that we are all used to benefiting from?

Mark McClellan: Yeah. So, this is a mainstay of containment. And I think a good shorthand to kind of remember is test and trace every case. That's what we’re aiming for here. It doesn’t mean we’re going to get all the way there. But, to the extent we can do that, we’re really going to be in a better position to contain and limit the impact of any future outbreaks. That's not to say that we won’t have more outbreaks. We’re going to. These systems are not perfect. This is a virus that spreads easily. The question is can we contain them well enough that everybody can have enough confidence about taking some significant steps forward in opening back up their region and the country.

And what tracing is really about is being able to quickly notify an effort to identity and contain any outbreak that occurs. So, that starts with a test, but that test information needs to make it back to the regional or the state’s programs, their public health systems, for alerting the response system to help with containment. And this is something that every region and state has. It’s something that every region and state needs to really beef up in order to deal with the magnitude of containment efforts that are appropriate for this virus and we’re already seeing that happen.

So, some of this involves just kind of old-fashioned detective type work, getting in contact with the individual that has a positive test, asking them about who they’ve been in close contact with for a long enough period of time that transmission could’ve occurred, and if they had spent time at a public place, whether there’s been significant exposure there. By the way, the public place—
and this gets back to the reopening issue, too—those public places are being much more careful now about deep cleaning, frequent cleaning, protecting individuals from residual contact and so forth. So, it’s that’s going to be different than it was in the past, as well.

But, being able to identify those contacts and then get in touch with them about testing and about quarantine perhaps if they were in fact a significant exposure while we figure out whether they were actually infected or not. Now, that sounds pretty daunting. There are some things we can do to support it. Many people are—so far—have been very happy to isolate themselves at home after they’ve tested positive and people who they’ve been in contact with have gone into quarantine at home themselves.

I think we can help support that by making available some local locations for people who for one reason or another don’t want to quarantine at home. You know, if they’ve got family members that they don’t want to expose for the coming days or week, or if they’ve got someone who might be at high risk of the – of complications from COVID-19 if they got it, and there are lots of ways to do that. Converted hotel space, for example, might be one. If we want people to go back to work and we want our – the public to be confident that workplaces are safe, businesses thinking about some paid time off for their workers if they test positive or if they’re exposed would be helpful for getting more adherence.

And you know also probably heard about some of the digital technologies in use around the world and somewhat similar versions in development here that may automatically be able to help identify, at least start to identify, who you’ve been close to. You know, those tools I think are not discriminating enough to discern say, you know, someone who was ten feet away from you on the other side or five feet away from you on the other side of a wall who you just were in contact with in an insignificant way from meaningful contact. So, they can certainly help. And there’s
also good digital tools that can be used to notify people if they may have been exposed and to help them get in touch with a quick testing and the other steps that they need to take to protect themselves and those around them. So, that’s what I mean by the tracing capacity.

**Tony Roth:** I hear about – yeah. So, I, you know, the – in terms of how the tracing occurs, there’s the possibility that the infected individual engages and does the tracing. In other words, I was near my friend, my colleague, and unfortunately, I don’t know who the people were that I was near in the grocery store. But at least I can tell my friend or my colleague. There’s the digital. So maybe, you know, Apple tells 30 people that they were near me. They don’t – they won’t say who I am, but you were near somebody that had COVID yesterday. And then there is the idea of municipalities or parts of the government hiring people to do this work and how many people are we going to need. We’ve seen dialogue around that. How would they fit into this puzzle? What would they do, exactly?

**Mark McClellan:** Well, we are definitely going to need more people. And if you look around the country, say it’s in local governments are already starting to do this. San Francisco has started a program in collaboration with some of these tech industry supporters. But it does include like actual people to help manage and reach out and help people through the contact tracing and containment. Los Angeles has started a program called the CARES Corps, which includes some repurposed medical students, others. It takes some training to do this, but it’s really just kind of good, solid, reliable human interaction and following a standard technology supported template.

Boston, Massachusetts, has started out by training up about 1,000 people in the greater Boston area to support these efforts. This is something that I think should be supported by the federal government, kind of a corps of short-term workers for the duration of this phase to help make
sure we’re containing the epidemic. It’s some notable job opportunities, but it’s also a really
good investment for helping people get more confident about opening up during this phase when
we’re living with the virus.

So, I think you’re going to see every state and region, hopefully with strong support from the
federal government, setting up these kinds of programs with the people, with the technology, and
with the public education and engagement, with collaboration from business to help, and schools,
to help make the containment work succeed.

Tony Roth: Okay. So, we have a lot of questions that have come in, dozens and dozens of
questions. And I’ve asked a couple of them as we’ve gone, but I want to pivot to those in a
moment. But I have one more question for you before we get to those questions. And while
you’re answering this, I want to – if we could advance the slide one more.

We do have one more visual to show folks that just introduces one more variable, which is the
variable of mitigation. And what you see is essentially a ladder of lines on a graph that as we
move up that ladder how much more additional testing and contact tracing we need as we open
society up from the highest level of mitigation on the bottom up to a lower level of mitigation on
the top, which is the orange line there. And then, as you get more therapeutics, you can start to
ramp down eventually this once you have confidence that we can treat people very successfully
or reliably. And obviously, we’re not there yet.

So, the last question that I wanted to ask you, Doctor, before we go to more audience questions is
around the federal government. There’s a lot of dialogue now around the phase four for federal
support for the economy and the country. Where do you see the greatest need for the government
to be directing additional assistance? Is it more towards the economy? Is it more towards
hospitals? Is it more towards testing? Is it more towards contact tracing? I know all those areas
probably could benefit from it, but where would you most like to see the federal government get more involved and place emphasis in terms of its own resources?

Mark McClellan: So, it’s a great question and there obviously are a lot of dimensions to this response with important roles for business, for schools, for state and local governments, for healthcare systems, and for people themselves. And what I’d like to see in the further economic stimulus legislation, which we're going to have more of it, is proposals that recognize how much people are hurting right now and how much of a cash flow shortfall businesses are having and they’re trying to stay in business through what’ll be a gradual reopening. I think we'll probably get to this, too. And health care organizations that have both been hit on trying to prepare and deal with this pass – the surge that’s passing and at the same time they’ve lost so much revenues on their usual healthcare activities. And for individuals as well.

To the extent that we can make these next set of stimulus proposals about helping to recover, helping to accomplish the things that will create confidence in the public, I think that’s very important. Otherwise, I think a lot of these expenditures are kind of like pushing on a string. You know, you’re replacing income that people have lost, but you’re not really giving them the confidence they need, the businesses, the individuals, to get back towards normal. And what we’ve just been talking about is the kind of setting that I think is really critical for doing that.

So, what does that look like? Well, it looks like help to state and local governments to not only replace losses in their budget, but to hire a set of temporary workers and to build an electronic infrastructure for supporting this kind of test and trace capacity that can be used to get us through the coming months, but that will also create a system that is going to last in terms of integrating public health and new technology and our health care system to be much more prepared in the future, both as residual issues related to the coronavirus stay with us, which I think is possible for
quite a while, and to protect against the next public health threats and just to give us better population health surveillance in general.

I think assistance to businesses that helps them, maybe some tax credits or other kinds of assistance that helps them take the steps needed to harden the businesses, to increase distancing, to support effective testing and communication with the state and local governments when outbreaks occur and how to manage them, that helps them get the equipment that their workers might need to make this environment succeed, steps like that. And for our health care system, you saw CMS today doubled the price basically of these, the diagnostic tests that we’ve been talking about that are so important. That's going to help recruit more testing capacity in. On top of that, I'd like to see some additional payment bonuses for the manufacturers of diagnostic tests that make them better, that make them self-administer, that make them more reliable, that make them easier to use. That kind of investment is good for technology, good for job recovery, and also good for just strengthening our system.

Similarly, relief payments to health care providers and hospitals, there are going to be more of them. They need them. But they shouldn’t be just relief to go back to the – so that people can go back to the health care system that we had. They should be relief that really strengthens the way that we deliver care using telemedicine, that enables people, especially those at highest risk for complications of COVID-19, to get good care without having to go into the hospital or a health care facility. That is a real change. That's new kind of investment.

And similarly, to help every frontline primary care physician in the country, every frontline practice be really connected to this emerging containment system that we’ve been talking about so that if they do a test, their electronic record system will automatically send the results without a whole lot of extra work and quickly and reliably into this ability to trace contacts and contain
the outbreak. So, more investments like that as part of the next stimulus package. It’ll provide relief for businesses, for people, for the health care system, but also help us build this kind of stronger, better health care system to help people be confident about the future of the country.

Tony Roth: Yeah. There's a silver lining here that it’s really that we’re learning a lot and if we’re smart in how we react to those lessons, we’ll be able to build a better system for ourselves once we’re over this. So –

Mark McClellan: That's right. And well, I think even before we get over it. I think right now to enable this kind of testing and tracing and this containment to occur right now. We need those kinds of investments.

Tony Roth: Yeah. Right. Okay. So, here’s a question, doctor. We’ve spent most of the time today talking about the Y axis, which is to say testing and control tracing, contact tracing, etcetera. What are your thoughts on the X axis? If you were to think about where we sit today, which is probably fairly to the left, we probably haven’t made a lot of progress yet in terms of improving how we treat COVID patients relative to where we were two months ago when we started that. Would you agree with that assessment? And when you think about the things that are coming, like the Remdesivir, Avigan, the convalescent plasma, and other things, do you think that we could make meaningful movement across this chart over the course of the year this year? Any sense yet on that? I know that we don’t have the data yet. But any sense or –?

Mark McClellan: No. It’s in process and I think there are some things to watch that can give you maybe more confidence that we’ll make that progress sooner. So, you know, the therapeutics are the ballgame for all of this and that’s where we can and should be putting an unprecedented amount of investment and effort.
Most important for that is developing and demonstrating the safety and effectiveness of vaccines that can be used on large populations, including lots of healthy people, as quickly as possible. And there has been an unprecedented effort to make that happen at a pace that will definitely shave a ton of time off the usual vaccine development process.

So, regulatory agencies around the world have worked hard to kind of align their requirements and their expectations for what constitutes good clinical studies for the safety and effectiveness of vaccines so that those studies can get underway and get done as quickly as possible through a, really a global collaboration. Remember, by the summer we’re hopefully not going to have a whole large number of cases in any one place in the United States. We’re going to have to be creative about finding the best place to do clinical testing in high risk settings around the world. That’s going to require an unprecedented level of collaboration. It seems to be happening.

The manufacturers of vaccine products and the early stage companies are all working together in that direction. At the same time, a lot of work going on to go ahead for very promising vaccine candidates and build out and certify from a regulatory standpoint the quality of the manufacturing of these vaccines at very large scale. So, instead of having a sequential process where you develop the treatment, do the clinical testing, get approval of the drug, and then do the manufacturing, doing those manufacturing pieces simultaneously with the clinical testing. That means a lot of extra spending, because you’re going to be investing in potentially billions of doses of vaccines that may not actually end up working.

But what we want to do is get the maximum number of excellent shots on goal about effective vaccines as quickly as possible. Hopefully, more than one of them will work. And if you take that same logic back to treatments that are going to be available sooner, like the antivirals, the – not just the serum of recovered individuals, but now synthetic monoclonal antibodies derived
from what looks like immune globulins that will really work, we can take the same principles and apply them there, make sure we have a fast path to clinical testing, even if there are not a lot of cases in the U.S. when some of these treatments become ready for clinical testing and later in the spring and summer, and then planning ahead so that we have premanufactured the treatments that look like they’re going to be most promising so we can make them widely available, and recognizing that for many of these treatments we’re going to keep learning about them when they’re on the market. We want to get them out quickly and they will, hopefully, be effective. But there’ll be a lot more to learn about how we can best use them. So, those are steps that can, I think, really accelerate the movement down that curve you’re describing.

**Tony Roth:** So, here’s a question that is, I think, such a great question, because it affects the most precious people to us, which is our children. And basically, the question asks in order to reopen so many families need to be able to have schools and daycares available to them so that they can go off, the parents can go off and work in the workplace. And even if they are open, how can parents be comfortable? How should parents be thinking through the risks to their children, whether they’re in daycare or whether they’re in let’s just say secondary school? Should they be fairly dismissive because that demographic really doesn’t seem to get too ill, but obviously some, you know, tragically there have been some kids that have passed away from this. How would you recommend that parents that have grade-school-aged children or daycare aged children grapple with that very difficult conversation they have with themselves every day when they have to figure out what they want to do with their kids when they go back to work?

**Mark McClellan:** Yeah. It’s a great question for kind of wrapping up, to give me a chance to talk about how reopening might occur. So, I think the easiest things to reopen are smaller retail establishments that are kind of like grocery stores, you know, where we’ve got some experience
with how to make physical distancing work and we can strengthen that a bit. So, I expect to see a range of smaller retail establishments be part of an early phase of reopening, going beyond the grocery stores and the like.

But schools absolutely have to be the top priority for an effective reopening strategy. It’s not only because kids really need the education and it hurts a lot for them not to be able to get that. It’s just not the same when we’re trying to do this at home. But also, as you said, if we don’t have some school activity in place, it’s going to be much harder for parents to go back to work as well.

As you said, the good news is that for kids the risk of serious complications, especially kids that don’t have underlying serious conditions, the risk of serious complications from COVID-19 is very low. That's a really nice feature of this infection. So that suggests that at least for smaller schools, maybe not, you know, full days, certainly not sports, full sports and contact activities, but maybe staggered days of school, maybe a bit more spacing. Maybe it’s not completely full days, but at least partial days. Those are things that I think are top priorities for federal and state and local policymakers to work on now. A lot of good ideas out there.

You noted that Germany has announced they’re going to start reopening they think in May if they meet some of the conditions that we just have been talking about today. One of their top priorities is schools as well for that exact same reason. So, it won’t be—just like everything else—it won’t be the same as what we had before. It’ll probably be stepwise. It will need to be accompanied by, and this is a great area for just routine testing of healthy people just to help make sure we’re not spreading any pandemic. But, that’s a very high priority issue and it’s back to confidence.
So, parents need to be confident that they can send their kids back to school in these modified environments and not have a big worry about contracting or spreading infections. I think that’s going to be among the earliest areas where you’ll see some forward movement and some real attention to what we talk about today to permit successful reopening.

Tony Roth: Well, thank you so much for everything that you’ve shared with us today. Before we end, I’m going to take one quick question that I think is very relevant to what we do for a living, which is a question that came in that asks in light of everything you’ve heard today from Dr. McClellan, what do you think, Tony, the markets are going to do over – where are they going to be six months from now?

And what I’ll say is that the markets, I think today, are not necessarily appreciating the difficulty that it’s going to take for the economy to get back on its feet over the next 12 months. I think that we’re going to need to see a lot of investment in exactly what Dr. McClellan has talked to us today around testing, contact tracing, and then, hopefully, we’ll make progress on the therapeutics.

And so, I think it will become apparent to the markets in the short-term, meaning over the next 30 days, how difficult this process is going to be. And so, I expect to see a lot of volatility in the markets over the next 30 days or so. But I also believe that, thanks to the great wisdom of people like Dr. McClellan, the society is uniquely dynamic here in the U.S. and I believe that we will do exactly what we need to do from a testing and contact tracing standpoint. Hopefully, we’ll have some luck with the therapies and we’ll start to be able to roll down the graph that we’ve looked at today and get to a point where we can see a light at the end of this tunnel six months from now. So, even though the very short going is going to be rough going in the markets, I think six months from now the markets will be higher than they are today and that’s the good news here.
So, again, Dr. McClellan, thank you so much for being with us today. And, more importantly, thank you for sort of guiding our nation with your insights. I want to thank our participants, our audience today for joining the call. Anybody that may have missed a portion of the call or may wish to listen to it again, we will have a replay.

And we had over 50 questions that came in just during the call. Obviously, we were not able to get to them all. We will send out individual answers to you all if we didn’t answer your question during the call today. And as always, feel free to reach out to your investment advisor or wealth advisor, who can help as well in any way.

So, Dr. McClellan, thank you again for being here today and thank you, everybody, for listening.

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(END)