

# COVID-19 + Data Decisions after Disruption

Video Transcript

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Jeffrey Wichtel: Got data? That is a question of the day it seems. There's a pretty good chance that you use data every day to inform decisions that you make for yourself or your family and so also equally true that we use data to inform decisions for our whole populations regions countries globally. In the midst of this pandemic our interest in data has never been great. Welcome to the panel discussion on data and decision making during the time of disruption. It's hosted by the Arrell Food Institute at the University of Guelph. Let me first introduce myself. I'm Jeff Wichtel, I'm the Dean of the Imperial Veterinary College and let me introduce our panelists today our University of Guelph experts. Firstly Dr. Rozita Dara, Rozita is an associate professor school of computer science, Dr. Amy Greer tier 2 Canada Research Chair in Population Disease Modeling and associate professor, Department of Population Medicine. Simon Somogyi, an Arrell chair in Business of Food and associate professor school of Hospitality Food and Tourism Management. And Alfons Weersink professor, department of Food Agriculture and Resource Economics.

Let me start with you first Amy. Your mathematical modeler for infectious disease especially much in demand these days. Let me ask you how important have data been in our response to COVID-19, say compared to previous epidemics or other emergencies?

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Amy Greer: Yes, so you know we always like to be able to make decisions that are evidence-based and I think the availability of data in the response to COVID-19 is really super critical and certainly we've seen some changes since the 2009 pandemic of influenza for example you know a lot of the data sources that are available and that the public as well as scientists frequently check in on are publicly available you know we have a lot of groups maintaining line lists of data keeping track of case counts from different public health units across the country and making really amazing data sharing resources publicly available and I think that that is something that's quite different actually then even in 2009 I think the other really interesting point related to data in the era of COVID-19 is the availability of preprints you know as scientists we engage in this research protocol where we conduct research and then we share our results by way of peer-reviewed publications and the data on COVID-19 especially because it's an emerging disease we're learning more and more about it every day and preprints are kind of an interesting way in which the scientific community are sharing their results very rapidly as a way to get information out, sharing that information publicly with the scientific community, recognizing that those results have not been peer reviewed, but it still allows us to have evidence at our fingertips to be

able to assess much more quickly than using more traditional scientific dissemination routes so it's really quite an interesting scenario that we have not really seen in in other public health emergencies.

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Jeffrey Wichtel: Thanks Amy. So a real democratization of data at the moment so more specifically with the data that you work with every day, what's it telling us about where we are in this pandemic as a province and as a nation and globally are we in a recovery phase as we're often hearing in the news?

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Amy Greer: So I think the term recovery phase is a bit misleading if you might so you know what we know about this coronavirus is that it is highly transmissible and that means it transmits from person to person quite easily and most of the you know-- all of the population is susceptible to becoming infected. We also know that it represents a number of extra challenges that we haven't seen with some of the other previously pandemic pathogens like influenza. With corona virus we know that transmission can happen before individuals are very obviously ill and that makes things like contact tracing challenging because if people are spreading illness before they even know that they're sick it's very challenging to control an infectious disease in that's what that has that sort of biology so in terms of where we are what I'll say is that nationally we use a term called the R naught or the basic reproductive number to kind of assess disease transmission in a population we know that that value has been dropping and that's really good news what that means is that as a society we haven't been engaging in aggressive and early physical distancing to drive contact rates down and that reduction in contact rate is really starting to demonstrate and that we have been effective at slowing transmission so early in the outbreak nationally we We're seeing a doubling of cases every three to four days now it's more like every 16 days so that's really good news the challenge is that we are not out of the woods yet in the absence of a vaccine as soon as we start releasing those physical distancing measures we know that transmission will begin to pick up again and so we are going to be in a position where we need to very critically use data to help us assess when we need to re-implement different types of public health measures in order to keep transmission low until we have a vaccine.

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Jeffrey Wichtel: Thanks very much Amy. Rozita I'll turn to you now you're an expert in the use of technology in the agri-food sector and society. More generally can I ask you, are there specific examples of technology we are using or should be using right now to support the agri-food sector that's clearly under a lot of pressure?

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Rozita Dara: So thank you very much Jeff and I believe this pandemic will spark agility in digital agriculture as it has emphasized the need to get access to some of the technology that exists in other sectors and they do and they are not easily accessible in agri-food systems so this this technology span from kind of simple requirements such as access to machine readable data which is which is not that that much of an extraordinary technology but not all sectors in agri-food or small-scale farms or businesses have access to such technologies also it emphasizes the need for platforms that can manage data and also more need for automation to be used for during throughout the food supply chain. So, these technologies—so what I expect to see that post COVID we'll be awarded with a lot more digital technology in agri-food system for food production, distribution, their safety, traceability. Some of the simple examples are for example physical distancing requirement we require again access to software tools that can collect data automatically rather than using paper-based processes we will see increasing use of robots, drones and machine learning and cutting edge sensors to collect data and make decision based on them. In China the use of drone technologies in farm has skyrocketed just because they want to make decision maybe increase crop area without having enough labour, I mean despite having challenges in having labour, access to labor other technologies that I would I would see that there will be increase our e-commerce tools because small-scale farmers now are showing Brazilians to sell to sell and provide food to the community and there they have turned into social media outlets and they are selling their product that way but I have to also mention that these technologies many of them are in the pilot stage meaning that they haven't been widely deployed or tested so one of the changes that I will see culture changes that I hopefully I will see in digital agriculture world is deploying these technologies in the real world environment to test them at the large scale and also engage the end-user who are making those tools and will be making decisions with those tools so that's one of the changes that I expect to see in in the culture and how we are using and developing these tools the other culture the other change that I expect to see is kind of having platform approach to digital agriculture as you can imagine our world digital world has become decentralized these days and we need connected platform that doesn't mean a centralized platform but connected platform with standardization and data and software and system that we can integrate such systems.

We need a pipeline for safe data management sharing and security, we need better way to identify people digitally, this is technology that is missing in almost all sectors because without identifying in a secure way identity of a farmer or a state or somebody who is in the food supply chain we cannot provide them service so I would expect there will be need for new platforms legislation and to enable this whole digital ecosystem to work efficiently and properly. But in terms of specific examples again as I mentioned the use of automation tools robotics in farms, throughout the supply chain there would be inevitable I mean it will probably there will be more of those tools and another example even for contact trace using contact tracing tools even for agri-food workers because as you know one of the

biggest outbreaks in Canada have occurred in a meat processing plant and we can use those tools to make our workers safe and also make sure that they comply with social distancing. So opportunities are enormous there are less that can be done with technology for future outbreaks but we have to start working now and we have to start to build that ecosystem.

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Jeffrey Wichtel: Thanks, Rozita, that sounds like an exciting future but the up take of technology such as this, especially technology that involves tracing and sensing of individuals it's sort of being unevenly taken up internationally some countries perhaps have embraced it before we have. Are there some real obstacles there in terms of privacy and the belief in the use of data that we need to overcome as a country before we use some of these technologies?

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Rozita Dara: For contact tracing obviously because we will be tracing individual and their most sensitive information such as location and their identity obviously is quite sensitive data many countries they have for example for South Korea they have they have deployed system and there were lots of controversies around it because apparently that data was public for people to be aware where some individuals visited and although their name wasn't published, they became identifiable but there are better-- basically privacy has evolved there are many best practices that are out there such as privacy by design and other practices that if such tools are going to be implemented and deployed they can take I mean practitioners they can use to embed those principles in the system and into process and in terms of how they use that data and to ensure privacy and so there has been some success stories, Apple and I believe Google they're working with different governments they are working with the EU, they're working with US government in terms of building a tool that doesn't collect highly sensitive data but at the same time enables traceability, tracing infected individuals or and also so they are again they are not using they are not collecting highly sensitive data so there are solutions out there whether how we can-- so one thing we have to consider about these technologies is that they cannot be kind of we cannot expect to leapfrog them into the workflow we have to integrate them into the workflow and so this is something that I think because I kind of multidisciplinary effort that for policy makers technology experts epidemiologists the healthcare providers we all need to sit together and look at not only privacy because privacy seems to me is very simple very one component of this entire kind of ethical aspect of using such tools and privacy little tiny thing which is very important but it's not the only thing it's I think it's important for all of us to sit together and decide about other harmful use of this data and make sure that we will avoid it and kind of embed it into the workflow of the healthcare basically.

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Jeffrey Wichtel: Great, thanks Rozita I know it sounds like this emergency may well be the catalyst for getting everyone together to talk a little more deeply around this role of data and sensing and tracing so thank you for that.

Alfons I'd like to turn to you now your area of expertise is agricultural economics and I'd like you in particular to comment on how resilient our food systems have been under this kind of pressure that it's feeling. What do you-- the data you work with tell us about how this pandemic has affected food systems and particularly labour and workplaces that a number of our food processing facilities have been struck very heavily with this pandemic can you comment on any of that please?

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Alfonse Weersink: Yeah first of all Jeff I'd just like to maybe just echo one point that Amy had brought up and that's the scientific community response and the the ability of data to respond very quickly and how it's I think this pandemic has changed the nature in which we as scientists respond a typical article has to go through a review process in the economics profession has a terrible reputation for the length of time before an article is submitted before it appears in print but just to give a little plug to our profession cultural economics the Canadian Journal of Agricultural Economics led a special issue on this and it was put out in three week's time, the editors Allan Kerr from Guelph and Ryan Cardwell from Manitoba got people together said this is the deadline it's not going to be traditional but it went through a quick review process and very well received and another I think outcome of that is the nature which we respond to these questions is through blogs and in posts that are picked up so as an aside you've talked about the resiliency a number of us have commented on this through I guess non-traditional approaches that that is due to the digitalization so the food system and the resiliency of it it has been bent but not broken and I think that that says a lot about our food system and you know initially why did it bend, is because the sudden change in the nature of the demand away from hospitality to the retail sector and that meant that that the whole system had to change in terms of the nature of the goods we weren't selling little slices of butter or big tubs of butter to the hospitality sector we were selling those one-pound containers of butter and so that is nature of demand.

In terms of what it might mean as we move forward Jeff I think that the that this trend of digitalization and automation is going to be enhanced because of this trend. Rozita's provided you a number of examples but why is that going to occur I think that that farmers for example as we move through the supply chain from up to down that that farmers are going to be looking to ways to save on labour they have for years it's not a new trend but I think this is just going to accelerate that movement to robotic milkers to automatic picker of whatever crop or output it might be so there's less reliance on labour.

Moving forward you've mentioned the processing sector and that's the bottleneck in the system there are you know we've got all the farm product coming into a few major Packers or processors and then it funnels back out through the system and that's the bottleneck and if they have labour issues, in this case the health of the labor then then it shuts down and we have implications at both the farm level in terms of lower prices and potential shortages as we move forward and then you know moving on that I think that there is going to be issues that the retail or the trends that we see at the retail level in terms of online purchase I think we will continue to see afterwards and in fact I think things like moving away from going from the warehouse to the grocery store to the consumer that we might just skip that grocery store why not go from the warehouse directly to the to the consumer so all in all I think you know that we've seen a system that has bent but not broken it will continue to be challenged as we as we deal with the remaining period of this pandemic but I think it's a tribute to the resiliency of it.

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Jeffrey Wichtel: Thanks Alfons, so it sounds like once this is all said and done we won't really be back to where we were before but there might be some significant systemic changes in the way food travels through society is that your feeling?

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Alfons Weersink: I think yeah, I think in a couple ways I think that there might be a trend towards more local and you know more self-reliance and so that's going to change the production system there's going to be demands for that.

Rozita mentioned some of the traceability technology I think consumers are going to want to know more not only how their food is produced but where it's coming from and likely support that demand for that attribute and then it you know as you move forward there'll be more information on what consumers want and the movement towards online purchase in and delivery of food I think will continue and you know It'll be interesting to see what happens to the hospitality sector after all of this how will the services that they provide go back to normal will the extent of in-person service decline will we see things like ghost kitchens you know that these restaurants have a kitchen that delivers but they don't have any in-house and in the in the data the digitalization the automation process will allow that allow that process to happen.

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Jeffrey Wichtel: Thank you there's a lot to think about and unpack there which is a great segue actually to Simon who's in the business of the business of food and certainly like to hear your opinion. What did the data that you work with tell you about how this pandemic has affected the business of food sort following on from what Alfons said and in particular

food prices and accessibility and how does that sort of speak after the pandemic to what this landscape will look?

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Simon Somogyi: My area of research is food supply chains and food consumer behaviour and the interesting thing is that most of my-- but the data that I work with is qualitative it's words it's phrases its meanings its understanding it's not necessarily numbers but I do a lot of work that does cross into the quantitative demands, sorry I mean quantitative area so I'll talk across those two I think there's two sort of related points to what Alfons was talking about and just general food supply chain issues they're related to pandemics and what we're currently seeing, so we've seen during the pandemic the evidence of the way that the grocery system works we've seen discussions about the just-in-time inventory management system that grocers use where grocers have data about demand and they then give that data for the supply chain to their suppliers so they can rapidly replenish stocks based on that demand and during the early days of the pandemic we saw outages and we saw all that panic buying and the just-in-time system was sort of blamed by some commentators out there for those shortages but I think it's a bit wrong, the system is far more efficient because of just-in-time and there's been discussions, that well okay rather than just in time systems let's have more inventory at various points in the supply chain but high inventories at wholesale in distribution centers won't mean that you get more food on shelves most important factor is trucks it's the logistics it's the movement of product into stores and as an example that the Ford government in Ontario move very quickly in mid-march to allow 24 hour-a-day deliveries to stores and that allowed for rapid replenishment so that these allergists for most products were short rather than long so the data that the grocery stores had about demand and the logistics system allowed them and the retail Council of Canada to Lobby the government to allow them to deliver 24 hours a day so I think it's a good example of you know data allowing for decision making.

Another example sort of related to the pandemic is food contamination and for the last number of years been talking about blockchain and blockchain technology and how it allows for greater traceability in the food supply chain which is you know it's more data and the data can be helpful but blockchain doesn't solve the problem the problem is say for example food contamination it allows us to understand with the contamination be happening in the food supply chain but it comes down to how rapidly government other food safety enforces can make those public announcements those recalls and so it's really the valuing of the data information is how quickly it's being used so I think data has been important during the pandemic it has value it has value in how it's interpreted or as I call it qualitative research I'm always thinking well what does it mean what's the purpose of rather than what is the number itself so the other angle to this is when it comes to data in the supply chain and the pandemic is cost, food is a low margin product the more technology you put into the food system and technology generally means systems and

systems mean cost so you together then recoup the cost from somewhere else consumers want food that is lower and lower in cost or even though in Canada we spend some eight nine percent of our basic income on food so yeah the system has bent a bit and to follow on Alfons saying, it hasn't broken but data has helped.

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Jeffrey Wichtel: Thank You Simon, yeah you're right Canadians are used to a very efficient and low-cost food system what of what we're going through now and the things that you've mentioned what do you predict will be a permanent change as a result of this experience either on the consumer side or on on the food value chain?

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Simon Somogyi: Actually, I'll disagree a little from Alfons. I don't think we'll see a major change I think what drives the food supply chain is consumers and we all recognize that there's no such thing as a consumer of food in Canada there's all these different consumers with different needs and wants and behaviours and we as researchers group them and study them but there is two trends across all consumers in the marketplace and that is convenience and price and if you look at any place you buy food now it really revolves around those two concepts so people have cost pressures income incomes that are relatively stable and not increasing if anything that's going to get even a more under tight pressure because people are losing their jobs because of the pandemic mortgages are high, cost of living is high but wages are increasing, so if anything this pushes more people into the industrial food system that allows them to access food every day of the year at low price from all year round and think about the quality of nutrition that we get from a grocery store system that allows us to get everything at one place people want convenience and I've sort of related that back to one place mentality and that I can go to one store I can get meat, vegetables, bakery items, seafood, all my toilet clean everything in one place so I don't think those are gonna change post COVID, now I also do work in food prices and we release the food price report each year and we've released a COVID-19 update to the food price report in in mid-march we in one week managed to scramble together a report based on the machine-learning work that colleagues in the School of Engineering particularly Graham Taylor and Ethan Jackson have been doing and we predicted that food prices are going to be relatively what we expected from our initial 2020 prediction back in December 2019 but what we have found since then is this pandemic has created this what I call a cyclone of data things that's changing so rapidly from 24 hours to 48 hours you know three weeks ago we didn't really have issues I'll say dumping potatoes or closing a processing plants or the flour baking craze and everyone's at home baking bread and all these factors including the farm labour shortages impact food prices so really on the really sit back a little bit because the data has to come in quickly and we just don't have mechanisms to get a lot. Our food price report data comes from areas outside of Canada because we find that data has been more accurate and stats Canada data for most of food prices comes out once a



month and it'll be sort of another month or so before we see the real impact on food prices in Canada so yeah we're in this whirlwind situation of data coming at us from everywhere the system of food has really been exposed to ordinary people and through various things that I've discussed before so it's an interesting time.

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Jeffrey Wichtel: Thank You, that's great I have sort of a final question for all of you that I'd like each of you to answer many of you have mentioned while you've been talking of the need either for changes in behaviors changed in regulation changes in attitudes perhaps more work that needed to be done in certain areas and maybe I'll go in reverse and just ask you to continue on Simon because you did you know talk to that a little bit, what would be your message either to the food sector or to regulators or any other stakeholders to try and improve the resilience of our food system you you talked about pretty good there and I think you're right you know we have been shown to be quite resilient but are there things that you know work is yet to be done that's being demonstrated from this emergency?

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Simon Somogyi: Well it can help but it needs to be accessible it needs to be accurate and I think that really important fact that is that the cost of doing all that has to be low we're not selling Rolex watches we're not selling Mercedes or Ferraris we're selling food which makes cents on the dollar so all these factors impact our ability to use data now as a message to the food sector I think the food sector is one that is highly resilient as it is it deals a perishable product it's used to having to change quickly be agile be adaptable to what's thrown at them and this is meant that the they've been doing a lot better than say the automotive sector which had to shut down all and is starting to come back to some extent but there are the examples so I think learning I think learning and understanding the cost of data are probably two big things.

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Jeffrey Wichtel: Right thank you. Working backwards through our speakers Alfons do you have a message for the food or AG sectors or regulators that you'd like to give at the moment to improve the resilience or the performance or the efficiency of our systems especially under moments of emergencies such as we're seeing now.

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Alfons Weersink: So uh yeah I think we're going to have another shock to the system and what we what in after this one is through we can look back and understand try to assess what were the data points that we needed to really understand how to better adapt to the shock and because in you know agriculture is a biological process it's not as easy to control as other sectors and so and we're more vulnerable to those natural shocks that might occur either to a disease or weather and so understanding that you know what could we have

done differently to move forward and I think what sort of data that we can collect one of the things we haven't mentioned is that just lots and lots of data sometimes there's just too much and we're overwhelmed with the volume of data and we can't amalgamate that data and may make decisions from it so what is it the data that we really need to be able to collect to deal with the future shock to the system such as COVID.

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Jeffrey Wichtel: Excellent thank you. Rozita do you have some further comments on this you know is there a message-- I think your message was one perhaps of a need for interdisciplinary work to try and bring all the stakeholders together could you expand on that?

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Rozita Dara: Sure thank you so yes I agree with Simon and all about data part so what the situation we have and we have lots of data we are overwhelmed with data and I think there was an estimation in 2014 that there was only one person of data were being used at that time and by 2020 only 13% and that's across all sectors so what governments or practitioners need to do starting with governments I think we need they need to understand that we need new infrastructure a new infrastructure includes wires and servers of course but it also requires some new technologies that it's not just a technology piece because identity management technology pieces existed for quite a long time but it's just because it requires a legal framework around that it needs as you indicated Jeff it acquires kind of a multidisciplinary and kind of multifaceted approach to address not only just the technology itself but many other aspect that these technologies required to be able to deploy and use kind of you know in a broad situation so new infrastructure with the support of the government as indicated clear we are before we are collecting lots of data but this data is being collected in without having a consistent protocols it is important to pay attention to a standardization there so that there are no system data platforms so that we can integrate different platforms at the time of crisis like this that to make it to be able to make more kind of a global or regional decision at the regional level that are more accurate and the other-- perhaps something that needs to be considered is aside from a standardization, we talk about privacy a lot but also there are other aspects ethics takes off data so and also operationally bringing everybody on board all the stakeholders enabling trust and transparency in between stakeholders this is something that technology on its own cannot enable it requires best practices it requires policies you know maybe new regulations and framework and kind of regulations and legal regimes basically to enable kind of trust and transparency among different stakeholders so that's something else another thing that needs to get done so technology is only one piece that needs to be advanced and I think that's the easy part it's the governance aspect as a whole it's a policy it's different stakeholders their rules their responsibilities a standardization of data platform digital identity tracing so that on the online we have a passport to declare our identity and

they can trust our identity all together and also one other kind of item I wanted to point out is digital literacy and digital awareness so as technologists we are aware of technology and still we're not completely of the consequences ethical consequences and legal consequences and I think in many sectors digital literacy and awareness is lacking perhaps um educational systems around data ownership or legal policies and you know agreements which will enable trust when as well those are also very critical so basically it requires kind of a holistic approach multi-faceted with many stakeholders on board to be able to have better systems that are accessible but in my opinion as a first step is to start small we don't want to boil the ocean and that could be responsibility of the government to identify the exact problem because there are many problems that would maybe night we may not be able to take it right now find a problem and then start small and start kind of in an iterative way to address that and many other problems that an after addressing one kind of iteration address more and deploy technology and processes and policies as we go on.

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Jeffrey Wichtel: Thank You Rozita Dara so it's a great take-home message that you know technology is good but we need to get our governments governance structures in place first right before we can do anything else so thank you for that. Amy do you have anything to add in terms of a message to the public to do the consumers or to government or to your academic colleagues as to you know what we should learn and take away from this emergency.

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Amy Greer: yeah so I think that if we're if we're talking about the agri-food business side of things I think there are a couple of things that are worth considering moving forward one is that the Canadian pandemic influenza plan is kind of the national document that we use to outline how we're going to respond when we are faced with a pandemic public health emergency and that plan is flexible and adaptable and it's been sufficiently flexible to be able to use it in our COVID-19 response I think one of the challenges that were faced with is that for businesses while some businesses have had a pandemic preparedness plan as a part of their human resources arrangement I think that that we have perhaps underestimated the potential for emerging infectious diseases I think we have planned based on scenarios that perhaps are on the lower end of the spectrum and what this has demonstrated to us is that when we have an emerging infectious disease it's highly transmissible and no vaccine candidate in the pipeline our only option for reducing transmission is to change our behavior very dramatically and very quickly I think that those are difficult things to implement for essential services like food production types of industries and we see that with some of the outbreaks in processing plants and so really thinking about moving forward you know how do we protect workers and people who are essential to the food that we eat that we require for our families and our communities and be prepared to be able to put that on the table to keep them safe as a way to protect the

supply chain and I think that's an area that really has surprised me over time is just you know how dramatically this has impacted some businesses that are really critical and outside of the healthcare sector and I think we maybe did not put enough focus on preparing as individual businesses for these types of possibilities and I think you know the University of Guelph is very much focused on One Health so thinking about interactions between humans and animals and the environment I think unfortunately you know we are at a period of time where the risk for emerging infectious diseases from animals into human populations that are novel to which we do not have any immunity in the human population that that risk continues to increase and so we need to really think about preparedness proactively moving forward I think.

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Jeffrey Wichtel: Right that's a great way to finish up here Amy and I think food was certainly an important item and in the news a lot before the pandemic I think it will continue to be and probably interest in food and Agri food systems will be the topic for some time to come I was gratified to hear our Deputy Prime Minister Chrystia Freeland speak at a press conference fairly recently talking about you know the question do we need a food emergency plan nationally, so that shows that at the very highest levels we're getting attention, you folks as thought leaders in your disciplines I hope we can find and I think our food Institute has a role to facilitate this I take a spot at the table to help government and the food sector adapt to this new reality and to be better prepared next time because we all know that next time as tragic and difficult as this time has been, next time could be worse especially if the pathogen set up in our domestic species for instance our food, the animal species as a reservoir so thank you for your input I appreciate all of your thoughts and I think those who will tune into this panel discussion will find it you know very interesting to hear from people who are at the absolute cutting edge of our response to this pandemic. Thank you very much.