Victoria Brooks: Welcome and thank you for standing by. All participants are in listen only mode for the duration of today's conference. Today's call is being recorded. If you have any objections, you may disconnect at this time. I would now like to turn the call over to your host, Earlene Dowell.

Earlene Dowell: Thank you, Victoria and Devon, from the US Census Bureau for hosting our webinar.

Good afternoon, everyone. And thank you for joining us to kick off the 2022 LED webinar. Before I introduce our presenter, I am thrilled to invite all of you to the 2022 Local Employment Dynamics Partnership virtual workshop on April 5th through the 7th. This year's theme is making sense of data in a new era. We will be highlighting the work of our state labor market information partners and other data users through plenary sessions. And our keynote speaker is 2021 Nobel Memorial Prize for Economics co-recipient David Card. Please visit our website at lehd.ces.census.gov for more information. And I'll be sure to put the link for registration in the chat.

On behalf of the US Census Bureau and the local Employment Dynamics Partnership in collaboration with the Council for Community and Economic Research and the Labor Market Information Institute, it is my pleasure to welcome you to the first LED webinar of 2022, initial impact of COVID-19 on travel, tourism, outdoor recreation varied widely across states and demographic groups, with my colleague Lee Tucker.

In this presentation, Lee shows how the US Census Bureau's quarterly workforce indicators was used to examine how workers employed in travel, tourism, and outdoor recreation across the country were affected by the onset of the COVID-19 pandemic. Data indicates that states with the largest COVID-19 outbreaks and those with the largest share of tourism jobs were disproportionately impacted at the start of the pandemic. Even workers who retained their jobs experienced earnings losses of up to 40%. Comparisons across demographic groups also showed that the reduction in earning and employment industry were unreasonably suffered by women and younger employees.

In addition, this study was also featured as an article in our America Counts stories. And I'll be sure to put a link for that in the chat for your review.

Lee Tucker is an economist in the Center for Economic Studies longitudinal employer household dynamics research group. His research interests include a range of topics, such as domestic outsourcing, veterans labor market outcomes, the impacts of local labor market concentration, and the impact of unionization. He helped the launch of the LEHD veteran employment outcome data product. And he's currently focused on efforts to update and improve the production of the LEHD snapshot for researcher use.

Lee joined the US Census Bureau in 2018 upon completion of a PhD in Economics from Boston University. He also holds a BA in Economics from Carlton College. And he served as the staff economist at the White House Council of Economic Advisors from 2012 through 2013.
With that, I welcome Lee Tucker.

Lee Tucker: Thank you very much, Earlene. And thank you, everyone, for joining today. Again, my name is Lee Tucker. And this research on the impact of COVID-19 on travel, tourism, and outdoor recreation is joint with Matt Graham, Heath Hayward, Hubert Janicki, and Erika McEntarfer.

And I should just begin by stating the standard disclaimer that the opinions and conclusions that I'll express in this presentation are those of myself and do not represent the views of the US Census Bureau.

All of the tables and figures that are going to be done here are using publicly available data from the LEHD's quarterly workforce indicators or QWI. For those of you who aren't familiar with QWI, it's fantastic. This is just giving you an inkling of some of the things that it can do. And you will be able to access the QWI Explorer. I've got a link for that at the end of the slides. And I'm sure that Earlene or someone else will drop that into the chat for you if you want to play around with some of these numbers yourself.

So, I want to start with just a quick background on this analysis and how this analysis came about. In March, I think, of 2021, LEHD researchers got an external request. We'll just say a high-level external request for more information on the impacts of the COVID-19 pandemic, specifically on these industries, travel, tourism, and outdoor recreation employment. And you know, this was related to potential legislative efforts, for example, to -- to address the issues with these industries. It related to the pandemic. And this was, basically, a quick deadline turnaround request. And the reason I mention that is because I want, in part, in this presentation, not only to show you some results, but to highlight some of the value of QWI for this -- for this type of analysis. These are kinds of questions that, I suspect, those of you at LMI shops or think tanks, you do all these kinds of things all the time. And we decided that QWI would be an ideal data [inaudible] for this analysis for several reasons.

First, it has quarterly frequency. That allowed us to do a fairly close analysis of the pandemic timeline. At that time, we only had data through the second quarter of 2020, which of course, was the initial sort of set of lock downs and so on during the pandemic. But this has since been updated through the 2021 Q1. There is some 2021 Q2 data. I don't know if that's publicly released yet. But I'm not using that here because we don't have all of the state. So this is up through 2021 Q1.

But this quarterly frequency was really nice for this because you know, things happen fast. We needed very timely information. QWI also allows for a lot of stratification because it is using administrative data from the LEHD. And we have a lot of statistical power that allows for simultaneous stratification by industry and geography, as well as demographics and actually, by all three. Although, the things that I will show you today are mostly stratified either by geography or by demographics.

And then finally, QWI provides readily available -- readily available tabulations. No need to go the microdata, this allowed us to produce a rapid turnaround, meant that we didn't have to go
through, for example, disclosure review board processes and so on, and allowed us to just get a quick answer to this question. So, you know, this, I think, is a really nice illustration of some of the things that can be done with QWI. So as I -- as I said, the idea here was to ask what was the impact of the COVID-19 pandemic on travel, tourism, and outdoor recreation. And so, the question, the first question you might ask yourself is, well, how do we define travel, tourism, and outdoor recreation. And so, what we started with was a set of 3-digit-NAICS codes. And the reason for this is that QWI allows you to do analyses using the public tabulations at the 3-digit-NAICS level. So, we basically went through the set of industries, found the ones that we thought correspond to travel, tourism, and outdoor recreation, made a couple of adjustments, and ultimately landed on the following sets of seven 3-digit-NAICS industries.

The first is air transportation, probably not surprising, then scenic and sightseeing transportation, performing arts, spectator sports and related industries, museums, historical sites and similar institutions, amusement gambling and recreation industries, accommodation, and food services and drinking places. Now, you might think about this, especially where it comes to food services, well of course, there are lots of types of eating at restaurants or other types of food service or drinking place, activities that are not really associated with travel or tourism and certainly, not outdoor recreation. So what we decided to do was to take a percentage of 722 employment. And in particular, we used a percentage based on the percentage of non-722 employment in the economy that is associated with the first six industries on this list. So essentially, took an allocated share that we would think of being associated with tourism. This gave us a, you know, sort of an aggregate that we could aggregate up in order to look at both employment and average earnings, since these are, you know, since QWI reports average earnings, we're able to take weighted averages based on the employment of each these individual industries.

This does correspond pretty closely to -- some of you may be familiar with the fact that the Bureau of Economic Analysis has a satellite accounts definition for, I believe, outdoor recreation specifically, that it is an amalgamation of industries. This is not exactly the same because we are only able to drill down to the 3-digit-NAICS level with QWI. However, it does correspond pretty closely. And you can think of this as being a pretty comprehensive picture of travel, tourism, and outdoor recreation employment and earnings.

So before we jump into results, I want to mention one more thing that's going to be very important in thinking through these results. And that is what does it mean to be employed in a quarter? Well, some of you may know this. For those of you who don't, LEHD uses a number of different administrative sources. And in particular, QWI's individual employment records come from UI records that are provided to the Census Bureau by individual states through the LED partnership. And these UI records just include total earnings in each quarter for each worker at each covered job, right. So if I worked for -- in three different jobs over the course of a quarter and I earned $10 in each, you know, it would look like -- if we were to just take all of the jobs in the quarter -- like I was employed three times, although I may have worked one of those in, you know, January, one in February, and one in March and never been employed in all three at the same time, so what often want to do is just observe a stock of employment at a single point in time. So the ways that QWI does this is to use a measure that is beginning of quarter employment. And what we basically do is just say, look, you have positive earnings in -- on one side of a quarterly boundary. And you had positive earnings on the other side of a quarterly
boundary and those two adjacent quarters. So on the boundary of the -- that quarter, for example, April 1, 2020, -- we infer that you have been -- you were employed on that date.

And so this is going to matter because of course, the pandemic in March and April and May moved very quickly. And so what we're going to be looking at is beginning of quarter employment, which means you're going to be looking at what did employment look like, essentially, on April 1 of 2020 for 2022, and then July 1, and then October 1. Is that right? Yeah. So that's beginning of quarter employment.

Average earnings, on the other hand, you know, we don't try to somehow divide because we don't know exactly when you are employed during the quarter. So we're going to report our average earnings over the entire quarter for individuals who were employed at that beginning of the quarter boundary. These are employment and earnings concepts that you can access in the QWI Explorer. There is some additional explanation on there. But I wanted to mention this because it is going to matter in terms of the interpretation of these results. And it may be a little bit different from what you think about if you're used to working with, for example, survey microdata or other things along those lines.

Okay. So now that we have that under our belts, I think we're ready to start talking about results. So this is going to have, essentially, four parts, three main parts, then our quick conclusion. The first is just talk about the baseline employment characteristics. Who is it that works in travel, tourism, and outdoor recreation in the US economy? Then we're going to talk about aggregate impacts on these industries and geographic trends and the impacts in these industries. And then we'll proceed to talking about demographic trends, breaking down by some of the demographic characteristics that are available in QWI. And then finally, we'll conclude briefly with sort of a summary of what we've learned.

So baseline employment characteristics. Who works in travel, tourism, and outdoor recreation? Well, it turns out that on the order of four to five percent of individuals in the US economy are employed in travel, tourism, and outdoor recreation. But there is quite a bit of heterogeneity by state. So in this state level map, which I apologize. This will be the prettiest map because this was fixed up by Heath. And the other ones were made to use updated dated by me. So they'll look a little bit less pretty. But you can see quite a bit of geographic heterogeneity here. In particular, there are some states, especially states in the Mountain West that have high shares of employment in travel, tourism, and outdoor recreation. Also, a couple of others that you might not be surprised to see as having high percentage shares, such as Nevada or Hawaii or Florida, for example. And you know, certain sections of, for example, the Midwest have lower percentages in comparison. So there is a fair amount of geographic heterogeneity in where people who are working in travel, tourism, and outdoor recreation are located.

But now let's turn to talking about demographics of who it is that's working in travel, tourism, and outdoor recreation. And here, you can see a graph that shows ratios of employment by sex and age. And I want to just explain how to interpret this graph. So what this is the ratio of employment of -- of the particular group that is listed on this bar to the overall amount of employment of groups. Of course, in some cases, groups are of different sizes. So if we talk about racial groups, as you'll see on the next slide, some of them are large and some of them are
small. So what we're essentially saying is how much more likely or less likely are you, as a member of this group, to be employed in travel, tourism, and outdoor recreation than you are to be employed in other industries, right.

And so a one implies that you're equally likely to be employed in those two groups and therefore, about proportionately employed in travel, tourism, and outdoor recreation. A number greater than one implies that there are more people in this group. And a number less than one implies that there are fewer people in this group than you would expect if the distribution of employment was random.

So what we can interpret from this is that women are about five percent more likely to be employed in travel, tourism, and outdoor recreation than in other industries. Men are somewhat less likely to be employed in travel, tourism, and outdoor recreation than in other industries. So employment does lean a bit towards women.

Now, if we look by age, we see an even more dramatic impact. And this may not surprise some of you that travel, tourism, and outdoor recreation disproportionately employ young people, ages 14 to 24. I've rolled up the, I believe, eight age categories that you can see in QWI a bit just here to make the analysis a bit easier to interpret. What you see is about 40% more likely to be in travel, tourism, and outdoor recreation than in other industries if you're 14 to 24. Whereas, you're somewhat less likely if you're sort of prime age, 25 to 54, and also, somewhat less likely if 55 plus.

We break down the same -- use the same methodology on race and ethnicity. What we can see is that there are some race groups that have considerably higher probability of employment in these industries. In particular, native Hawaiians or Pacific Islanders are the most likely demographic group here to be employed in travel, tourism, and outdoor recreation. And that likely is also associated with the geographic distribution of individuals in this group, in particular, in Hawaii.

And you can see that other -- in general, other minority racial groups are more likely, across the board, to be employed in travel, tourism, and outdoor recreation, while white alone, Americans, are slightly less likely to be employed in travel, tourism, and outdoor recreation.

And then when we break down by ethnicity, you can also see that employment in these industries is somewhat disproportionately held by individuals who are Hispanic or Latino.

So what -- you know, my takeaway from this is that -- there is a fairly broad scope of -- pretty broad swath of the population, demographically speaking and geographically speaking, that is employed in these industries. But there are a, definitely, significant concentration, most notably among young people, Hispanics and Latinos and Native Hawaiians and Pacific Islanders.

Okay. So now that we kind of have a sense of who it is that's working in travel, tourism, and outdoor recreation, let's look a little bit at aggregate impact and geographic trends. And this is sort of the headline graph that might not surprise you, but is still shocking, in a way, to look at. And that is that -- just shows that travel, tourism, and outdoor recreation employment declined
rapidly between the first and second quarters of 2020 and that as of 2021 Q1, which is the most recent data here, that it had not really recovered at all. In fact, it had continued to decline. So if you take a look at the axis here, you can see that, in 2020 Q1, there were about five million individuals employed in travel, tourism, and outdoor recreation in -- in all states for which QWI data are available. That has declined to about four million by April 1 of 2020. So that is a very, very rapid decline when you consider that the onset of the pandemic was really only in the last couple weeks of the first quarter of 2020. And that again, is shocking but even though it is, perhaps, not surprising to all of us at this point.

So moving forward, you can see that, by the beginning of 2021, we were down to just over three-and-a-half million employees. So this really is a -- a very striking drop over this -- over this period and in particular, really no evidence of a recovery in terms of overall employment.

So now let's look at this geographically. And what you can see is that, in the early stage of the pandemic, these declines were concentrated in the Northeast. And again, this is why I wanted to outline that the measure of employment that we are using here is beginning of quarter employment. This is really a snapshot of employment -- sorry, the employment decline on April 1 of 2020. This is a year over year percentage decline. So you can see, for example, that in the most affected state here, which was Vermont, the decline in travel, tourism, and outdoor recreation employment was on the order for about 43 or 44%. It was just under 40% for several other states, all in the Northeast and in the 30% plus range for several more states, all in the Northeast. This, again, tracks the early stages of the pandemic outbreak in the Northeast. But what -- it turns out that we see -- and again, this is -- these are relatively new results because we just updated these for subsequent quarters -- is that, over time, this decline in employment spread across the country. So it's not something, necessarily, specific to the Northeast. You can see here, 2020 Q2 in the top left, 2020 Q3 in the top right, 2020 Q4 in the bottom left, and 2021 Q1 in the bottom right. And so what you can see is they, actually, in general, these are all on the same scale, I should mention. So by the -- the worst this employment effects within states, year over year, were generally felt in the third quarter of 2020. And there was a bit of a rebound. But this, you know, basically, not a -- not a substantial one. But basically, what you see is that pretty much across the board, by the third or fourth quarter of 2020, you're looking at, in most places, employment declines of 20% or more, in some cases, up to 50 or 60% declines in travel, tourism, and outdoor recreation employment. Again, by the first quarter of 2021, you start to see a little bit of a rebound. Again, these are year over year percentage declines. So this is attempting to net out any sort of seasonality that we might be concerned about, which certainly matters at the -- at the state level as well.

So you can see there are some states for which employment declines are still in that 40 to 60% range. Notably, you know, in California, New York, Massachusetts, and my current locale of the District of Columbia. But in -- in contrast, the employment declines are actually only on the order of five, 10, or maybe 15% in some of the upper Mountain West states. So there is quite a lot of heterogeneity as of the beginning of 2021. But certainly, in comparison to that 2022 graph, this decline did spread across the country as the pandemic itself spread across the country.

Now, this is the interesting finding that you might not have expected. And that is that average earnings in travel, tourism, and outdoor recreation have actually recovered rapidly. You can see
here; these are nominal dollars. These are not adjusted for inflation. You can see here, the red line is 2020 Q2, that there was a very sharp decline in average quarterly earnings between the first and second quarters of 2020. But by the fourth quarter of 2020, well, by the third quarter of 2020, this had basically been erased. And by the fourth quarter of 2020, average earnings were actually substantially above those before the pandemic. And this is really obviously very much in contrast to those employment results. And what this suggests -- and we'll get into this a little bit more -- is that there was a lot of reduction in employment. And most of that reduction in employment occurred among individuals who were lower earners, essentially, the sort of left tail of the earnings distribution left the industry, either to unemployment or to switch to another industry and -- or to leave the labor force entirely. And so the individuals remained, actually, at higher average earnings or at least, similar average earnings to what they had before the pandemic.

So now, it's a similar set of state level maps here that track this over the four quarters throughout the country. And what you can see, orange here corresponds to declines in average earnings. And obviously, fairly clear that in 2020 Q2, most states are fairly deep shades of orange. In particular, some of the states that were hardest hit at the initial stage of the pandemic include some of those states that were most reliant on travel, tourism, and outdoor recreation as a share of their employment, such as Nevada, the District of Columbia, and Hawaii. And you can see that there were earnings decline on the order of 40 -- up to 43%, I believe, in the case of Nevada, in these industries, so huge declines in average earnings that occurred very rapidly. Again, this is unlike the employment data. These are earnings over the entire course of the quarter but for individuals who were employed on the -- on April 1.

As we move through time here, you can see in 2020 Q3 or by 2020 Q3, most states had rebounded entirely and actually, were reporting small increases or in some cases, somewhat larger increases in average earnings. You see the same pattern in 2020 Q4. And by 2020 Q1, things have sort of leveled out. And what you can see is that most states, the vast majority of states are reporting either a zero to 10% increase in travel and tourism or average earnings or zero to 10% decrease in travel and tourism average earnings. Essentially, though there was a huge employment adjustment by the first quarter of 2021, earnings had more or less -- average earnings had more or less returned to what they were before the pandemic and were, in fact, modestly higher in most states.

So with that, we'll now turn to demographic trend. And I'm just going to show you this by those same demographic groups that we talked about before. So this graph shows employment and average earnings by sex. And what you can see here in the green series, both for employment and for average earnings are males. And the blue series are employment and average earnings for females. What you can see is the same pattern that we saw in the aggregate data, where both earnings and employment went down between the first and second quarters of 2020. And the earnings -- sorry, average earnings rebounded. Although, employment did not rebound for either demographic group. However, what you also see is that, in 2020 Q1, these -- these lines are basically all right on top of each other, right. A percentage -- year over year percentage change was slightly positive, as you might expect, just a slight increase in nominal earnings and a slight in increase in employment. But over the course of the pandemic, in fact, almost immediately but even, you know, consistently over the course of the pandemic, women had larger employment
declines than men. And they had smaller increase, larger decreases and then smaller increases in average earnings. And I want to just point out that these are not -- these are within group, right. So this is earnings of women, average earnings of women in this industry relative to average earnings of women in this industry in the prior year. So I showed you some slides that showed that women are disproportionately employed in travel, tourism, and outdoor recreation, right. So this is saying that, you know, not just is it the case that they are more impacted because there are more of them in the industries. But the folks who remained in these industries -- sorry, fewer of those folks, women remained in these industries and those who remained in these industries have smaller earnings games. So this is sort of on top of that disproportionate employment.

Now I'm going to turn to age group. And you'll see the same sorts of set up here, except for with the three age groups that we talked about before. And so what I'm going to refer to as prime age individuals, ages 25 to 54, who we tend to think of as being in sort of the prime of their working years, are in these thicker blue lines. And then the green lines correspond to young individuals. And the orange lines correspond to older individuals. And what you can see here is that there's also quite a bit of heterogeneity. But it's not quite as clear. Interestingly, what we see is that the employment declines were largest for young people and remain largest for young people. And employment declines were smallest for older people in sort of a clear age gradient. But when we look at average earnings, we don't see the same sort of thing. We see that both young people and older people had small increases or even, by 2021 Q1, small decreases in average earnings as the pandemic sort of continued. But individuals who were sort of in those prime age years had the largest average earnings increases. So that's, again, suggests sort of a shift to less employment but employment by individuals who are, perhaps, more likely to be higher earners in the first place and higher earnings for those individuals.

Then we shift to ethnicity. And what we can see here is, again, a very, you know, very similar pattern. We see, here, individuals who were Hispanic or Latino are reported in the thicker blue line. And in the green line is individuals who are not Hispanic or Latino. And we see that Hispanics and Latinos had larger declines in employment throughout the pandemic and have had smaller increases or in fact, decreases in average earnings relative to individuals who are not Hispanic or Latino. This, again, is of any race categorized separately from race groups in -- in QWI. But this consistent with this sort of pattern that we saw before about individuals who may have had lower earnings antecedently having more negative shocks ex post. And I think there was something else I was going to mention with this. But okay. I think we've got that.

And then, finally, we'll talk about employment changes by race. And for this, because there are six groups, I'm going to use a slightly different format. I'm only going to show you two quarters. And I'm only going to show you employment. If we were to look at average earnings, it's a bit mixed. But there's not a really clear gradient or a clear pattern across the six groups. They, you know, switch orders over time a bit. But in employment, there is a more clear pattern. And what you can see here is that, in 2020 Q2, which is the green series, there were some differences in the year over year percentage change in employment. This is, you know, there is some heterogeneity. Native Hawaiians or Pacific Islanders had smaller declines, for example. However, I do want to point out that because this is beginning of quarter employment, this is a snapshot of a point very early in the pandemic when we know that the decline in travel, tourism, and outdoor recreation employment had not really spread throughout the country entirely. So
some of these differences may be driven by just geographic differences in where individuals of these racial groups reside. But if we look forward to 2021 Q1, what we do start to see is a little bit more clear of a pattern in which white individuals had the smallest declines -- percentage declines in employment. Although, they are still very large at nearly 30%. But Black or African American individual, in particular and also, the other racial groups had larger employment declines. And you can see there that the percentage decline in employment for individuals who are black or African American in travel and tourism was close to 40%. So again, very large declines in employment that do span across demographic groups unquestionably but still quite a bit of heterogeneity. And again, heterogeneity suggests that suggests some sort of selection in who was -- who remained employed in this industry and who did not remain employed in this industry.

So a few conclusions here -- this is mostly just going to restate thing that I just told you. But earnings and employment in travel, tourism, and outdoor recreation both declined substantially at the onset of the pandemic. However, average earnings have appeared to have, essentially, fully rebounded. And that suggests that the -- the set of individuals who remain employed in this industry has changed and also suggests, you know, that the -- that the individuals who left the industry had a -- or whose earnings, you know, were lost as a result of this, you know, may have or do have the most negative outcomes.

So the next bullet point I want to point out here is just that -- and remind you that early geographic patterns did follow the spread of the pandemic. But these effects of this employment and effect on earnings on travel, tourism, and outdoor recreation have become more widespread over time. There's really still a fair amount of heterogeneity by the beginning of 2021 in the employment impact but actually, very little, comparatively speaking, heterogeneity in average earnings impact by the time we get to early 20 -- 2021. Women, young people, and racial and ethnic minority groups in these industries have continued to be disproportionately impacted by the pandemic.

So in terms of next steps in thinking about this, of course, this is something that we are interested in continuing to analyze over time. And the researchers on this project are looking at this. But this really suggests, you know, an important future direction that is already the subject of some ongoing research within LEHD, which is just how -- how can we best track cohorts of impacted workers over time, in particular, as they change industries. What we see in these data are, for example, the average earnings of the people who stay in this industry. But when the decline in -- in -- in an industry is so pronounced, what we may actually care about is where did those folks go, right. Where did they go? Where did they end up permanently? What did their earnings look like permanently? And we do have some other data products, such as the job to job flows data product, that do start to answer this question. But there is continued research into thinking about how do we -- how can we, in QWI and in general, provide publicly available, readily accessible, easy to use and useful statistics that tell us something about -- did these folks leave employment entirely? Did they switch to other industries? What did their earnings trajectories look like and so on? And as you can see, for many individuals in travel, tourism, and outdoor recreation and in particular, for women, young people, and some of these racial and ethnic minority groups, it is particularly salient because it appears that they have, in many cases, left the industry entirely.
So I think that is all that I have to say for today. But I'm looking forward to answering any questions that you may have. You can see my contact information right here. I welcome your emails. And I've also included links, which, I think, Earlene will drop into the chat for the QWI Explorer, where you can explore some of these data yourself. These were not produced directly on the QWI Explorer only because we needed to aggregate up industries, as you saw. But all of these data can be played with and actually, downloaded via the QWI Explorer website and also, the America Counts Brief, which does cover most of the same ground here, with the acceptation that, at the time that was produced, we only had data through 2020 Q2 and now been able to give you a bit of a more updated picture of what we've seen going on with travel, tourism, and outdoor recreation.

So with that, I think I will turn it back to Earlene or to whomever it is that is fielding the questions.

Earlene Dowell: Great. Thank you so much, Lee. So at this time, if you have any questions for Lee, please add them to the Q and A box. And we will address them as -- as they come in. We've had questions regarding the recordings and slides, which will be available at our Census.gov/academy. And Victoria and Devon have added the link to the chat.

So the first question I have is what was the tourism percentage you came up with for 722?

Lee Tucker: I would have to check on exactly what that number was. But it is, like I said, it's basically, you take total employment, subtract out 722 employment so it's not in the total numerator and denominator, and then it -- we took the sum of those six industries of employment and divided by that number, total minus 722. If it's not in here, it's approximately, I'm going to say, 4 1/2 or 5%. But I don't recall the exact number off the top of my head. But it is definitely something you could do directly with the data downloaded from QWI. And I will say that we used, as a baseline, for all of this 20 -- 2019 Q2. Because that is -- you know, there was the -- the initial analysis was just 2019 versus 2020. So we just kept that as the baseline for the rest of this analysis here.

Earlene Dowell: All right. Another question is just wondering why cruise industry, that actually cater for pleasure and/or tourism travel as compared to air transportation, was not included in the seven identified industries. Thank you.

Lee Tucker: Of course. That's a great question. And the answer is that, unfortunately, QWI does provide stratification at this 3-digit-NAICS sector level. I -- I remember looking at this. And I believe that, if I've got this correctly, that there is a boat transportation category that is a 3-digit-NAICS sector and that cruises are a five or six-digit-NAICS underneath that. So basically, we couldn't separate cruises from, for example, cargo, boat transportation, or passenger ferries or other types of boat transportation that were, potentially, not really travel, tourism, and outdoor recreation. And we didn't have a great way to allocate it that, you know, given the turnaround. So we didn't include it. But I certainly think that, you know, that -- that's right. I mean, you know, we're taking our best stab at what is -- how do you aggregate up travel, tourism, and outdoor recreation. I think that, in terms of percentages, this is certainly in the right ballpark, the right order of magnitude. But you know, are there some types of employment that might -- we might
think of as being travel, tourism, and outdoor recreation that wouldn't fall under this? Certainly. And are there some types of employment that might fall under this that might, you know, not be entirely tourists or entirely outdoors? Certainly, that also. But this, you know, provides us a pretty good benchmark, I would -- I believe.

Earlene Dowell: Great. I don't -- here's another question. I don't see a change in slides from average earnings in travel tourism.

Lee Tucker: Okay. So I'm make sure I understand here. So let's pull up. You don't see a change in slides from average earnings in travel and tourism.

Earlene Dowell: In travel tourism.

Lee Tucker: I'm not sure I understand what's meant by a change in slides. Maybe the person can clarify.

Earlene Dowell: Yes, maybe if you'd like, you can add your question. And then we'll -- we'll find that one.

Earlene Dowell: So we'll come back to that one. Another question is how much did the struggle with childcare and virtual schooling during the last part of the 2019, 2020 school year affect these industries?

Lee Tucker: That is a great question. We have not tried to analyze this directly. I think that it is something that I would like to see more research on. However, I think that, you know, what we can definitely see -- I mean, it -- it seems likely, although, we don't know for sure, that some of the -- this heterogeneity in employment, in particular, by sex, is potentially not entirely driven by sort of the employer side but is driven by the labor force for space and decisions of individuals. We think that's probably the case for all of these, to some extent. But you know, because it is, you know, there is plenty of statistical evidence suggesting that childcare is disproportionately done by women in the US, I think that it is likely that some of this difference in employment could be associated with that.

But and that may be true for some of the other demographic groups as well. But specifically tying it to childcare or specifically tying any of these statistics to childcare isn't something that we have tried to do. I imagine you could use geographic information about the -- the number of children or other things. If you had the microdata, you -- the LEHD microdata by itself does not include information about household structure. Although, there is information in things like the ACS. Or the ACS microdata would probably be if you were working with public data, the place that I would go to try to answer this question.

Or if you had access to restricted use microdata, then maybe, you know, this information in the decennial and so on. And that might be able to link something to household structure to get into this more. But in terms of what we can do with the publicly available data, certainly with QWI, we -- we're not really equipped to be able to answer that question directly.
Earlene Dowell: Okay. Next question is can you please explain why this analysis was done at the 3-digit-NAICS level when, I believe, QWI provides data at the 4-digit-NAICS.

Lee Tucker: Yes, it's been awhile since I've looked at this specifically. But there are some 4-digit, 2-digit information in QWI. But I believe, if I recall correctly, that either the demographic or geographic tabulations cannot be done simultaneously with industry level tabulations at the 4-digit level. I don't recall if the -- I don't recall which of those it is. But I believe that was the, essentially, the constraint. Because I think, had we been able to go deeper down, we would have certainly liked to do so. In particular, we would have liked to bring in cruise transportation as that person pointed out. That was something that we also thought of and also recognized as a limitation. But if I recall correctly, QWI allows some stratifications at the 4-digit level but a more comprehensive set at the 3-digit level.

Earlene Dowell: Great. A next -- this is more of a comment. It said, "Don't forget wonderful LED extraction tool." So thank you for that.

Lee Tucker: Yes, that's right. That's right. Actually, this was -- so this was not done -- the final version of this was not done using the LED extraction tool. But the initial version of this actually was done using exactly an extract from that tool. So I definitely recommend everyone to check it out because it is what allows us to do this.

Earlene Dowell: Here's another one. Have you done a similar analysis based on educational status?

Lee Tucker: We have not done an analysis based on educational status. It was not as much in our remit at that time. And it has not been added to this. But I think it's a good idea to do it. In fact, I'm going to write it down because it would not be a difficult thing to add. Although, we would need to pull a new extract in order to do so.

I believe -- I believe there is some data elsewhere that says that employment in travel, tourism, and outdoor recreation is, you know, disproportionately individuals with lower levels of education. But I don't have an exact, you know, any exact data on that. And then, in terms of the impacts and the heterogeneity impacts, I would be very interested to see if it follows this same pattern of, you know, the expectation would be, just looking at these, that perhaps, individuals with more education were less likely to leave employment in this industry and perhaps, have larger average earnings gained. But again, we haven't looked at it directly.

Earlene Dowell: Thank you. So next question is some states had a Y-O-Y decline in average earners in 2021 quarter one while most rebounded. Any insight into why?

Lee Tucker: No. Hang on. Oops, I left the slideshow. Hold on one moment. I don't know. I'd like to go to that. And I went -- clicked too far. Can people see my slides?

Earlene Dowell: Yes.
Lee Tucker: Okay, good. So I -- I don't have a clear answer to that. Obviously, I do want to point out that, you know, by the time you get to 2021 Q1, all of these, actually, are within the zero to 10% range. I wanted to keep them on the same scale. And I didn't want to have, you know, too many categories. So I don't have the numbers in front of me to give you a more precise answer than that as to how close to zero to 10 they are. But you know, they are all in this sort of lowest category of decline. And actually, all of the ones that increased are in the lowest category of increase, which is -- which is, certainly, a difference from Q3 and Q4 of 2020.

I mean, even by Q3 of 2020, what you can see is it really -- there's only three states that saw our average earnings decline at that point, three states that we think of as being relatively heavily reliant on travel, tourism, and outdoor recreation. But it -- it -- I don't have a clear answer, other than to say I wouldn't make too much of that specific difference because you know, it could be that they're all in the single -- they're all in the single digits either way. And they could be in the low single digits, to be honest. I wouldn't be able to tell you that off the top of my head.

Earlene Dowell: Okay. The next question is was 441 included in your seven 3-digit subsectors. I'm specifically interested in 4412, which includes army and boat dealers that boomed under COVID and support the TNT sector.

Lee Tucker: Mm-hm. No, we didn't look at 441. And so I don't recall, off the top of my head, what 441, the full sector, is. I could probably look it up real quick. I should have an encyclopedic knowledge of NAICS. But I can't claim that I do. Motor [crosstalk] vehicle and parts dealers.

Earlene Dowell: This question is from one of our NAICS gurus. So

Lee Tucker: Yeah, so, so -- that's a -- that's a great question as to what happened with 4412. Since -- since 441 is all motor vehicle and parts dealers, it would be, you know, certainly, too broad to include all of that in travel, tourism, and outdoor recreation. But I can see that -- that we've got boat dealers, RV dealers, motorcycle, ATV dealers. I mean, certainly, all of those folks, in an ideal world, we would be including them as well.

Earlene Dowell: Okay. Great. So we do have a follow-up to the question, the first question that was asked. And he says that, "This change in slides problem is a web issue, not content issue. So no worries. It's working now." So that was great. Thank you for following up on that, sir.

Lee Tucker: Thank you for clarifying and sorry to hear that.

Earlene Dowell: Okay. Next question, how does the census measure workers age 14 and 15?

Lee Tucker: So a little bit of background on where the data that go into QWI come from. The -- the LEHD is a partnership or is the result of a partnership between the states and the US Census Bureau. And so the -- there are a number of administrative sources that make their way into the LEHD, particular for information about the firms, information about worker's earnings, information about the worker's demographic characteristics, for example. All those can come from different places. But basically, any UI eligible employment, which is not all employment, right. Some types of self-employment are excluded, some types of agricultural labor and so on.
But any UI eligible employment states have to keep track of who is working for whom and how much did they earn in order to administer those programs.

And so that information is what's being provided to us and what's going into this. So we just see the workers. We see what their earnings were. To actually see that they were 14 or 15, we have to get that information from other places, which going to include the ACS or the Numident or other -- other types of administrative or survey sources that allow us to identify the specific demographic characteristics of an individual. But essentially, 14 and 15-year-olds, to the extent that they're employed in UI eligible employment are not being categorized -- or not being provided or captured any differently than older individuals in -- insofar as they come from the same administrative realm.

Earlene Dowell: Okay. Did average earnings recover above 2019 levels because lower paid workers lost their jobs, because wages were increased, or both?

Lee Tucker: So what we see, the two sets of statistics that we see are the number of people who are employed, meaning they report any earnings. And we see the number of individual -- or sorry, the average earnings of those individuals who were employed. So in -- in terms of what we know is that the individuals who remain employed, their average earnings stayed the same or went up, right. And the people who are no longer employed, obviously, they -- they don't contribute to that average. So it has to be the case that -- well, it doesn't have to be the case that any individuals who remained employed saw their earnings go up, right. It could be entirely driven, as you said, by this removal of a big chunk of the employment, right. If all of the low-paid workers lose their jobs and the high-paid workers stay -- stay but their earnings stay the same, the average will go up, right.

So that's part of the reason we're interested in doing this kind of individual level tracking, not just for the people that lose their jobs and switch industries, but for the people that stayed behind, to be able to say, "How much better are you doing than you were doing, you know, before the pandemic," or, "How much worse are you doing?" So I don't have a great answer to that. I also want to point out that there is one third possibility that relates to this, which is hours, right. So average earnings could be, you know, average earnings per hour could be not changing. But average earnings could be going up if -- because of a big decline in employment, the people who remain are, for example, working longer hours. So we don't observe hours. In QWI, there is no hours information. We don't observe hours in the administrative data that QWI is being compiled from, except in a -- in a few states. And so we don't have any specific information about that at this time. But I think that that's a very good question. And that's certainly part of the motivation for our ongoing research projects.

Earlene Dowell: Okay. Great. Lee, could you put the slide back on your address email, please.

Lee Tucker: Of course.

Earlene Dowell: And then --

Lee Tucker: Try not to go past it this time.
Earlene Dowell: And then the next question is is the data adjusted by age, sex, etc.

Lee Tucker: So the data are -- these are raw, unadjusted earnings. So when we are -- when we construct an average -- and I apologize that I'm going to switch back away from that slide. When we construct an average for all groups, like the one here, this is a weighted average. So we already had to produce a weighted average in order to aggregate across industries, right, so that we're, you know, considering that some of these industries are a larger component of -- of travel, tourism, and outdoor recreation than others. We're also waiting -- constructing a weighted average across demographic groups when we aggregate across those demographic groups. So the individual, you know, as you -- as you split it up into smaller pieces, you know, smaller demographic groups and so on, you know, there is, essentially, there's a within and a between component of these -- of these averages. So you know, we can think about, like, within the group, what is the average and how -- how does the overall average, you know, affected by the difference within a -- within group and then, also, this sort of between component as to how -- and I apologize, these helicopters flying over my house. This is Washington D.C. So I apologize for the noise. But there's also this between component of, you know, looking across demographic groups and how much is the overall average being affected by differences across demographic groups. So in terms of thinking about the, you know, these, you can think about these as being unadjusted averages for that group. And you can also think about the -- the overall average or you know, any agglomeration or compilation of these as also being, you know, the unadjusted average because we've taken those weights. Hope that answers the question.

Earlene Dowell: Okay. Great. What is the future prediction in 2022?

Lee Tucker: So as a representation of LEHD, as a research staff, I don't -- I wouldn't claim to know the answer to that. At a personal level, I don't have access to these data. I haven't looked -- I should look at the -- you know, we don't have access to the data from QWI that aren't available yet, that haven't been reported or processed yet. I have not looked at, for example, like CPS or other types of data sources that produce really, very quickly that would allow you to get some semblance of this. But my suspicion is that tracking overall trends in employment and earnings, that probably travel, tourism, and outdoor recreation employment rebounded a little bit in 2021, certainly through the first three quarters, you know, as the sort of pandemic subsided, as certain types of travel became more widely practiced and you know, outdoor recreation activities and so on. However, if I had to guess, I would suspect that, as of right now, travel, tourism, and outdoor recreation employment is still pretty far below what it was in 2019 and the first quarter of 2020. And how long it will take for that to rebound, I think, is a -- is a very good question. And I also think this average earnings question is really a good question for thinking about in the future. Because essentially, now again, I -- this -- these data aren't telling us who is leaving or you know, what's happening with the people who are leaving employment in travel, tourism, and outdoor recreation, right. They're not included in those average earnings. But if we think a lot of them either left the labor force entirely or switched to other industries, then you know, what -- especially if they left the labor force entirely, what we think of is, essentially, an increase in inequality associated with this. Because it appears that the -- the highest earning individuals are the ones that stayed behind. And lower earning individuals left the industry. So you know, I think it's a good question as to what that means for the distribution of earnings. And in some
sense, also, just for the -- for the method of economic production in this industry or in these industries in the future, right. You know, our -- our travel, tourism, and outdoor recreation firms going to find ways to substitute away from labor and make do with less employment and fewer workers in a more permanent, which would be consistent with the kind of pattern that we're seeing here. Or are we going to rebound to something that looked very much like it could previously, in terms of the structure of employment? I don't have the answer to that question. But I would like to know. So I think that's certainly something that we'll have to keep an eye on going forward, absolutely.

Earlene Dowell: Okay. Great. And the final question that we have this afternoon is a comparison by employer size would also be interesting.

Lee Tucker: Yes. Yes, it would. We did not do any kind of comparison by employer size. But I believe we can do that. I believe we can stratify that by pulling the new extract while still keeping the same things. But don't quote me on that because I haven't tried it. But that's right. QWI does have some information on employment -- on employer size. And you know, I mean, it wouldn't surprise me to find some amount of heterogeneity on that. As course, as we all know, you know, the economy in 2020 and in early 2021 was really heavily, you know, heavily impacted but was also heavily impacted by government policy designed to mitigate the impacts of the pandemic, you know, including PPP loans and other things like that. And I think it's an open question and something that's certainly well worth exploring to -- to ask how did employer size, you know, -- how did large and small employers behave during the pandemic, in terms of did they retain more employees or lose more employees, comparatively speaking. And what did that mean in terms of the average earnings for folks in those categories? That is something that I would like to take a look at as well. So thank you for that suggestion.

Earlene Dowell: Okay. I don't see any more questions in the chat.

So I would just like to thank everyone for joining us this afternoon. And thank you to Lee for his outstanding presentation. The LED webinar series will continue again on March 16, 2022, at 1:30 pm, Eastern Standard time, when Corina Graif presents spatial network effects on maternal and child health, new insights from linking census data and vital records statistics.

Finally, an evaluation will be sent to you following this webinar. We would appreciate it if you took the time to fill this short survey out so that we may better serve you.

Again, thank you so much for joining us this afternoon. And I hope that everyone enjoys the rest of their day.

Lee Tucker: Thank you, everyone.

Victoria Brooks: That concludes today's conference. Thank you for participating. You may disconnect at this time.