Coordinator: Welcome and thank you for standing by. All participants are in a listen-only mode until the question-and-answer session of today's call. At that time, you can press star 1 to ask a question, unmute, and record your name clearly. I'd like to let everyone know that today's call is being recorded. If you have any objections, you may disconnect at this time. It's my pleasure to turn the call over to Earlene Dowell. You may now begin, ma'am.

(Earlene Dowell): Thank you, Michelle. And thank you to Lisa West from the Census Bureau for hosting our Webinar.

Good afternoon, everyone, and thank you for joining us for our July LED Webinar. On behalf of the U.S. Census Bureau and the Local Employment Dynamic Partnership, in collaboration with the Council for Community and Economic Research and the Labor Market Information Institute, it is my pleasure to welcome one of our esteemed speakers from the 2021 LED virtual workshop, Chris Worley, as he presents Spatial Shift in Daytime Population Due to COVID: Impacts and Increasing Levels of Remote Work.

Geospatial distribution of workers has far-reaching implications for commuting data, consumer spending behaviors at restaurants, retail and services and commercial real estate. The pandemic has forced employers to rethink the ability to work from distance and shift large segments of the workforce to remote work. This analysis pairs Bureau of Labor Statistics Data by ability to work remotely by industry, coupled with the Longitudinal
Employer Household-Dynamics commuting data. Early results indicate a shift in daytime population away from traditional job centers in the urban core and into suburban and rural areas as a result of increased remote work.

Chris Worley is a consultant with Fourth Economy Consulting. In his role as an economic development analyst, he applies creative analyses and detailed research to support innovative projects that build better communities and stronger economy. By combining qualitative and quantitative information with targeted facilitation, his work is focused on helping communities tell their story and develop solutions to pressing challenges. His recent work includes population projection modeling, COVID impact analysis, and national remote work modeling.

With that, I welcome Chris Worley.

Chris Worley: Earlene, thank you so much for that introduction. And Lisa, thank you too for the invitation to speak today.

Today we're going to kick off the presentation with a topic that's been on everyone's mind. It's something that flipped our world upside-down. This of course is the rapid shift to remote work. Specifically today I'm going to talk about how COVID impact and the rise of remote work has shifted daytime population away from traditional job centers and to home locations of remote workers. We're going to have fun today.

As Earlene said, I'm an analyst at Fourth Economy. We're a national economic and community development firm based out of Pittsburgh, Pennsylvania. Some of our recent work has focused on COVID impacts. We've worked on projects around disruptive shifts like the transition
to remote work, helping communities and main street businesses adjust to COVID.

And then throughout this past year plus, we've worked with local governments and philanthropic partners to understand changing economic dynamics and to help allocate resources to the most vulnerable households and businesses.

Right now we're kind of in the throes of starting work with communities to adjust to a new normal, and to work through changes and what they'll mean in terms of opportunity stretch and regional competitiveness.

I'd also like to say that today's topic is an interest to me both professionally and personally. Last year, our company shifted towards remote work, in late March, and we haven't looked back. My family has moved from Pittsburgh to Kansas and haven't lost a beat. So I'm excited about today's topic.

I'm also interested in what you've been experiencing, so, please use the chat to introduce yourselves, let us know if you're working remotely still, what your plans are for that, and how your organization is handling this. I know that I'm not alone, early estimates predict that 14 million to 23 million Americans are planning to move as a result of remote work.

For today's presentation, it's kind of broken up into four pieces. Of course, our goal is to talk about the specific dataset and describing spatial shifts in daytime population, but the last time that I gave this presentation, folks wanted to talk about sort of a variety of issues surrounding remote work.

So I want to say that Fourth Economy and myself are not the only people interested or concerned about this. So, first off, we're going to look at headlines from throughout the past year. We'll also look at national surveys
and datasets. Some of these will be linked so that you can browse and utilize these after the presentation today.

I'll briefly mention some of our project examples of what we've been doing around remote work. And then go in detail around a couple of projects that leverage LED data to help tackle some of these difficult questions.

And then, of course, please use the chat function throughout. We'll be kind of having set aside time for discussion later, but it's always useful if folks are throwing questions in the chat throughout the presentation.

So, first off, let's talk about headlines. What job related trend is up 457% in the past year? Well, it's remote job postings. That comes from LinkedIn. I don't know any other trend that's up that much. Remote work has become such a part of our everyday lives that it affects everything from carbon emissions, where worldwide emissions for transport was down 36%. To things like dress shoes, the sale of dress shoes over 2020 and 2021 were down off the 2019 levels.

And also it's changed the way that we think about work. Workers are now expecting that their workplaces adapt to what they've adjusted to. So the overwhelming majority, 87% of American workers, who have been working remotely, expect and would like - and would prefer to continue remote - working remotely at least some during their work schedules.

We also see headlines coming out of Bloomberg, you know, that are saying employees are quitting instead of giving up working from home. So, companies have, and organizations that have tried to go back or tried to force their employees to go back in person, having a really difficult time with it.
All this leads to extreme changes in what sort of spaces are needed for organizations. So the New York Times leads with this piece of what will happen to all the empty offices - office buildings and hotels. What does this mean for commercial real estate? These are the types of questions that we're interested in and we'll dive into a little bit more on today's Webinar.

Okay. As I mentioned, other folks are looking at this and, thank goodness, there's been a few national surveys that have really assembled great data around what a shift to remote work looks like, in terms of the American workforce.

Prudential, the pulse of the American Workers Survey, as I mentioned earlier, explores workers' perceptions and on the trends and policies and issues impacting the future of work. The Bureau of Labor Statistics is also a wealth of information around surveys that they put out. Our analysis that I'm going to show you later on in this presentation leverages both these surveys.

So there was, early on in the pandemic, not great idea or sense of who exactly was working remotely. Well, an old BLS job flexibilities and time usage survey from 2017 to 2018 is what we used for that analysis. However, recently, from May 2020 forward, the Bureau of Labor Statistics had added questions to their current population survey detailing the effects of the COVID pandemic on the labor market, and that includes information around telework. And that survey is fantastic. It's a monthly survey still ongoing.

A couple of other data sources that we've used in some of our work, COVID-19 mobility data. So, are folks using parks more, how often are they going to grocery stores, what's that like and changing over time. Google has put out some really interesting data around that.
O*NET has a great database that talks about occupation-specific information around things like work activities. So, are you a material mover? Do you have to interact with others? Or your computer usage, are you communicating frequently over email and that sort of thing? We've used this information early on in the pandemic to talk about vulnerabilities, to things like if you're in person, you're more vulnerable for contracting COVID, that sort of thing. If you use email more often than another occupation, you're more likely to be able to work remotely, and that sort of thing.

Okay. That's a mouthful. There's so much and so many exciting things out there. But one of the things that I've been really happy to work on this past year has been our remote work portfolio.

A few of the things that we've done, early on in the pandemic, we created a national remote work model, which is our early attempt at building a nationwide dataset around remote work by industry and putting that at a county level, and then looking at things like broadband deployment and Internet speed. We also worked early on with the Pittsburgh foundation community to talk about worker vulnerabilities, using that O*NET data that I was talking about, and what appropriate supports look like there.

We also partnered with Livability.com around attracting remote workers, what remote workers want in terms of community investment and sense of place, and all that kind of good stuff.

But these last two that I've highlighted are the two that I'm going to talk about on today's call. One is in Lansing, Michigan, we're working with a tri-county region to look at changes in commuting patterns and shifts in consumer spending. The other was in our hometown, we're working with Downtown
Pittsburgh partnership, to look at the effect of remote work on commercial real estate in the downtown area.

So, why is data important? Well, data can provide backing to the lived experience of residents. It can allow voices to be heard. It can align resources. It can change opinions. And it can impact lives. I hope that we could do some of that today.

As I've said, our first project example comes out of Lansing, Michigan. And all interesting analysis starts with an interesting question. The question given to us by our client, who represented this three-county region around Lansing, Michigan was, how has the shift to remote work affected commuting in the region?

Well, we know the industry is a key determinant of the ability to work remotely. For example, those working in food and accommodation industries are unlikely to work remotely, while many in finance and insurance may have the ability to do so. A good proxy for the ability to work remotely comes from the national dataset assembled by the Bureau of Labor Statistics in a job flexibilities and work schedule survey from 2017 to 2018. That's the one that I mentioned earlier.

This survey grouped data about the ability to work remotely by industry. All told, the BLS estimated that 42 million workers representing 29% of all workers across the U.S. did work from home. We fit this data to a model for each county in the U.S., and depending on the industry mix of the community, the concentration of workers who are able to work remotely generally ranges from a quarter to a third of all workers.
A rise in remote work means shift in commuting. This example is from the tri-county region. This region's economy is based off of education, health, manufacturing, and an emerging finance and tech sectors. Major employers in the urban core include Michigan State University, state government employees, and the regional health system.

This analysis matches data for the ability to work remotely by industry and couples it with LED commuting data using work and home locations by industry of worker. We examined the shifts in commuting patterns and the changes in daytime population.

In the analysis for this region, there's a visible shift in daytime population away from the urban core and into suburban and rural areas as a result of the increased remote work during the pandemic. This map shows the pre-pandemic to post-pandemic change in daytime populations. Areas in blue on the map are those that gained daytime population, i.e. instead of commuting out - commuting into work, folks are working from home. And those in red on the map are areas that lose daytime population, so, no longer are they receiving those inbound workers.

In total, the three-county region sees an overall loss of 5800 in daytime population because of less inbound commuters. These losses are most concentrated in six ZIP codes in the urban core where there's a loss of over 20,000 workers, that represents a change of 14% compared to pre-pandemic levels.

Why is this important? Well, this analysis reveals the potential geographic impact from spending behavior, especially in restaurants, retail and services, and we'll circle back to this a bit later in the presentation. I do want to real quick mention the methodology and data sources.
So the tools used for this analysis are all free to use and download. They include Census OnTheMap, spreadsheet software. I use Google Sheets for this. And Tableau Public For Mapping.

Primary data comes from OnTheMap. I use both Home and Work Area Profiles and selected Primary Jobs for this analysis.

The basic model looks at a change in daytime population as being equal to the post-pandemic daytime population minus the pre-pandemic daytime population. For the pre-pandemic daytime population, we accounted for some base-level remote workers. For the post-pandemic population, this is where it gets interesting, using LED data.

We said that the post-pandemic daytime population is equal to a base number of work location of primary workers, this is who you would expect to work and at their work location; minus remote workers by industry, these are workers who are working at home instead of at their work location; plus the home location of remote workers by industry, these are where remote workers are living and spending their daytime hours working remotely.

That's a mouthful. Okay. So the daytime population changes with remote work. This next section we chose the slide as, "So what?"

We think that there are far-reaching implications for this work, including on commuting data and consumer spending at restaurants, retail and services. These next few slides will try to look at revenue loss for the main street small businesses in that urban core.
Fewer commuters could result in a loss in demand for restaurants, retail and services in those traditional employment hubs. Remote workers won't buy a coffee on their way in to work. They won't have lunch with coworkers. They're not dropping off laundry at a dry cleaner's. And we know that main street small businesses are the most at risk because of this change in spending.

In the six ZIP codes in the Lansing region that lost workers, those were the ones in red earlier, there are 2100 main street small businesses, with $184 in monthly sales, employing 14,300 workers. What does a shift in commuting and remote work mean for these main street small businesses?

Well, we said, if all workers who could work remotely did work remotely, these six ZIP codes would see a shift in commuters of minus 20,000, a loss of 14%. If we assume that that 14% is the same as the decrease in sales, these small businesses would lose an estimated $25 million in monthly sales. And this demand decrease could impact 2000 workers using a sales per worker estimate from the Economic Census.

So, what? Well, we use this information to generate conversations. The tri-county region around Lansing had great support through the PPP loan program and the State of Michigan grant that were given out to main street small businesses. But are those business supports enough?

We found that matching up the total amount given during those business supports would last for about three months of lost sales, and cover about three months of sales due to less commuters from remote work.

Where we ended up having some great conversations were around potentially implementing different campaign to support small business spending. So, by
local campaign. Hopefully, post-pandemic, spending on experiences and services can rebound. Folks are demanding - they want to spend on arts and culture and restaurants and travel. So we think a buy-local campaign could make a comeback.

We also think that there's a rural opportunity. A lot of what this analysis points out is historic land use and development patterns that may be outmoded. So, folks aren't coming in to the urban core to work, maybe the shift in commuting and more of remote work in more rural and suburban areas means that those areas and those business corridors in those areas can get a boost.

The next example of a project that I'm going to talk about is in Downtown Pittsburgh. So we're going to see a lot of the same types of things that we saw in the tri-county region apply here. But I'll talk a little bit about - we did this analysis more recently, so I'm going to talk a little bit more about what datasets were used for this analysis.

Downtown Pittsburgh is beautiful and I miss it. It's full of lots of arts and culture. It's where you would do everything from a launch a boat to be on the rivers, to get a meal before or after a Steelers game. It's a wonderful place to be. And it's close to my heart.

When we're talking about Downtown Pittsburgh, what do we mean? We mean the specific census track. And when we're talking about the City of Pittsburgh, what do we mean? Here's the boundaries of that.

So, Downtown Pittsburgh pre-pandemic is the work hub of the City of Pittsburgh. Nearly a third of all workers are working - have their work location in the downtown area. But very few people live downtown.
And early on in the pandemic, downtown looked a lot different than it normally does. Usually, Pittsburgh is this vibrant place, the downtown is seeing a lot of inbound and outbound traffic. While workers were advised to stay at home, city streets had very, very little traffic. Rush hour in the city looked nothing like what it normally does in Downtown Pittsburgh, which is normally this vibrant place, full of activities, was eerily quiet.

We saw this - we saw this in some really, really far-reaching datasets. This one comes from the Pittsburgh Parking Authority of parking garage utilization rate. You can see up at the very top parking utilization pre-pandemic was, you know, in the 90%, so, 89% to 94%. In May 2020, really in March, April, May of 2020, we see that parking utilization dropped. In May 2020, rates had dropped to 22%. By May 2021, so, fairly recently, rates had risen to 35% of utilization, but they were still well below pre-pandemic levels.

Now, that's an interesting data point, but how does that relate to our LED data? Well, LED data matches that of what we see in the parking lot - parking garage utilization. When you look at a pre-pandemic baseline and what both remote work and job loss has done, few workers working in the downtown area in Pittsburgh, you see a significant decrease in workers early on in the pandemic, and still a drop to this day.

Now, pre-pandemic, downtown was a work hub with a few people living downtown. Primary jobs brought in around 71,000 people into downtown. In May of 2020, Downtown Pittsburgh had about 50% fewer in-person workers than it did before the pandemic, both as a result of job loss and remote work.
And if you sampled 10 workers who are no longer commuting downtown for their jobs in May of 2020, 2 in 10 would be because of job loss and 8 of 10 would be because of remote work.

In 2021, Downtown Pittsburgh is still bouncing back. As of May of 2021, many jobs have returned and about half the people who had been teleworking returned to working in person. However, remote work trends continue. All told, downtown remains at around 75% of pre-pandemic worker population and has around 17,000 people less in-person than it did pre-pandemic.

Now, OnTheMap and BLS data could help us talk about the specific populations, and those are the ones that are broken out in the slide. So we'll review that over the next several slides.

Tool use for these, again, a couple of free products, Census OnTheMap and Spreadsheet Software.

Data use, pretty similar to last time, except for the BLS product, which I mentioned earlier, BLS, starting in May 2020 and going monthly since then and the newest addition to that data is for June 2021, has a supplemental data measuring the effects of COVID on the labor market. They asked these questions alongside their current population survey.

And one specific table talks about employed person through telework in the last four weeks because of the pandemic. And they break that out by industry. So it's a really useful thing that we can align to OnTheMap data.

Our basic model is very similar to the analysis that I just described. It uses 2018 OnTheMap data for primary workers, both home and work data. In-
person workers and remote workers who live in the area are the same as they were before.

The two adjustments to the previous analysis, one is we wanted to account for unemployment. So what we did is we down-scaled MSA unemployment data to fit for Pittsburgh and fit for the Downtown Pittsburgh. We just assumed that those smaller geographies inherited overall unemployment rate.

After these adjustments were made, we applied remote work levels by industry, reported from that BLS product. And we did the other calculations the same as the last time.

Let's talk through what each of these bars means. We have our pre-pandemic followed by May 2020, followed by May 2021. And one of the things that I'm going to concentrate on in this next series of slides that I'll walk through are the ones that are below that dash line. So, what did job losses and remote work do to account for the change in the number of primary workers in the downtown area?

So, those who are no longer in downtown include those job losses or remote workers who are living outside of the area. Workers who remained downtown includes everybody who are in-person workers and the very few folks who are living downtown and working remotely.

In May of 2020, early on in the pandemic, 9% - 9.7% of the overall workers had lost their jobs across all industries compared to pre-pandemic levels. However, a really significant chunk, 41%, continued to work remotely. And these folks weren't commuting into downtown.
So if you took a - if you surveyed 10 people in May of 2020, and said "Why aren't you coming in to downtown for your work?" two had said - 2 in 10 would have said "It's because I lost my job," 8 in 10 would have said "Oh, it's because I'm working remotely and no longer coming in."

The story looks a little bit different in 2021. The number of primary workers in downtown has rebounded in 2021. Nearly half of those who were working remotely in May of 2020 have returned to in-person work by May of 2021. As jobs rebound, those who are no longer in downtown have also shrunk.

So, jobs rebound but employment has yet to return to pre-pandemic levels. The remote work trend continues with many workers continuing to work remotely. You can see that still around an estimated 22% of folks who have jobs where their work locations are in Downtown Pittsburgh are continuing to work remotely as of May 2021.

And if you did that same thing, where you sampled 10 workers, and you said "Hey, why aren't you commuting into downtown?" 1 in 10 would say "Well, it's because I haven't been able to get my old job back," but 9 in 10 would now say "Well, it's because I'm continuing to work remote."

So, what? Why does this - why does this matter? Remote work especially impacts this job hub. So, not every city has the same kind of live/work distribution that Pittsburgh does, but places that have many jobs but few residents, like Downtown Pittsburgh, are going to be the most impacted by a shift to remote work.

An open question for all of us interested in more of this during the discussion is: is remote work here to say? So, remote work has deeply impacted
Pittsburgh's downtown, it's responsible for 90% of the change in primary worker population in May of this year compared to pre-pandemic levels.

Will workers continue to remain away from downtown in the traditional job centers? If so, that's a loss of 17,000 people. How are we going to bring back people and vibrancy through these places? Is it going to be through events, conventions, conferences, travel? How is that going to look?

And then also, specific to our client that we are working with, is, how is commercial real estate going to be impacted? We know that both from this analysis and other headlines that are appearing that there's some part of this where a change in demand for office space is going to have an effect on commercial real estate for years to come. So this presents a challenge and opportunity for converting some of these office spaces to other uses.

All right. This is my favorite part of all this, is the discussion. So, what are you seeing in your community? We think that there are far-reaching implications for remote work across a variety of areas. I'd like to know what you're thinking about. Is remote work here to stay? What implications will remote work have on your community? What are you interested in figuring out?

That's it for my presentation. Thank you so much.

(Earlene Dowell): Operator, we're ready for questions, if there's any.

Coordinator: If you would like to ask a question, please press star 1 on your phone. Unmute and record your name. It will be one moment for questions to come in. Again that is star 1 on your phones.
(Earlene Dowell): Okay, great. So, while we wait for questions to queue up on the phone, I'd like to remind everyone to please be courteous and keep your questions pertaining to the presentation with one follow-up question. We've received a few questions regarding the presentation, which will be accessible on the Census Academy Web site in a week or two at census.gov/academy, under the Webinar tab.

Also, an evaluation will be mailed to you following this Webinar. We would appreciate if you took the time to fill the short survey out so that we may better serve you.

So, at this time, operator, are there any questions on the phone yet?

Coordinator: We did have one question, Teri from Washington State, if you still have a question, can you press star 1 again? Thank you.

(Earlene Dowell): Okay. So, in the chat, it was pretty busy, if we can see that, Chris. There was a lot of people saying, you know, Robin - Robin said hello, my name is Robin, I'm back to the office working from home one day a week.

We had Pat, he works in healthcare. A small portion of our employees population was sent home to work, but most could not. I have asked to work from home one day a week.

And then we have Danisha. I work remote but would love to move to another state or further out to afford home purchase during remote work.

Greg, he is the director of Ideation - sorry, Greg - at HUD. I moved pre-COVID and, the same, have not looked back. We are sponsoring a challenge on the long-term effects on housing and the economy post-COVID. We're
using the same trends in our early research. This will be a major reset in our culture and society.

So there were a lot of questions, I mean, a lot of introductions. But there were a few questions. So I'll go ahead and ask this one. This one is from (CSC), and it says, Chris mentioned 14 million to 23 million are planning to move as a result of remote work. Where is this from? Where are people moving? Out of market, new state? That was the question.

Chris Worley: Yes. It's a great question. Earlene, if I could find the source, I'll send it a long to you after this.

(Earlene Dowell): Yes…

Chris Worley: What we did see early on in the pandemic is a lot of people moving away from really, really densely populated places and into more suburban and rural places, for that reason, one, to kind of get open-air space. Another thing that we had seen was around cost of living. So, a lot of folks trying to take the opportunity to move potentially from more expensive places to less expensive places.

Now, this has been challenging since the housing market has been crazy and has adjusted I think to the demand and from a shrinking supply being available in the market. But those are two of the early indicators.

Those came up, by the way, Redfin CEO -- Redfin is the - is a listing - online listing agent of real estate -- said that this shift was profound, that they even saw it in their search data where people were searching for house in more suburban and rural communities compared to year over year to a pre-pandemic level.
(Earlene Dowell): Right. Michelle, is Teri on the line?

Coordinator: I believe she - that caller was disconnected or disconnected. I do have a question from Elaine. Your line is open. If you'd like to ask a question, please press star 1. If you'd like to withdraw it, it's star 2. Elaine, your line is open.

(Elaine): Yes. This is Elaine. I was wondering if anybody has done this specific type of analysis for New York City to Upstate New York?

Chris Worley: Yes, I believe so. The New York Times has a great - are you talking about the mover data?

(Elaine): Yes, the remote working and spatial shift in daytime population…

Chris Worley: Yes.

(Elaine): Yes.

Chris Worley: Yes. So, as far as the moving data, the New York Times has an analysis team called the Upshot, which are fantastic. They look at where people were moving to, I think by a neighborhood or borough, from New York into Upstate New York or Pennsylvania, or wherever throughout the country. So they've tracked movement of people and households in that way.

I have not seen an analysis that looks at daytime population levels within New York, but of course, another - the New York Times article that I mentioned I think does link two things, like occupancy rates and other kind of source
information that folks are tracking. So that could be a pretty good proxy outside of the - outside of the analysis like the one that I presented today.

(Elaine): Okay. Thank you.

Coordinator: As a reminder, if you have a question, please press star 1 on your phone.

(Earlene Dowell): Right. Well, I have a couple more that came in the chat. It says here, I'm writing - I'm from Lansing, Michigan. I did start a part-time job working for a civil engineering firm, and we can work from home. My interest in your presentation is to understand infrastructure needs.

Chris Worley: Yes. I mean, certainly that's going to be based on a number of factors moving forward, especially if remote work continues and at what level. Overall the number of travelers and commuters could change, but to what degree is kind of open to the kind of forward-looking trend on that.

I'm glad that we got somebody from Lansing on the call. That's great.

I do - one last thing on that piece. We did work with the tri-county planning commission on that project for Lansing, and they have a transportation component as part of their overall work portfolio. So they might be a great organization to get in contact with for follow-up.

(Earlene Dowell): Great. I did find Teri's question in the chat. It says, will employers respond by adjusting salaries of remote workers to the cost of living in the area they relocated to? What are the impacts of that?

Chris Worley: That's so interesting. I know that some major employers, and in fact, Earlene, we were talking about this just yesterday, some major employers, some
government employers adjust already before any of this major shift to remote work, had already factored in cost of living to salary ranges for their employees.

Another, you flip that question its head, another thing that we're looking at right now is for jobs that can be worked remotely, what's to stop a company, say it's a technology company in California, from poaching a technology worker from another place, being able to pay them less than they would pay at a California rate, for example, and then that person now add to a tech ecosystem in a lower cost of living state. So those are interesting implications as well of all this remote work.

(Earlene Dowell): Okay. Another question is from Tom. What is the population of the Lansing metropolitan planning organization boundary?

Chris Worley: That's a great question. Wikipedia is both of our friends, but I don't have that right in front of me right now. Sorry.

(Earlene Dowell): And then we have another question from Gary. Do you see this as a temporary shift or one that will be the future going forward? Does this mean a shift in infrastructure to meet these moves?

Chris Worley: Yes. I think it - I think there's some sort of happy medium that we haven't reached yet. You can see from perception surveys from the American workforce that folks want to have some sort of remote possibility or hybrid possibility within their work. At least that had come up on a number of their comments that Earlene was reading out loud. You know, "I want to work remote at least one day a week or a couple of days a week, and my employer better be used to that flexibility, both for me not being in the office and for me to have the schedules that I want."
So I think it's - I think it's probably a bit of both. I think it's probably not the 40% or 50% or whatever that high percentage of workers early on when we are in stay-at-home orders and government closure orders, and that sort of thing. We're, I don't think, ever going to return to that level.

But I think there are going to be companies that do make the switch into full remote because, like mine, they said we can do it. So there's going to be a baseline in those companies and there's going to be a huge swath of companies that are going to adopt some sort of hybrid model.

What that ends up being, you know, maybe it's not 40% or 50% of the early pandemic, maybe it's not 3% to 5% to 6% of the pre-pandemic, maybe there's a happy medium of somewhere in between that range for the remote workforce.

(Earlene Dowell): And one more chat before I check the phone. Scott asks, it seems like a big leap of faith to assume that job loss is uniform across geographies.

Chris Worley: It is a big leap of faith but it's the best way that we could estimate it. And using the Pittsburgh example, the downtown is about a third of employment, so it's the best that we could do. Point taken, and all these numbers are estimates trying to squeeze the most possible out of the most recent data that we have.

(Earlene Dowell): Michelle, are there any calls?

Coordinator: Yes, ma'am, we do have a couple of questions in queue. Our first question comes from Daniel. Your line is open, sir.
(Daniel): Hi. Thanks for this analysis. My question is about the Pittsburgh analysis. Specifically, you have that chart that showed, you know, analysis over time of population downtown and working remotely and working in-person. And above the line, was that people that were working totally in-person, half in-person? How did you account for hybrid employees in that part of the analysis? Thanks.

Chris Worley: Let me pull out my chart just so that we can all be on the same page, real quick. Sorry to give everyone nausea for flipping through all this. This chart I think is what you're talking about.

(Daniel): Yes.

Chris Worley: I did not account for hybrid workforce at all on this. And everybody that's above the line in this chart is people who are in the orange there, in-person, so those are the folks that - whose work location, they're still going in to work. The little, little tiny sliver of a bar of purple on top of that is the folks who are living downtown but now working remotely. Does that make sense?

So that's everybody that's in the downtown area, mostly from workers who are going in to work, and a little bit more (picked on) because they're living downtown. They were going to work outside of downtown but now are working remotely where they're living.

Coordinator: Our next question comes from Christina. Your line is open.

(Christina): Thank you. This centers around commercial real estate, and I'd just like for you to dive a little more into what you're seeing and hearing regarding the future of commercial real estate immediate and long term.
Chris Worley: That's a question that I wish I had more expertise in. But it seems like a lot of folks are, in the commercial real estate space, are scrambling to try to understand the dynamics of what the demand shift will be coming down the pike. All the questions that we've had about what level of remote work, what does, you know, what does a hybrid workforce look like, all those questions have implications that have to do with changing - potentially changing and converting a traditional office space.

For instance, if you have - if you go from a model of nobody is working remote, everybody is in-person, and there's no desk sharing, to then you still have that same square footage but all of your renters, all of your business or organization renters are trying to shift to a hybrid model where there's desk sharing, where they don't need as much square footage as they used to, where potentially there's, like, running out of conference space, all those have adaptations that have to be done and planned for in the commercial buildings.

Another is, you know, the adaptation of commercial real estate to residential. And that's tough too, because buildings are designed to be for the use that they're initially intended for. In the New York Times article that's linked in this presentation goes into some of that, where, you know, you can convert buildings from commercial real estate to residential but it's tough, the amount of space that you get to have a window in your bedroom or how you subdivide each floor of the building, or even like the number of elevators that you need to transport people up and down, are all different in those different use cases.

So I hope that answers your question. I wish I knew more about it. I wish I knew more about what the vacancy was like and what it's projected to be. But those are all really, really good and tough questions to answer.
(Earlene Dowell): Christine, I'd like to add something to that question. So, in March we had another LED Webinar, and it was regarding using Census and Zillow data to understand COVID-19. You might want to check that out. It's on our lehd.ces.census.gov. And I'll put it in the chat. And it's under the Learn More tab. So I'll add that link to the chat.

Coordinator: We have no other questions in queue, ma'am.

Chris Worley: I saw a couple, Earlene, if you want to browse through the chat.

(Earlene Dowell): Yes, I have it. I have it.

Chris Worley: Okay. I saw one that I want to address, or like a couple of folks had mentioned it. With commuting and its impacts on the tailpipe emissions and all that kind of stuff, early on in the pandemic we saw emissions drop drastically. And certainly one of the things that I'm really interested in is what that looks like for the future. Can remote work, can telework be a potential solution for emissions reduction?

And what's really interesting is, in 2019, we got asked by the main broadband coalition to work on a project that looked at emission, distance from home and work locations using LED data, and talking about telecommuting. So if a number of people adopt these telecommuting practices or some sort of hybrid remote, what would that do for overall emissions? And the results were staggering.

So I do like that line of thought. And there's a couple of other supports that that needs, right? So, HR practices need to be in place, deploy broadband, especially to rural areas and suburban areas that allow for remote work, and companies that are willing to allow workers to do that. But that's an
interesting analysis and I hope that's a good outcome from the increase of remote work in the pandemic.

(Earlene Dowell): So I have a question from Mica. When you say they are working remotely, are they defined as fully remote or virtual or partially remote, or mix of both?

Chris Worley: That's a great question. And for this, I think the way that the - you're going to have to check the BLS survey that's linked here. I think the way that it says is, in the past four weeks, have you worked remotely as a result of the pandemic? I think that's the language on it.

So I didn't differentiate between hybrid or partial remote or that sort of thing. If they said yes, it's effectively, I assumed, that's remote.

(Earlene Dowell): Okay. This question is from Ben. Could you by chance review or expand on your model to arrive - or did you answer that question already? Arrive at commuting patterns for 2020 and 2021 given that the LEHD data only goes through 2018?

Chris Worley: Yes. That's why I - that's why in the second analysis for Pittsburgh - the first analysis doesn't do that. The second analysis tries to take - tries to estimate the overall workforce by using unemployment data that's more recent than 2018. So the pre-pandemic baseline uses the 2018 LED data and the subsequent 2020 and 2021 use the unemployment data to try to get an overall workforce estimate. But then we apply the BLS survey data about proportion of folks working remotely by industry to that overall workforce. I hope that makes sense.

(Earlene Dowell): Okay. And this is from Adam. How are companies hedging bets when it comes to expansion announcements and affiliated job creation numbers?
Chris Worley: That's a great question. I'm not going to touch that one.

(Earlene Dowell): Okay. I have one from Jim. Hi, Jim. While this is still a novel trend over the long run, don't you think that people will begin tiring if knowing their coworkers and clients solely in the context of a thumbnail on their laptops and begin to again crave in-person interactions?

Conversely, will there become a point where employers will start to desire more in-person interactions with and among their employees? Finally, how does one maintain an organizational culture when they are only interacting in this manner? Many of us really hate it.

Chris Worley: Well, from one thumbnail stamp on your computer to another, it certainly is a slog and it gets tiring just looking at a Zoom screen every day. I think one of the things to keep an eye on is that Prudential future of work and pulse of the American workers survey. They ask all those types of questions and more and present the information in a really easily digestible and meaningful way. So I think that can speak to the trends.

As far as the implementation of what hybrid and remote looks like, how to maintain a culture with some team members virtual with others not, and all of that, I think those are really, really important questions. Those are human resource questions that a lot of human resource managers and smarter people than I are thinking about, but going to be very, very key to balance the desire of workers to continue working remotely or hybrid, with the needs of that collaboration from organization and in-person innovation or in-person experiences to maintain a culture.

Thanks for the question.
(Earlene Dowell): This is from Vince. He says that the Bureau of Economic Analysis has linked the LED's commute data to their chart of accounts data. This can be used to see how much income is earned inside and outside accounting. If residents are finding higher-paying jobs outside your local area, you will see evidence of it here. Use the gross flow of earnings file.

So he added a link to the chat, if everyone can see that. It's from Vince.

Chris Worley: Fantastic, Vince. Thank you for doing that. And I encourage others, if you've seen studies or know of specific datasets that relate in some way to what we talked about today or what you've heard others ask in the chat, please put it in the chat. Use that as an example, because this is a great community of practice, we can all improve our data analysis with sources and these types of things. So, thank you so much for putting that in.

(Earlene Dowell): And I'm going to ask this question and then I'll check back with the operator. This is from Margaret. Does demography impact who is moving out of the city? Are younger and POC professionals staying?

Chris Worley: Yes. And we know that from a variety of ways, especially as it relates to who is able to work remotely. White versus non-White, higher-paying occupations versus lower occupations. White workers are more likely able to work remotely. We know that from the BLS survey - remote BLS job flexibility survey from 2017 to 2018. That same survey says that higher paid workers are also better able to work remotely, or more likely to work remotely. And I think full-time/part-time split, full-time workers are more likely to work remotely.
So, yes, there is demographic differences in that, who's able to move because of the ability to work remotely.

(Earlene Dowell): Michelle, are there any more calls on the phone?

Coordinator: I do not see any questions in the queue from the phone lines. Thank you.

(Earlene Dowell): Thank you. So, another question, this is from Patrick. No one has mentioned the generational issues surrounding telework, but butts in seats still reign supreme where I work, despite the fact my job is entirely online.

Chris Worley: Can you - it cut out for me. Can you read that one more again, Earlene?

(Earlene Dowell): Sure. So it says, no one has mentioned the generational issues surrounding telework. That's the question. And then there's, butts in seats still reign supreme where I work despite the fact my job is entirely online.

Chris Worley: Yes. Yes. I think this goes back to that increasing need for human resources support and better work models. With the shift of remote work and hybrid work being - it's going to be a part of our work system now and into the future.

But that doesn't mean that it has to be a negative part of their work system. It means that we need appropriate workforce supports for workers who are working remotely or are hybrid workers. We need similar but different supports for people who are on teams with - and in-person who are with other people on their teams who are working remotely or during a hybrid model. We just need better human resources models for that. Thank you for that insight.
(Earlene Dowell): This is from Al. Does classic zoning districts approach to local land use make sense anymore?

Chris Worley: It's a great question. Zoning is always something that's picked on from - everything from, you know, housing to commercial zoning and why communities apply certain zoning layers to one area and not in other, and all that kind of stuff.

I think that one of the very, very clear pieces of insight from this analysis is that historically in these patterns, about where people have been developing residential versus where they've been developing commercial has resulted in, at least in the Pittsburgh region and in Lansing region, these very, very sprawly land use patterns, which make - which make this a huge differentiation in between who's staying where while they're working.

And another follow-on for that is, if people value, which they do, their sort of like ability to walk around, access a coffee shop or small main street business districts, we're going to really have to figure out how to make that work with the land use patterns that we've had historically. Like, do we develop, going into the future, smaller pockets for - of livability where there's, you know, instead of one gigantic business district, many smaller, dispersed business districts, or other things? Who knows?

I'm not a planner, I'm not a land use planner, but it's very clear to me that the historical land use planning process has resulted in these dramatic graphs. In a case where there's similar number of workers, like more aligned with work balance in terms of residents living and residents working, and equal shares in the same place, you would not see this huge differentiation in population shifts.
(Earlene Dowell): Okay. This question is from David. Will the move from urban to suburban rural residency by remote workers restore the travel that has been reduced by not commuting? And will this shift travel from transit to autos?

Chris Worley: That's a great question. Wow, that is a great question. One of the things that I didn't present today but - that I did look at was things bus ridership pre-pandemic and then this year - or last year and this year, what it looked like.

I can tell you, for Pittsburgh, downtown bus ridership went from 2.5 million pre-pandemic to around 500,000 trips. These are monthly trips, kind of last year and this year, about the same. And anytime when you see a ridership decline like that, if the demand shifts five-fold, maybe we have supports for that, where bus lines keep moving now with the rescue fund money and all that kind of stuff. But long term that's not sustainable.

So if a shift like that happens and there's a bus line that is supporting folks to use public transit that live in more outbound communities but they're no longer using it, that's - that line is susceptible to going away. And if your job doesn't allow you to work remotely any longer, maybe someone who had been taking a bus into work with that line removed now has to drive. So there are interesting pushes and pulls in both those directions.

(Earlene Dowell): Okay. Here's another question from Christina. Chris, please weigh in on this thought. If downtowns lose population, parentheses, customers, then should we force people back, or accept changing market?

Chris Worley: Yes. There's no way to force people back, but there are different approaches or avenues that you could take that ups the number of consumers in a downtown area. One is that building conversion that we've been talking about, converting off what had been office space or planned as office space to
more residential. So, instead of folks working there, you'd have folks living there.

Other types of things are things that downtown bureaus and travel have been working on for a long time. So, is there an opportunity for conventions or conferences or other types of things?

There's a lot of ways to drive customers into an area that may not be based on, "Hey, I work here, I'm going to spend my money here." But it's tougher when you don't have that population just right there automatic going to work every day.

So I think it is going to be something that communities are going to have to adjust to. I think what it means is long term, if these trends continue, there's no way for a customer base that had been supporting businesses at a pre-pandemic level, if that customer base decreases by 25%, there's no way to maintain and support all of those businesses at pre-pandemic level, which is just going to result in some businesses closing.

(Earlene Dowell): Okay. Here's a question from Sabrina. How are school enrollments being affected by these spatial shifts?

Chris Worley: That's not something that I've looked at. School enrollments from the spatial shift. School enrollments have definitely shifted. I tell you what, one project that we did work on was in a ten-county region in sort of more rural Michigan, where they were the recipient - they had a great tourism season. So, historically it had been during the spring, summer and fall months, they had had a lot of tourists come in to the area. And they were really concerned last year with the pandemic that their tourism industry would be heavily impacted by folks not wanting to visit.
But what they found is that a lot of - a lot of their second homes, instead of being rented out for like a weekend trip or that sort of thing, shifted to be rented out for long-term tenants. So, folks, instead of renting for a weekend, would rent for a month or two months or three months. And they found that all their tourism aligned businesses actually had some of their best seasons on record.

But that did impact school enrollments. And their schools, you know, had a significant increase in the population. So I think that's just one example of what your community looks like and where people are having - who can work remotely have a preference to move to, like what those communities look like, has a really big effect on what school enrollments and the balance of that could be in the future.

(Earlene Dowell): Okay. We're coming up at 2:46 right now. I have a couple of questions that I will ask you, and then hopefully we can answer all the other questions offline.

So this is from Barbara. Hi, Barb. Has anyone done this for the D.C. area and its surrounding area? Also, does the data you are working with include federal government employees?

Chris Worley: My data does include all employees, not just private. And when I was presenting in April, Earlene, maybe you could share this link too afterwards, Leah Brooks from the D.C. area presented an amazing analysis of what Washington, D.C. look like, who was able to work remotely in the district, and all that. And so I think we can follow up with this, either a link to that presentation or something. There's analysis out there.

(Earlene Dowell): Yes. I can add that link.
And then the final question for today - let's see. There are so much, so much chatter in the chat.

Chris Worley: Yes, it's great.

(Earlene Dowell): Do you see any questions that you - that stand out to you that you would like to answer right now?

Chris Worley: Not offhand. And I apologize if we didn't get to the question that you asked. Certainly, this is indicative to me about how important this work is and about how much interest there is in it. So, thank you so much for attending today, grilling me with really tough questions. And thank you again, Earlene and Lisa, for inviting me. It's been a lot of fun.

(Earlene Dowell): All right. So I'll go ahead and close out our Webinar for today. Let me see.

So I just want to thank everyone for joining us this afternoon, and also thank you to Chris Worley for presenting.

The LED Webinar series will continue again on August 18, 2021 at 1:30 p.m. Eastern Daylight Time when Chris Askew presents Minding Our Ps and Qs: Using Loads Data to Explore the Impact of the CARES Act Pandemic Relief Programs.

So, thank you, everyone, for spending your afternoon with us, and thank you for going over a little bit of the time. And I hope that you all have a wonderful day.

Coordinator: That concludes today's conference. All participants may disconnect.