

NWX-US DEPARTMENT OF COMMERCE (US)

Moderator: Deborah Rivera-Nieves
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12:30 pm CT

Coordinator: Welcome and thank you for standing by. At this time all participants are on listen-only mode. During the question-and-answer session you may press star then 1 if you would like to ask a question.

Please be advised that today's conference is being recorded. If you have any objections, you may disconnect at this time. Now I would like to turn the meeting over to Miss (Earlene Dowell). You may begin when ready.

(Earlene Dowell): Thank you, (Brittany), and thank you to Deborah Rivera for - from the US Census Bureau for hosting our Webinar today.

On behalf of the US Census Bureau and CTER welcome to our first LED Webinar of 2019. It is with great pleasure that I welcome back one of our esteemed presenters, Mr. Aaron Terrazas, as he presents using LEHD and Zillow data to understand how the market impacts.

This Webinar will focus on Zillow's use of this data to understand the housing impacts of local tech booms, including Amazon's HQ1's impact on Seattle housing market, Amazon HQ2's potential housing impact on Washington, DC

and a recently published analysis of how Facebook's 2012 IPO boosted home values in Silicon Valley.

Aaron is a senior economist at Zillow. He is a frequent commentator on the American housing market, including recent appearances in the Wall Street Journal, CNBC, Telemundo, and more. Before joining Zillow, he was an economist at the US Treasury Department Office of the Economy Policy, where he participated in the interagency group of economists who prepare the forecast underlying the president's budget.

He started his career at the Migration Policy Institute, a non-partisan think tank in Washington, DC, and he received his education at Georgetown University and Johns Hopkins University. So with that I hand it over to Aaron.

Aaron Terrazas: Thank you, (Earlene), and everyone at the Census Bureau who invited me to speak at this Webinar. And obviously thank you to everyone who's on the call. I'm excited to present on this research that we've done. As (Earlene) mentioned, this is my second time presenting to this group. It's always a pleasure to return and come back.

You know, the LEHD data that Census publishes has just been such a phenomenal resource in our research on the housing market. You know, I think many people, you know, anyone who works with data is familiar with so many of the outstanding Census data products. LEHD is a little bit of a newer data product and I think one that perhaps sometimes gets overlooked but it really does include a wealth of information and, critically, it includes a wealth of highly localized information, which is so important for housing market analysis because so much of that LEHD data is published down to the census tract or census block level.

So, you know, as I said I'm happy to be presenting here. Today, as (Earlene) mentioned, I'm going to present a little bit about how we've used this data to look at the housing market impacts of tech booms. Obviously this is a very top of mind question with the news, you know, this past week of Amazon's decision to withdraw from its proposed New York City HQ2. Obviously Amazon and its search for a second headquarters has been in the headlines around the country over the past year and a half.

You know, even well before that Amazon kind of had a lion's share in Seattle, where we are based because of its HQ1, but obviously kind of beyond that news cycle, this line of research touches on important challenges that communities across the country are grappling with.

You know, if we look over the course of the past number of years, job opportunities and employment gains have been concentrated, particularly those high-wage employment opportunities are increasing concentrated in a number of community and, you know, the result is that more and more people want to live in approximately the same places which of course, absent, you know, a lot of investment in new supply and construction, has contributed to some degree or another to rising housing costs in many of the country's largest housing markets.

As part of this analysis, unavoidably I do end up focusing disproportionately on Seattle and San Francisco. These are obviously kind of the cities that have been perhaps the national focus of the tech boom. They're also kind of cities where (unintelligible) were headquartered and have offices so, you know, I think this is - the areas where these issues are most prominent.

I've tried to bring in examples from other markets. Of course those two areas are not the only areas that have seen growth in tech jobs. There are many other parts of the country, including Washington, DC, including places like Denver and New York, they're also seeing kind of growth in these job opportunities and kind of, you know, how to adapt this growth.

So to set up a little bit about what I'm going to talk about, I'm going to focus mostly on, again, how we use the data, touch a little bit on the findings but not really go into the weeds and methodology. If you're interested in learning more, I'll direct you to some resources where you can find out more about that research and what exactly we did.

But before I go into the research and the data, let me tell you a little bit about Zillow, you know, and particularly our economic research team. I'm sure some of you at least on this call are familiar with Zillow but some of you might not be.

For those of you who aren't, Zillow is the largest consumer-facing real estate search portal in the United States. Millions of consumers visit our website each month. They come looking to buy, to sell, to rent a home, to get a mortgage, and simply to - often to find information on their communities and their homes, which for most Americans is the most important asset that one typically ever buys.

Zillow was launched about a decade ago by two former executives from the Expedia who, having just kind of, you know, had this initiative and founded this company to bring transparency for consumers who were shopping for airline tickets, they decided to apply that same logic to the home shopping experience, and that's really where Zillow was born.

Often in company meetings, our executives describe home shopping pre-Zillow a little bit like standing in a dark room and, you know, you would go to a real estate agent and try to describe what you were looking for and, you know, they would shine the flashlight in one corner or another based on what they interpreted your preferences to be, when really, you know, all you wanted to do was turn on the lights in the room and look for - look at everything that was out there. And that's what Zillow does.

You know, we have, like I said, kind of provide all that information on homes for sale and for rent but, you know, not only that, we provide an estimate on every home out there regardless of whether or not, you know, those homes are on or off the market. You know.

So our research group really grew out of that mission of turning on the lights, if you will, for consumers. If you go to zillow.com/research, that's our - essentially our economic research blog. You can see our mission and principles. You know, we aim to be the most authoritative source for timely and accurate housing data and unbiased insight with the goal of empowering consumers, professionals, policymakers and researchers to better understand the housing market.

Here you can see a little bit what our research blog looks like. It's just zillow.com/research. I encourage you to check it out if you're interested. On top of that research and commentary, we publish hundreds of data series every month, real estate market metrics, kind of freely available to download anywhere from the national, state, metro, county, city, zip code, neighborhood level. So that's kind of - that housing market data is what we've been able to pair with Census's LEHD data to understand, as I said, the housing market impacts of these tech booms nationwide.

So with that, having said that about Zillow and our economic research group, let me go into some of the applications where we viewed LEHD data. And in general I'm going to comment on three broad themes of research where we view these data. Some research is kind of more intensive. Other research is kind of more just compelling charts and graphs.

So first, as (Earlene) mentioned, kind of housing and the tech boom. There are two major pieces of research where we viewed the LEHD origin destination data in particular. That is one of the data series that LEHD publishes and, as I said, kind of this first analysis so we did probably about two years ago at this point looked at the impact of Amazon's original headquarters in Seattle and what that has done to the Seattle housing market.

You know, for those of you who are familiar with the story over the past decade, you know, Amazon has built their first headquarters in a neighborhood just adjacent to downtown Seattle, a neighborhood called South Lake Union. This is a neighborhood that has been transformed over that period from a largely industrial neighborhood to, you know, a classic tech hub with high rise buildings and coffee shops and fancy restaurants.

You know, Amazon is not the only employer in this neighborhood. There are a lot of other employers in this neighborhood, companies like the Gates Foundation, Facebook is building a new office there, Google is looking at a new office there, REI is there, the University of Washington has a big medical center there. So, you know, Amazon, as I said, is not the only presence in this kind of booming neighborhood but there's no doubt for anyone who's walked around the neighborhood, you know, they are to some degree or another the anchor tenant if you will, they are kind of the dominant presence in that neighborhood.

And so, you know, this is a question that has been coming up, you know, over and over again in Seattle conversations over the past decade, kind of what has this neighborhood transformation, so this transformation of this neighborhood from a gritty industrial district into kind of a tech hub, what has it done to the Seattle housing market.

So we used LEHD data to look at, you know, people who work in that neighborhood, which is composed roughly of two census tracts. People who work in that neighborhood where do they live in the Seattle metro area, and these are maps that kind of use that LEHD data, both the 2015 data and then changes in the distributions from 2011 to 2015 on the right.

And, as you can see, you know, there is a relatively high concentration in the - go into, let's see, a pointer here and, you know, this area right here where the read pointer is roughly the neighborhood that is home to Amazon's Seattle headquarters -- that's South Lake Union -- and you can see there's a higher concentration of people who work in that neighborhood in those adjacent residential communities. You know, roughly this area here is the city of Seattle and then you spread out in the metro area.

So, you know, there has been a relatively high concentration of where the growth of this population has been. And so, you know, we were able to merge this LEHD data on the distribution of Amazon workers in the density of any given census tract with our own data on rents, our census-tract level rent series. And, you know, with a simple change on change regression framework that suggests kind of that - the growth in South Lake Union employment over that 2011 to 2015 period. It explains about 17% of metro-wide rent changes in the Seattle metro area.

It's higher within the city but, you know, roughly half of the South Lake Union workers live outside the city limits so I think the metro comparison is more appropriate. This research, as I said, was timely and topical to many conversations happening in the city. A year or two ago it was cited in our mayor's state of the city address. So, you know, this research is definitely something that has resonated in our community.

A second kind of piece of research where we've been able to take a similar approach and use LEHD data merging with our data is to look at the impact of IPOs on the local housing market and in particular we looked at the impact of Facebook's 2012 IPO on the housing market in the Bay Area, in California's Bay Area.

There is a lot of interest right now in how housing markets respond to these wall shocks, wall shocks associated with IPOs. Several large area tech companies are expected to IPO this year. Companies like Uber, Lyft, Slack, Airbnb and, you know, and if you look at the long history, you know, it is kind of compelling to understand kind of what can Bay Area home owners, potential sellers expect from these events.

And I should mention that this is research that was done by my colleague (Jeff Tucker). So, you know, what (Jeff) did is he created census tract weights, a census-tract weighted index of home values using weights based on the residence tracts and LEHD data of people who work in the Menlo Park census tract that was home to Facebook headquarters at the time of IPO back in March 2012.

And here you can see kind of the main chart that's a result. You know, if you create that weighted index, you know, index it to March 2012, that's the kind of hundredth value on that axis, you know, homes in census tracts with a

higher concentration of people who work in that Facebook census tract did see slightly faster home value appreciation over the subsequent year after IPO.

He found that Facebook's IPO was consistent with the approximately 1.6 percentage point faster annual home value growth in the following year. That's, you know, roughly about \$30,000 of home equity for homeowners, preexisting homeowners in those areas. So, you know, I think, as I said, this is a timely question. You know, this is a single event study but it does provide some guidance to help, you know, set some expectations for homeowners in the Bay Area.

Obviously Facebook's IPO in March 2012 did come at a unique period in the housing market. That's roughly the bottom of the housing market after the financial crash. So, you know, there was a lot of room for recovery at that period. At this point, you know, a half decade-plus later, with the tech IPOs, the Bay Area housing market's a much different place. It's probably at a relatively high point and, you know, I don't think the next five years of the Bay Area housing market are going to look like the past five years.

So you can see here in this next slide some of the coverage these two pieces of research received. On the left you see the coverage of the Amazon HQ1 research, which was featured by (Jean Balk) of the Seattle Times. He's a data columnist for them. And then the IPO research was featured in the story about (Kathleen Pender), who's a real estate reporter at the San Francisco Chronicle on the front page of the Chronicle just a couple of weeks ago.

So, as I said, these are questions that the combination of Zillow and LEHD data have allowed us to answer to some degree or another that are of broad interest, not beyond - beyond the world of data geeks, which is obviously very important, but to a much broader population.

In general, to conclude this first portion, this first set of research that we focused on, I think these are our takeaways from this body of research that the, you know, the labor demand shock associated with Amazon HQ2 and the wealth shock associated with Facebook's 2012 IPO were associated with significant but, you know, small in magnitude effects on local housing markets, either rents or home values, but in general you think about 17% explanatory power over rent growth in the Seattle market, you think about 1.6 percentage boost to home value appreciation in the Bay Area.

That's probably roughly small relative to the broader forces driving both of those housing markets. There, you know, I generally say there are much bigger forces driving those housing markets, and the macro trends driving the national and regional housing markets are probably dominating what we're seeing here.

So that's, as I said, kind of the first body of research where we've been able to use LEHD and Zillow data to look at the housing effects of the tech boom. Another kind of second area where a separate LEHD data set has been very helpful has been looking at price elasticity. The LEHD publishes this job-to-job flow series at the metro level essentially looking at how many, you know, employees, adults as I understand it, have changed their place of employment over the course of a quarter across metro lines.

And I think, you know, obviously that concept of people moving from one place to another, one part of the country to another, is essentially kind of marginal changes in demand that's very important fundamental concept in real estate economics and, you know, it kind of has, you know, been very helpful when we talk about kind of areas that are booming and areas that are struggling when it comes to the housing market.

One particular specific line of questioning where this has come up has been the so-called California exodus. California housing markets have become particularly expensive over the past two years and there is a wealth of anecdote and some data suggesting that the growing numbers of people are packing up their bags and deciding to move out of the Golden State, you know, so that outflow, that net outflow has implications not only for California housing markets but for the places where these people tend to go.

And, you know, they, based on the LEHD data, do tend to go toward, you know, western, other western housing markets. Adjacent states tend to be large beneficiaries, or nearby states as well. You know, when you look at people who are leaving Southern California in particular, that's what this chart that you're looking at now does, it looks at, in green, kind of the number of people moving out of Southern California to each of these three metro areas over, you know, the past decade and a half, almost two decades at this point: Dallas, Las Vegas and Phoenix.

And then on - in the blue line, kind of the left-hand axis, you see the affordability advantage, if you will. That's essentially the difference in mortgage affordability, the share of income to total household spend on their mortgage. That's how much cheaper in percent of income it is in each of these markets: Dallas, Vegas and Phoenix relative to Southern California.

So you see in general, you know, during the mid-2000s housing boom, as Southern California home values increased very quickly, the affordability advantage of each of these markets kind of accelerated and picked up. You know, in 2006, Dallas, you know, was about 45 percentage points more affordable than Southern California and Vegas was 25 percentage points, similar in Phoenix at that peak of the mid 2000s housing bubble.

As California housing values dropped back, and of course they dropped also in many of these communities as well, that affordability advantage eroded and kind of went back down, you know, and so, again, looking back at that mid 2000s housing bust, as affordability in California deteriorated, as that affordability advantage in these three adjacent markets expanded, you saw an inflow, and that inflow of people from Southern California to each of these markets, once again over the past four years or so we're seeing growing inflows.

Those are the areas, the parts circled in red there. You know, we're seeing growing inflows from Southern California to Dallas, to Vegas and to Phoenix. However, what's different this time is that we're not seeing that affordability advantage. The way to interpret that is that, you know, home prices in each of these markets are responding to the population inflows in a way that they didn't a decade and a half ago.

You know, affordability is now becoming a concern in places like Dallas and Vegas and Phoenix. So, you know, this is the relationship that speaks to, you know, a story that we're hearing from people, from journalists, that people are living every day to day and, you know, it's something that I think is only something that we can do with the combination of these two data sets.

A second analysis where we've used the job-to-job data is looking, trying to estimate this potential impact of Amazon HQ2 on the various housing markets that they were considering back a year ago. This was analysis we did with (Ben Kesselman) at the New York Times and, you know, we tried to estimate based on a historical relationship between population inflows and rents, you know, what could each of these markets expect, you know, from Amazon HQ2 with various assumptions about, you know, how many people would be

moving versus how many people would be local hires, et cetera, and how fast the pace of hiring would commence in each of the HQ2 cities.

So, again, you know, this was a question that I think a lot of people had in mind as Amazon was considering any of its 20 candidate cities, what was going to be the impact from the proposed 50,000 new jobs that were going to be created, and this was one way to try to estimate those effects that, you know, something that was possible because of the combination of the two data sets but I think was broadly of interest, you know, to many people beyond a data, a deep data wonk community.

So a third area kind of, you know, where we've been able to use the LEHD data to talk and to illustrate the housing market and real estate trends has been on this subtopic of housing and transit. You know, we - a couple months ago this past summer we tried to estimate how much a typical home in a given commute radius of downtown was worth and how much income you need to have in order to afford those homes.

So for instance, if you think about how - what is the typical price home within a 15- to 30-minute commute of Denver, downtown Denver, the same with downtown San Francisco, the same with downtown Seattle, and then you think about each of those 15-minute bands moving further and further out, what is the typical kind of home value, what's - what income do you need to afford that typical home value.

This is data that we were able to - it was a data collaboration with a company called HERE Technologies which provided the commute times to downtown, and so you can see, you know, for Denver you can - you know, how much the typical home increases or decreases with each kind of marginal 15 minutes of extra commute time.

Now as I said, this is data that we collaborated with HERE Technologies. There's no obvious LEHD data here but there is kind of behind the scenes. And before I get to where the LEHD data are, you can see here kind of what that map looks like for the Washington, DC metro, you know, what is the median home value for each of those commute bands.

But as I said, where the LEHD come in is this question of, you know, where - what is the commute to downtown, where is downtown. And I think this is urban geographers and economists kind of trying to grapple with this question and various hacks to question in different ways. You know, one common way is to look at historical retail sales patterns. Kind of the way that we've decided often to do it is to use LEHD data to look at employment density in each census tract and then, you know, you can select the census tract with the highest employment density in a metro and identify that as a downtown core.

So here you see Atlanta and you can see the employment density back in 2005 and 2015 and how that's changed. I know kind of with all the census tract it's kind of hard to visualize exactly kind of the shift but zooming in a little bit, you can see here more clearly. You know, back in 2005 the census tract with the highest employment density was that census tract there, which is - includes the state capital and kind of the neighborhood and stuff downtown.

But over that decade, the intervening decade, employment concentration gradually shifted northward and now you can see the census tract with the highest employment density is this neighborhood, you know, a couple census tracts north. That includes a civic center and Emory University Hospital.

So, you know, you can kind of see the evolution of cities and employment patterns obviously in this data and of course, you know, the two biggest

anchors in most people's lives are where we work and where we live. And so this gives us kind of that critical second anchor of where people work across any metro area.

The final kind of use of LEHD data that I wanted to point to was, you know, just a very simple look at, you know, people who live in - people who work in Seattle kind of where do they live. And to give you a little bit of context here, the Seattle metro area, as it's classically defined, includes three counties: King County, which includes the city of Seattle, that's roughly, you know, this area here, Snohomish County to the north, and then Pierce County to the south. Pierce County includes the city of Tacoma right here.

Now obviously there is a lot of commuting within - amongst these three counties. The further out you go, fewer and fewer people commute but you do have these kind of communities out in Kitsap County, out - across Puget Sound, that are not formally part of the Seattle metro. However, if you look at a place like Bainbridge Island and Vashon Island, these are two islands in Puget Sound. Now Vashon Island is formally part of King County. Bainbridge Island is formally part of Kitsap County.

But a very high percentage of Bainbridge Island employed adults work in the city of Seattle. The reason for that is that there is a 25-minute ferry across the Sound connecting Bainbridge Island to the city of Seattle right to downtown, so it's actually a much easier commute than places, you know, say, up here in King County. And the way we've been able to talk about it is that there are kind of proposals and even some already in motion to include a faster area to this community here called Bremerton. You don't see it here but there's a waterway right here which connects downtown Seattle to Bremerton, the city of Bremerton, by ferry.

Currently it takes around 50 minutes to an hour but they're launching a fast ferry which takes, you know, about 25 minutes to get there, passenger only, no cars, but that would make Bremerton a much more attractive area for downtown Seattle workers to live in, potentially boosting home values in that community.

And, you know, I think it'll be interesting to see. Obviously these data are only through 2015. The fast ferry I think launched maybe in 2017 or 2018, but it will be interesting to see how that share of people who work in Seattle evolves over the next half decade with more regular rapid access to the city. So that's something that we're definitely watching.

That I think is all of the research that I was going to present to you. I'm happy to take questions. I encourage you to check out zillow.com/research, zillow.com/data for, as I said, more details on this work. You know, obviously check out Census LEHD page. Their data have been supremely useful to us. So with that I guess (Earlene), operator, I'll hand it back to you for any questions that we have.

(Earlene Dowell): Yes, so...

Coordinator: We will now...

(Earlene Dowell): Go ahead. I'm sorry, (Brittany).

Coordinator: We will now begin our question-and-answer session. If you would like to ask a question, please press star then 1 and record your name clearly when prompted. If you need to withdraw your question, you may do so by pressing star then 2. One moment as we wait for any questions over the phone.

(Earlene Dowell): Okay. So while you are - you're all preparing your questions, I would like to take this time to thank Aaron for his presentation and thank you all for joining us today. I invite you back next month on Wednesday March 20 at 1:30 pm when (James Spretzer) of the US Census Bureau presents Older People Working Longer, Earning More.

Coordinator: And as a reminder if you would like to ask a question, please press *, then 1. One moment as we wait for any additional questions.

Deborah Rivera: Great. And just one other reminder. First of all, good afternoon everyone. Thank you for joining us today. I'd like to thank (Earlene) and Aaron for this very informative presentation. I would also like to let everybody know that after today's session concludes, all participants will be receiving a follow-up containing an evaluation survey and we would greatly appreciate it if you could take just two minutes of your time to complete it.

You can give us your thoughts and feedback. You can also tell us how we did today or tell us any new Webinar topics that you'd like to see in the future. We really appreciate your feedback so look out for that email. It should be coming shortly after the presentation.

Coordinator: Excuse me, we do have a couple of questions on the line. Our first question comes from (Lance). Your line is now open.

(Lance): Yes. Is it too late to apply for the Census Bureau's field representative position?

(Earlene Dowell): I think that question should be directed to our Census Bureau job posting instead.

(Lance): Okay. Do you know what the website is for that?

(Earlene Dowell): No sir, I don't. Not right now.

(Lance): All right. Thank you.

Deborah Rivera: I should probably be able to help you with that. I'll do some research on my side. Please look out for it on the chat. I'll try to do my best to find the information you're asking for.

(Lance): Yes. Because I actually have an application for the field representative position with the United States Census Bureau but it says issue date 8-31-2018 and closing date 12-31-2018 so I'm wondering if it's too late to apply, if those positions have already been filled. That's it.

Coordinator: And our next question comes from (Dale Donnelly). Your line is now open.

(Dale Donnelly): Hi. Yes. I had a question on the median price of a home within commuting distance of the downtown core. Seeing as how that you all use this third party to identify the downtown core, is there any way for someone like myself, I'm an analyst, to recreate that on my own or would I have to go to HERE Technologies and is that a paid service or would that service be free through HERE Technologies?

Aaron Terrazas: Yes. So we, you know, we use Census data to identify the downtown core. We used HERE Technologies to identify commute distance between any given home and that downtown core. You know, HERE I don't know the full details. You know, I'm happy to provide kind of contact information there. I do think it's a paid service.

However, you probably can approximate the distance just using, you know, a Euclidian distance between the lat/long of the downtown core and the lat/long central to the census tract, and then that gives you a distance in miles which you can approximate into minutes. It's not going to be a network distance but it's probably a good approximation in most metro areas.

(Dale Donnelly): Awesome. Thank you.

Aaron Terrazas: Yes.

Coordinator: And our next question comes from (Joseph Reecy). Your line is now open.

(Joseph Reecy): Hi. I was curious if you or anybody else at Zillow research has been doing work or is interested in doing work on investigating, just as an example, investigating the effect of tech companies on forces like gentrification. Thank you.

Aaron Terrazas: Yes. No, that's a great question. You know, it's certainly kind of a topic that we're interested in researching. You know, we - I encourage you to check out our research page. We kind of touched a little bit on peripheral topics but, you know, poke around on the research page. If there's something you see there that helps, great. If not, there's a contact form up there. You can reach out to the contact form or reach out to me. I'm happy to connect you with someone.

We also, if you are affiliated with a university or an academic research group, we do make a lot of our property-level data available to academic researchers for academic purposes. That's a program called ZTRAX, Zillow Transaction and Assessor Database. So you can find information about that on our webpage. So, you know, lots of opportunities there. So encourage you to reach out, look into ZTRAX if appropriate for your purposes.

Coordinator: And our next question comes from (Erica Tennil). Your line is now open.

(Erica Tennil): Hi. Good afternoon everyone. This message is - I'm sorry, this question is for Aaron. And thanks again for the time that you took out just to explain a lot of what you explained. So my first question is about the regional migration and the housing affordability when you were talking about - because I got kind of confused when you said that people moved from California to Dallas, Texas and Las Vegas, Nevada and Phoenix, Arizona based on the affordability advantage.

However, you then said once California became expensive over the first, you know, two years, now you're seeing some issues within those various other markets. But then you said that now it's - something is cheaper. So I just wanted to kind of clarify exactly what you were saying about it.

Aaron Terrazas: Yes. No, absolutely. Let me kind of walk you through this chart again. I know there's a lot kind of going on here. So. Can you see the chart?

(Erica Tennil): Yes, I can see the chart.

Aaron Terrazas: Great. So the green line here is the quarterly number of people, again, based on the LEHD job-to-job data, who moved from Southern California to Dallas, Texas, each of these metros right here. So you can see kind of during the mid-2000 housing boom, you saw a rapid increase in the number of people moving to Dallas from Southern California. That fell back...

(Erica Tennil): Hello?

Coordinator: Excuse me. It appears as if his line dropped. One moment as he dials back in.

(Erica Tennil): Yes, it dropped. Okay.

Coordinator: Please continue to stand by. We are experiencing technical difficulties. Your call will resume momentarily.

(Erica Tennil): Thank you.

Deborah Rivera: Okay. This is Deb Rivera. I'll take this time to go over a few commonly asked questions in the chat, just to review some of these. So will the slides be available? The slides for this presentation will be made available through the census.gov training and workshops page. I'll be sure to send a link to that website or to that site through the chat feature, so keep your eyes out.

Typically, it takes us about 24 to 48 hours to get the slides up on the site. The recording of the presentation should take we're hoping by the end of the week, if not possibly by the beginning of next week. Again, I'll send that...

(Erica Tennil): Did she go?

Deborah Rivera: Pardon me? So yes, look out for that link in the chat box.

Coordinator: Excuse me. We are waiting for our additional speaker to dial back in. Please continue to stand by.

Deborah Rivera: (Brittany), how many questions do we have in the queue?

Coordinator: We have four questions on the line. Would you like to continue with the question-and-answer session?

Deborah Rivera: No. We need to wait for Aaron at this time.

Coordinator: Okay.

Deborah Rivera: We'll wait a couple more minutes and then otherwise we'll - what we can do is I'll give out my email address and then any questions that went unanswered you're welcome to send those to me and we'll forward them to Aaron to get them answered for you. But we'll give him a few more minutes.

Coordinator: Please continue to stand by.

Aaron Terrazas: Hello? Sorry, I apologize. This is Aaron again. I guess I must have gotten dropped from the call.

(Earlene Dowell): Welcome back.

Aaron Terrazas: Okay. Great. So I'll continue where I left off. So, yes. So this green line is the number of people who moved from Southern California to each of these markets. And as you can see, it increased during the housing boom years of California it got very unaffordable, fell during the recession years, and then has gradually been increasing again.

Now if you look at the blue line on this kind of left-hand axis, that is how much more affordable is Dallas compared to Southern California. So if you think about, you know, say in Dallas the typically household spends 10% of their income on a house, you know, this 45 percentage point gap means in Southern California what they were paying 55% of their income on a mortgage, again. So the higher this line, the more affordable Dallas is relative to Southern California. The lower the line, the smaller the gap in affordability there is between those two different places.

So, you know, as I said, California got very unaffordable. We saw people moving to that area. And again, you know, suddenly we're starting to see more and more people move to that - to Dallas from Southern California but Dallas is not kind of keeping its affordability edge. It's actually kind of starting to see affordability deteriorate, you know, just in line with Southern California. You know. Does that - I'm not sure if that answers your question. It makes more sense.

Coordinator: And her line has been removed. If you would like any additional questions, you're more than welcome to star 1. But our next question comes from (Walter Johnson). Your line is now open.

(Walter Johnson): Yes. Thank you. I live in the Bay Area and I am also working at trying to predict house prices in various areas. It's kind of a hobby. And one of the things you didn't talk about here is prediction into the future, okay? Have - do you have techniques that you standardly employ, and in particular, do you find long range techniques useful in a market like the Bay Area or do you have to just basically look at the last two months to make some type of prediction about what's going to be happening in the market in the next month? Do you go back a year or do you go back a month?

Aaron Terrazas: I guess it depends on the type of - what you're trying to predict. If you're trying to predict sales numbers, if you're trying to predict home values, and I guess on top of that, what are you trying to - are you trying to predict an individual home's value, are you trying to predict the median home value in an area. So, you know, I guess without knowing kind of more precisely what you're trying to predict, it's hard to answer that.

(Walter Johnson): Individual homes, generally.

Aaron Terrazas: Yes. You know, obviously Zillow has a lot of resources and information on predicting kind of the prices of individual homes. You know, if there's a home in particular that you're interested in, I encourage you to go look that. That home page on Zillow will have a 12-month forecast for, you know, for its price.

But, you know, there are people definitely who have spent kind of their careers on this type of question. Probably not worth me going to it like on a call right now but encourage you to reach out to us with the question and check out that kind of particular home's forecast on Zillow. Yes, that's a big question, as I said, people spend careers and lifetimes working on.

(Walter Johnson): Yes. Just the main problem always is, around here, is it's very difficult to make any prediction in a fast-moving market.

Aaron Terrazas: Yes. That's - fast-moving markets certainly make it more difficult, yes.

(Walter Johnson): Okay.

Coordinator: And our next question comes from (Patricia Cavage). Your line is now open.

(Patricia Cavage): Hi there. Thanks very much, Aaron. I'm with the city of Seattle and I wondered if you look at all at rental housing and the effects of tech booms on rental housing in the city, specifically we're (unintelligible) opportunity zones and just looking for creative measures around increasing, you know, affordable units, potentially additional dwelling units and backyards and things like.

And Oakland had used 2010 Census to understand that around 25% of their housing is actually single family rental housing, so looking at this similar sort of lease model. So just wanted to - those two questions really around rental housing and then whether you are all tracking opportunity zones and development of - or increasing prices in opportunity zones. Thanks.

Aaron Terrazas: Yes. Absolutely. Two great questions. On rental housing, so the analysis on Amazon HQ1 was on asking rents, so median rent across census tracts in the Seattle metro area. As far as kind of availability of rental units, I haven't looked at kind of vacancy or absorption rates. But I think kind of your fundamental point that the mix of the rental stock has shifted, you know, between single family and multi-family rental units, I typically use kind of ACS data to look at that distribution of the rental stock over time.

On opportunity zones, my colleague (Alex Casey) is definitely kind of working on that question and researching, you know, specifically about what's happened to prices in opportunity zone areas. I'm happy to put you in touch with him. Feel free to reach out to me if you don't already know him. I know he knows a lot of folks at the city. But, yes, I'm happy to put you guys in touch.

(Patricia Cavage): (Unintelligible). That would be great. Thanks so much.

Coordinator: And our next question comes from (Seth Falcoony). Your line is now open.

(Seth Falcoony): Hi. I had a question about the median income or the necessary income related to the median home value prices on the cost versus commute slide. I'm just trying to understand how those were calculated.

Aaron Terrazas: Yes. Yes, so the necessary income, you know, again takes that median home value in that commute band and then facts out a necessary income, assuming the household spends, you know, 30% of their income on housing costs. I'm pretty sure we assumed a loan-to-value ratio of 80, so 20% down payment and I forget the exact mortgage rate we used in that calculation. It was probably something around 4-1/2, which is roughly around current mortgage rates.

Coordinator: And our next question comes from (Lance). Your line is now open.

(Lance): Yes. My question is how do you access the chat? I'm trying to figure out how I can access the chat dialogue box but I don't see any corresponding icons in my screen - on my screen.

Deborah Rivera: If you take your cursor and your hover towards kind of the bottom of the screen right where the PowerPoint is visible, typically you get some icons. They look like a phone. There should be a speech (unintelligible). I don't know if you can see it. Just click in the center of your screen, if you could just go there.

(Lance): Okay. Is it to - is it the icon immediately to the right of the phone symbol?

Deborah Rivera: It should be. It's blue and it has kind of like an empty speech bubble in the center. And if you click on it, it should open up your chat on the right-hand side.

(Lance): There you go. Okay. Great. I see it. Thank you.

Deborah Rivera: You're welcome.

Coordinator: And our next question comes from (Casey Martin). Your line is now open.

(Casey Martin): Hey, Aaron. Thanks for taking this, man. This is really cool. I had a question about the chart. You know, how -- you can tell me if I'm characterizing this correctly -- but the chart from California it sounds like sort of the expense of property is sort of following the exodus from Southern California.

Aaron Terrazas: This chart?

(Casey Martin): What's that?

Aaron Terrazas: This chart that you...

(Casey Martin): Yes, right. Are we seeing similar like - is it right to characterize it as an exodus? Like, are we seeing anything inverse? Like, do the property prices in California, in Southern California, are they going down at all because of the exodus or is it sort of being backfilled by other things? Does that make sense?

Aaron Terrazas: Yes. No, absolutely. I think exodus is probably a strong word. That's how I've seen it characterized. I think, you know, this is total outflow. There's also still an inflow of the population of California -- small. Net outflow I think is the correct characterization. But more importantly beyond that aggregation is the composition shift.

I think, you know, as California has become more expensive you do tend to see the younger people kind of entering the employment market for the first time go there and you see kind of older people, or mid to late career folks, staying there. Kind of young adult starting out families kind of who need space are more often than not the ones moving to these neighboring areas. So, as I said, exodus is definitely a strong word.

(Casey Martin): So the older generation is sort of cashing out their gains is kind of being backfilled by...

Aaron Terrazas: Sure.

(Casey Martin): Okay.

Aaron Terrazas: Correct. And then as to the point about prices, appreciation has certainly slowed, particularly in Q4, in the coast of California metros but it's still kind of above national paces right now. So for instance, you know, the Bay Area has seen a big slowdown. In fact, in Q4 you saw kind of a slight decline in median home value. That's the first time we've seen that since 2011, I think, but the year-over-year pace has slowed. We're not seeing negative year-over-year paces yet.

(Casey Martin): Okay. Cool. Thanks a lot.

Coordinator: And our next question comes from (Larry Field). Your line is now open.

(Larry Field): Hi. Thanks for the presentation. This is really interesting. My one question is I'm doing some volunteer work for a local service agency and I went to the FBI website for crime data yesterday and I was overawed. Is there a tractable place to go for crime data in looking at, you know, situations, you know, similar sort of analysis that you have here?

Aaron Terrazas: Yes. You know, I've never worked with crime data. I know that that's something people have tried to look at and kind of study it with respect to housing. Unfortunately, I'm not familiar with that data so I don't think I can help you. I'm sorry.

Coordinator: And our next question comes from (Aaron Riming). Your line is now open.

(Aaron Riming): Hey, Aaron. Thanks so much for the presentation. It's really great stuff. I work for the city of Renton. I was wondering if you guys have done affordability advantage studies for inner ring suburban cities related to tech hubs.

Aaron Terrazas: That's actually an interesting question. We haven't. But that's a great question. I'll definitely think about it. We do - I think we try to do kind of urban, suburban and rural affordability but I'll have to dig that up. Yes. I don't know if that's helpful.

(Aaron Riming): No, I appreciate that. And is the ZTRAX data is that available for public sector folks to do analysis as well or not?

Aaron Terrazas: Unfortunately, I think it's only university researchers. Yes.

(Aaron Riming): All right. Thank you.

Aaron Terrazas: Yes.

Coordinator: And our next question comes from (Candice Platt). Your line is now open.

(Candice Platt): Hi. Thank you for your presentation. Well, I like looking at the ZTRAX and I was wondering if there were examples of the different kind of studies that have been done using it.

Aaron Terrazas: Oh, yes. You know, I'm not sure we have a list. If you reach out to us, I can put you in touch with the person who manages that data set and they might be able to share some examples with you.

(Candice Platt): Okay. Awesome. Thank you.

Aaron Terrazas: Yes, of course.

Coordinator: And our next question comes from (Quentin Samsi). Your line is now open.

(Quentin Samsi): Hi. This is (Quentin Samsi).

Aaron Terrazas: Hi.

(Quentin Samsi): So I'm interested in the LEHD data and would like to know the frequent output of data and how it's refreshed.

Aaron Terrazas: Yes. So (Earlene), I don't know if you want to answer that. I - you probably have better knowledge than I do.

(Earlene Dowell): Yes. So the LEHD data is - we have a partnership with all of the different states and other territories and what they do is they send us their unemployment insurance wage records and we combine that with surveys and censuses to create the LEHD data. Does that answer your question?

(Quentin Samsi): Yes, great. Yes, because I thought it was like every ten years and isn't it too outdated but if we work with the states correctly then maybe it will be refreshed more often, so that's great. Is it free?

(Earlene Dowell): Yes. It's free and so the load data is currently - we're working it out with one of our larger partners. We have details that we're trying to resolve, and once that's resolved, we will be producing the 2016 and 2017 data. But we have other data sets that are current. Like we have the QWI, our quarterly

workforce indicator, the QWI explorer, and then the job-to-job flows explorer is also very current.

(Quentin Samsi): Oh great, great. Thank you.

(Earlene Dowell): Sure.

Coordinator: At this time there are no questions on the phone.

Deborah Rivera: Great. Aaron, we do have one question from the chat. It's a gentleman that unfortunately can't access or doesn't have access to a speaker. If you don't mind me asking his question (unintelligible). Just a second. Okay. So the question is, "On the migration and home prices data presented by Aaron does that include only individuals migrating and purchasing homes or does it include investors moving in those areas and capitalizing on the tech boom?"

Aaron Terrazas: Yes. So the migrations a job-to-job data and, again, (Earlene) will have more detail on this. This only includes, you know, employed people, so, you know, people for whom their employer filed an un-insurance - an unemployment insurance claim record. So, you know, it's not children, it's not household. It's a different concept. Right, (Earlene)?

(Earlene Dowell): Yes. That's correct.

Aaron Terrazas: Yes.

Coordinator: At this time...

Deborah Rivera: (Brittany)? I'm sorry. Go ahead.

Coordinator: We do have one question on the phone. One moment. And that question comes from (Collin McCarter). Your line is now open.

(Collin McCarter): Hi, Aaron. Thanks for the presentation. I was curious if you could just give a couple sentences about possible connections to other regions in the US. I was wondering especially about if the southeast is being - acting similarly as the southwest that you're showing here.

Aaron Terrazas: I'm sorry, you mean possible connections with regards to the migration outflows or home price trends or what did you...

(Collin McCarter): The relationship between the sales prices that you're showing and the kind of affordability and migration patterns, if a similar thing is happening in other parts of the country where you're seeing migration come out of a more like major urban core into maybe some of these like secondary cities.

Aaron Terrazas: Yes. No, absolutely. Definitely. I think that's one of the great questions that the job-to-job data really allow you to dig into because we are so rich in the - those metro-to-metro pairs. So certainly a lot of southeast cities have seen migration inflows to some degree from approximately West Coast markets but more from the northeast. So places like Atlanta, like Nashville, you know, the research triangle in the Carolinas and, you know, certainly Orlando and the Florida metros are seeing population inflows.

Also in the West Coast, you know, Northern Californians are also kind of leaving to some degree to places like Portland, Seattle, Boise, Reno, Salt Lake. You know, those tend to be popular destinations. So it's not only kind of a Southern California to southwest phenomenon. This is, you know, people moving happens across the country as well.

(Collin McCarter): Thank you.

Coordinator: At this time there are no questions on the phone.

Aaron Terrazas: Okay. (Earlene), do you want to I guess wrap it up?

(Earlene Dowell): Yes. So thank you everyone for joining us and thank you again to Aaron for such a wonderful presentation. Like I said, please come back next month when we talk to (James Spretzer) about older workers earning more. Thank you.

Coordinator: Thank you for your participation in today's conference. All participants may disconnect at this time.

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