

Issue 5

Contemporary Conversation: Sustainable Urban Development



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Introduction

About These Series

The Contemporary Conversation (CC) Series is a compilation of voices from experts in the transportation sector, focusing on specific topics and divided into their relevant subtopics. These pieces are taken from the Regional Mobility Dialogue Series, a series of conversations made from Dialogues organized by the Leonard Transportation Center (LTC). These Dialogues include a diverse panel of experts, from researchers and PhD professors, to key players/stakeholders in the transportation sector.

The purpose of the CCs is to provide the reader with an overview of the transportation issues faced in the Inland Empire and California. It is to do so by including a wide variety of perspectives which bring about a further understanding of the issues faced and their respective solutions proposed. The topics discussed can vary from housing, sustainability, fiscal policy, among others.

About This Issue

This Contemporary Conversation is around the sustainability of the urban development in the Inland Empire. The San Bernardino and Riverside County have been for years already one of the fastest growing regions in California, and while that is good for the counties, the federal and state government still have their priority set to a more sustainable future for the region. This CC is going to talk about the Inland Empire in numbers, the impact that the pandemic brought about for those numbers, and then we are going to see different approaches to arrive at the right results for sustainable development in the region.

This Contemporary Conversation is organized into three topics:

- **Our Current State of Affairs:** This section is purely databased, based only on the research put together by the LTC team. It is meant to show how things are looking like in recent years of the county of San Bernardino and Riverside.
- **Telecommuting's Impact on Urban Sprawl:** Covid has impacted everything and everyone, this section is meant to show how Covid has impacted transportation, housing affordability and job patterns in the IE.
- **Approaches to Sustainable Mobility in the Inland Empire:** Finally, this section is supposed to show a diverse set of solution proposed form different time background as for how we are going to make sure that the development in the IE is done sustainably.

Our Current State of Affairs (LTC)

The Leonard Transportation Center (LTC) is the voice for an integrated and sustainable transportation system in the IE. As part of the research done, people have been able to arrive at some crucial data for the development of this dialogue, this data speaks about what is currently going on with job growth, transportation, and housing, this data shows how the Inland Empire is currently doing. Dr. Collins will start the conversation by covering some key points about the job growth in the region to start pinpointing the trends.

Employment in the Inland Empire

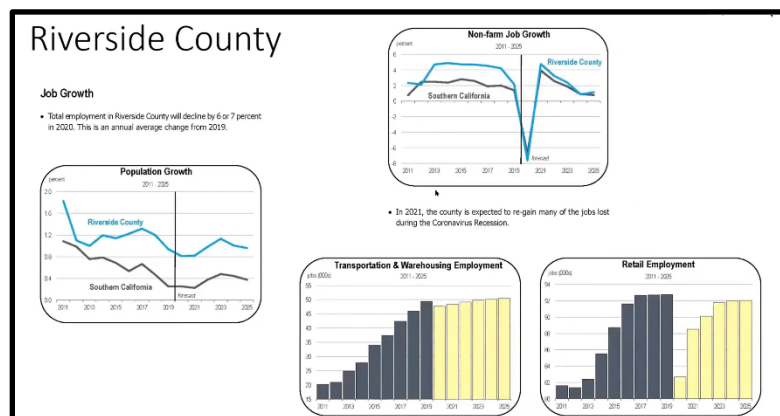
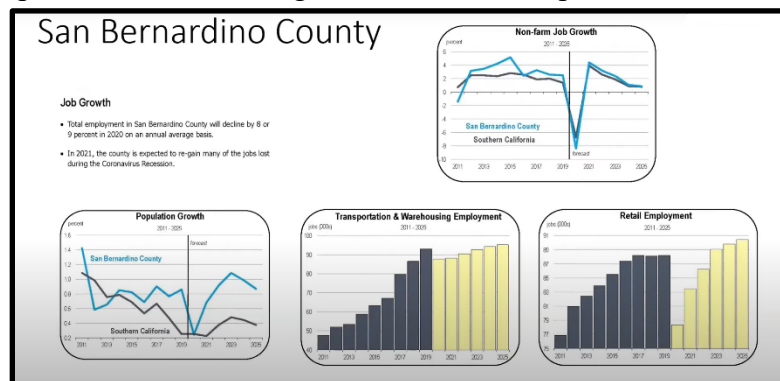
Dr. Kimberly Collins, Executive Director of the Leonard Transportation Center

Dr Kimberly started the conversation this time differently compared to other sessions. This time she gave some data to analyze before getting the conversation started, starting with an analysis of the current economic situation in the San Bernardino County:

In comparison to San Bernardino County, in Riverside it is expected that the lack of population growth will only stabilize both transportation-warehousing and retail back to pre-COVID rates.

The Job growth was expected to decline by 6 or 7 percent in 2020. After 2021, it is expected to return to normal levels. However, unlike San Bernardino, Riverside will not experience significant growth, likely due to its stagnant population.

Together Riverside County and San Bernardino County make up for most of the Inland Empire's total land. For these and many other reasons it is important to analyze the trends that happen in the two counties in comparison with the rest of the region as both of them have different characteristics. In our communities there are still located many of the essential workers that are still having to go to work in our warehouses, in our hospitals, grocery stores, etc. It is interesting though, to see that despite warehousing being such a big factor of jobs in the region, the graph still shows that the percentage of people who are staying at home from both counties is below the average of the rest of the state.



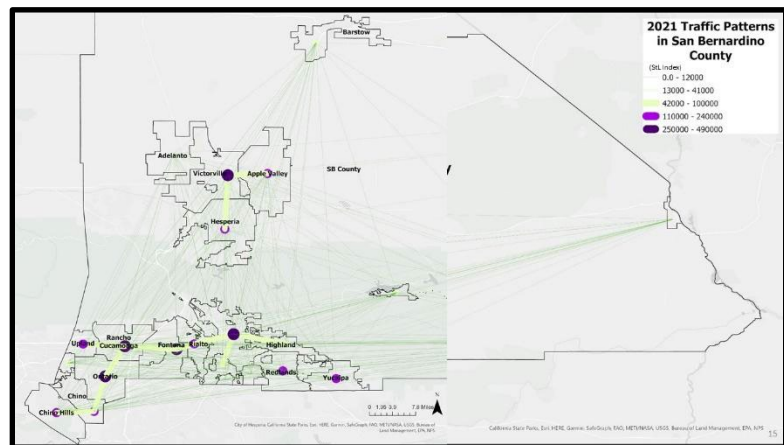
Dr. Collin's overall intention with her presentation was to open the stage of conversation among the presenters of the day. Moving on with the conversation, Dr. Raffi is going to speak about the significant key role that transportation infrastructure plays in San Bernardino traffic and travel patterns.

Diving Into San Bernardino's Travel Patterns

Dr. Raffi Der Wartanian, Research Fellow of Transportation Policy, Data Science, and Sustainability at the Leonard Transportation Center.

Dr. Raffi starts the conversation by discussing Big Data and, more specifically Vehicle Traffic Patterns and Connectivity in San Bernardino County. Raffi goes over the study for San Bernardino County in 2021. The data used for the study is Streetlight Data from 2021 and the sample count was a little over 900,000,000. The vehicle types that were counted during this study included all types of vehicles, ranging from light, medium, and heavy-duty vehicles. Raffi explains that they were able to utilize this big data because the university has such advanced software to undertake the big data.

The emphasis on the data shown and presented in this presentation are just for San Bernardino County, the purple dots represent the trips within the city. Raffi then states that there are two main ideas that can be included by looking at the map this way. The first main idea is that the concentration of purple dots within major cities like San Bernardino, Ontario, and Victorville paints a clear picture.

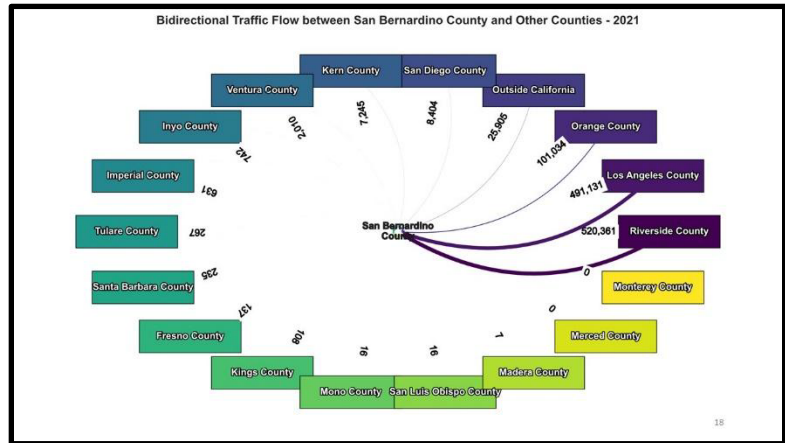


These areas experience a high volume of trips happening entirely within their city limits. The second main idea can be drawn by looking at the map a little differently, we can observe that there is a lot of travel being conducted through the northern part of the Inland Empire, also known as the High Desert. Cities that experience the heaviest traffic are Victorville, Apple Valley, and Hesperia.

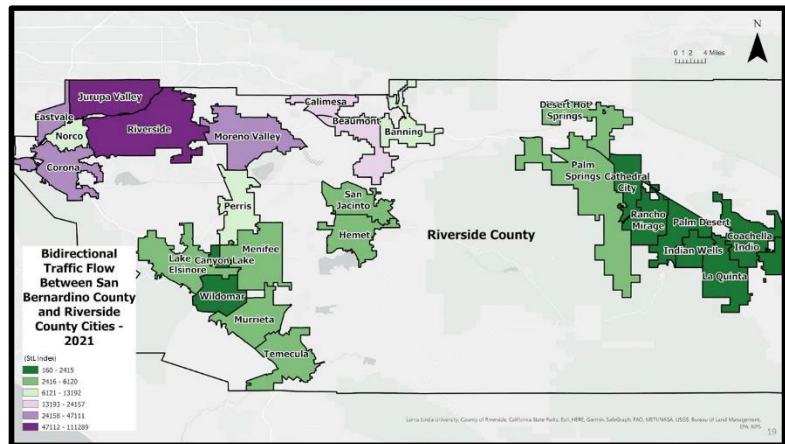
Switching focus to the total traffic index, essentially all trips that start and end within a city, this graph further supports the first main idea brought up, which is notable because it shows that the intercity traffic is the highest within San Bernardino County, and of all the cities, the highest traffic experienced according to data is in San Bernardino. Again, pushing the idea that trips that start and end in each city is much higher than anywhere else.

Moving on to big data study about bidirectional traffic flow between San Bernardino and other counties. Raffi highlights the highest trips that leave San Bernardino County are Riverside and Los Angeles Counties. Riverside County has 30,000 more points than Los Angeles County. The County with the least traffic between it and San Bernardino is tied between Monterey and Merced

County, with astonishing 0 points. Raffi then talks about how surprising it is to consider Riverside to have a higher traffic flow from San Bernardino County than Los Angeles, considering how important and large Los Angeles is and the job opportunities it offers. The top 6 counties that San Bernardino leaves are Riverside at 520,361, Los Angeles at 491,131, Orange County at 101,034, outside California at 29,905, San Diego County at 8,404, and Kern County at 7,245. It is interesting to note that the numbers jump dramatically from one another, the closer you get to the top three the bigger they become.



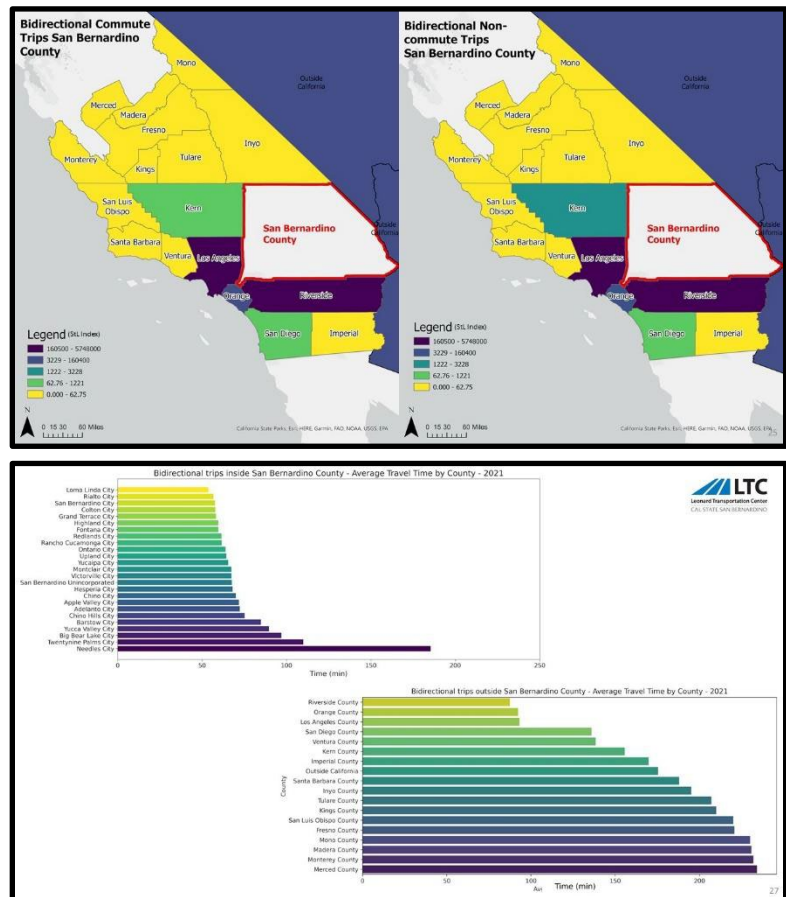
Taking a closer look at Riverside County and its various cities. According to Big Data reports, Raffi found that if trips start or end in San Bernardino County, they mostly come from Jurupa Valley, Riverside City, Moreno Valley, Eastvale, and Corona. The darker and more purple areas on the map show where most of the trips occur and as it gets light to dark green shows you the least number of trips that occur in the area. According to Big Data reports, approximately 33.6% of all the trips that happen within San Bernardino County are for commuting; for work. Non-commuting is double the rate of commuting which Raffi expressed as a very big surprise, the rate is 66.4% for non-commuting purposes; for any and all non-work reasons such as entertainment or visiting.



Raffi points out for both graphs that out of the 25 cities in San Bernardino, 5 major cities are consistent. With trips being conducted in San Bernardino with 12.3%, Rancho Cucamonga with 10.2%, Fontana with 10.2%, Victorville with 9%, and Ontario with 8.5%. When adding each of their respective percentages, they both equal approximately 50%. This means every other city in San Bernardino County collectively adds to a total of 50% as well, being extremely low in both categories, with Barstow benign listed as the lowest with 1.4% on home to work trips and 1.9% home to other, however it is the lowest listed on the graph but it is not the lowest as the lowest is too small to be named.

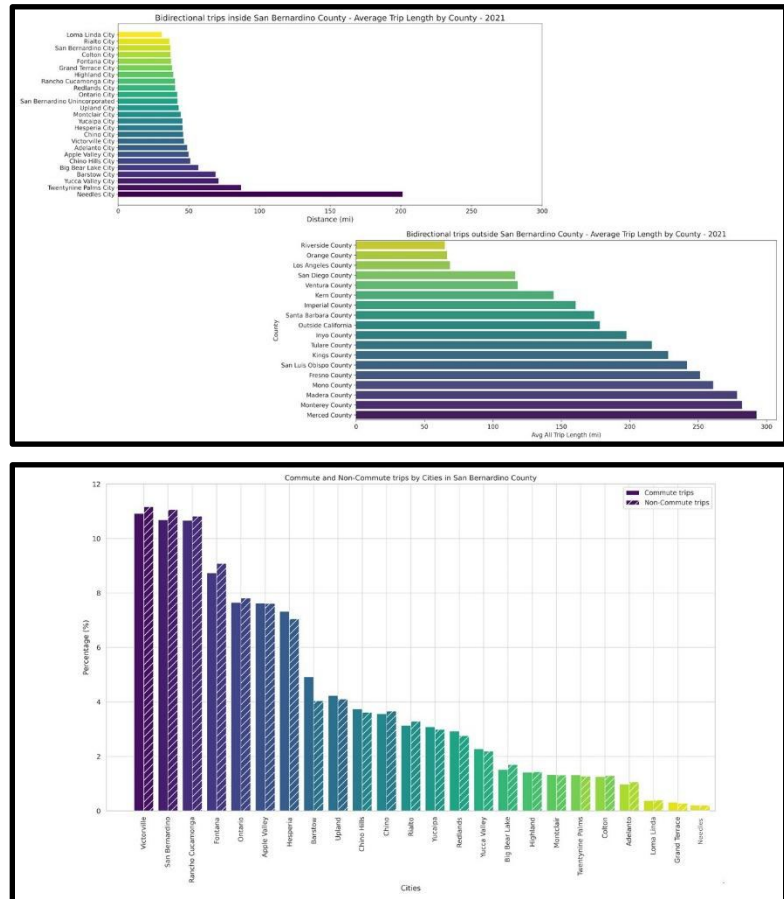
Switching focus to commute and non-commute trips outside the county. On the left are the commutes and on the right are the non-commute trips. It is worthwhile to note that they are very similar with Los Angeles and Riverside counties being visited the most followed by Orange County. However as much as they are similar there is a slight difference between the two. Kern sees more trips that either originate and come to San Bernardino or trips from San Bernardino come when it comes to non-commute trips but less when it comes to commute trips.

Switching focus to the time spent on the road and the miles covered, this is split into two graphs; the top left graph depicts trips originating in the county and the bottom right graph depicts trips originating outside the county. Raffi expresses a little shock to see the numbers for Needles. But it can be explained through some factors, for Needles City the extremity of the time spent driving there can be explained way through the distance needed to travel to get there. While Needles is the outlier in the situation, the average distance traveled from city to city in the county is approximately an hour or an hour and 10 minutes, this can be explained by the. For trips heading to different counties, the lowest time spent on the road is Riverside, Orange, and Los Angeles County, the time being approximately an hour and 30 minutes. Raffi expresses the data will be used in key findings to understand the issue of connectivity.



The miles traveled. This section is divided into two sections: the top left graph focuses on the miles traveled within San Bernardino County, and the bottom right graph is the trips outside of San Bernardino County. They take the average miles per day and then they multiplied it by 365 days to get the yearly average and we can specifically see trips per city. Cities ranging from Loma Linda to Chino Hill have approximately traveled 40 to 50 miles, in their respective cities. Raffi makes a reference back to the previous slide and emphasizes the 1 hour and 10 minutes as travel in our County, this slide tells us that time is approximately 40 to 50 miles. Raffi draws on the idea that because of the far distance and time spent traveling, there is room to enhance the current transportation quality in the Inland Empire.

The initial study for the Vehicle Miles Traveled (VMT), how they came to their conclusions is they took the index for the traffic and then multiplied it with the daily average of miles traveled. After getting that number they then multiplied it with 365 to get an idea of per trip and miles traveled in our County. This section is divided into two graphs, the graph on the left is commuter trips and the right depicts non-commute trips. Raffi emphasizes that these graphics are indexes and do not represent actual travels of trips, as the sample used was based on street light data rather than vehicle samples. For the graphic index there are minimal changes between each other. The only deviating statistics we see is Fontana and Loma Linda, with both cities seeing more trips in the non-commute section than the commute trips.



Raffi's presentation had analyzed the Inland Empire and what shapes its economic and infrastructural aspects. Our next speakers are a group of students who will dive deeper into the interconnectedness of housing and transportation within the region.

The Nexus Between Housing and Transportation in the IE

Carolina Carlos, Master Student of Public Administration from CSUSB.

Dorlins Villalobos, Public Policy Grad Student at UC Riverside.

Jordan Leffew, Public Policy Grad Student at UC Riverside.

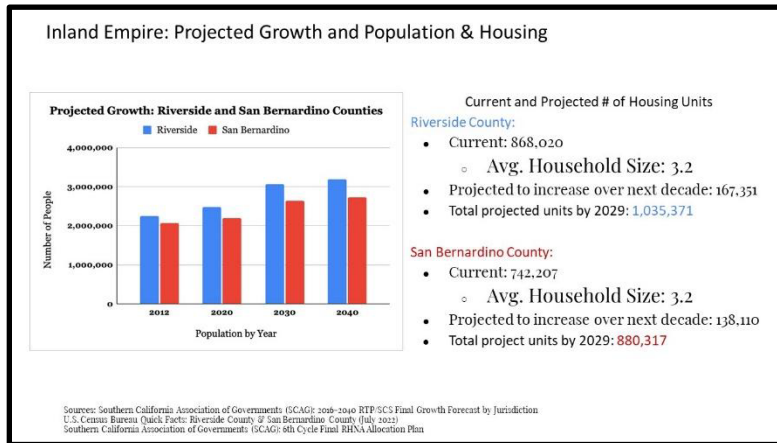
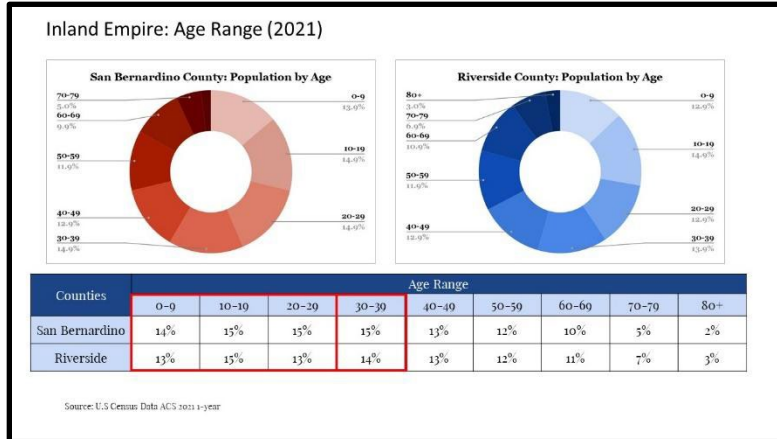
Kirill S. Rogovoy, Civil Engineering Student at Cal Poly Pomona.

Yasamin Rasouli, Civil Engineering Student at Cal Poly Pomona.

The group of student speakers started the presentation by giving an overview of what they were going to be talking about: "The nexus between housing and transportation in the Inland Empire is a complex interplay of spatial, economic, and socio-demographic elements. The Inland Empire has attracted many looking to live the American Dream of owning a home but this has created a

trade-off with transportation challenges/costs and environmental impacts.”. The purpose for this research project is to examine how the suburban and regional characteristics in the Inland Empire influence housing and transportation choices and affordability, which impacts the overall quality of life within the region.

Rasouli then went on to talk about certain demographics within the region. In their study, she found out that within the Inland Empire, according to the U.S Census Data of 2021, in the Riverside and San Bernardino County we could see that the median age for the population is among 30 to 40, however, near 30% of the population is in between 10 to 30 years old. This indicates that there is a healthy amount of youth in the region, ready to take on the new upcoming challenges and replenish the workforce. Ms. Villalobos continues the conversation by adding into the picture that in this sense, the population in both counties that make up most of the area of the Inland Empire is going to keep growing steadily, data from SCAG

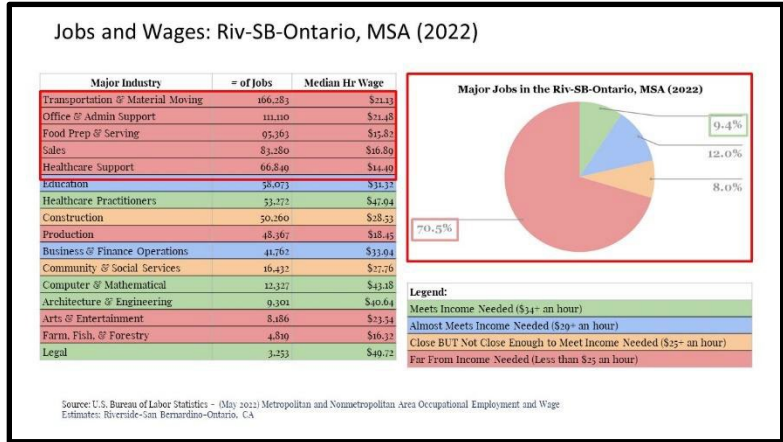


shows that the number of housing units current and projected in San Bernardino County by year is going to increase 167,351 over the next decade, and Riverside County is going to go from the current (2022) 868,020 to 1,035,371 by the year of 2029. This will probably decrease the current average household size of 3.2 in both counties.

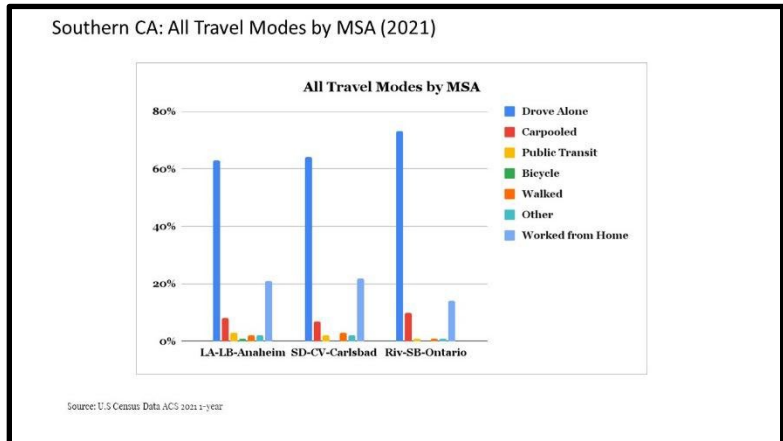
Shortly after it was turn for Jordan Leffew to speak. She continued the conversation by making some conclusions from the data previously shown, for example, based on this data and another research form the American Enterprise Institute, we can say that the Inland Empire is the fifth fastest growing region in California, it also locates four of the five fastest-growing cities in SoCal, from which three are in Riverside County. The law of supply and demand then does its job, and the rising demand for housing drives rent prices up significantly in the region, for this reason is that we can see that the average monthly rent in Riverside for example is about \$1,971, or in San Bernardino is \$1,813, for both just about 2.3 times Californian minimum wage.

Compared to other cities in the LA county like Long Beach or Anaheim, really it seems like most of the industries within the IE region give a wage that is qualifies as far from the income needed.

Only 5/16 industries actually meet the income needed to sustain a house rent in the region, 58.8% of the total chart shows that are industries that don't pay their workers the median hourly wages that they require in order to sustain a home in any of these two major counties. On the basis of this data Leffew assumes that the IE residents "face trials of finding quality jobs in our region which may, thus forcing them to look for jobs outside the region even if that may cause a longer commute". This makes the Inland Empire's qualified workforce to escape the region many times, it also makes an effect in the carbon footprint that we leave since the commutes are longer.



Next, Rasouli proceeded to talk about the travel modes that are generally used in the region to commute to their jobs. According to the U.S Census Data ACS we see that 73% of citizens from Riverside, San Bernardino, and Ontario drive alone as their way to get to their job destination. It was also shown that three cities also have the lowest rate of people who work from home. A small highlight might also be that out of the three regions examined in the graph, the IE does have the most amount of people who carpool together; this might be due to the number of locals who work in the same area. As a trend for the whole region in general we see the reflection of SoCal's dependency on the highway system because of the rates of people who use public transit in its main three regions.



Looking a little deeper and comparing cities within the Inland Empire, we find that effectively they are the top in commuting time compared to their neighbors but with Ontario City being the one with the highest commute time, data shows that Ontario city's Average Commute Time is of 31.4 min compared to its neighbors San Bernardino (28.9 min) and Riverside (29.7).

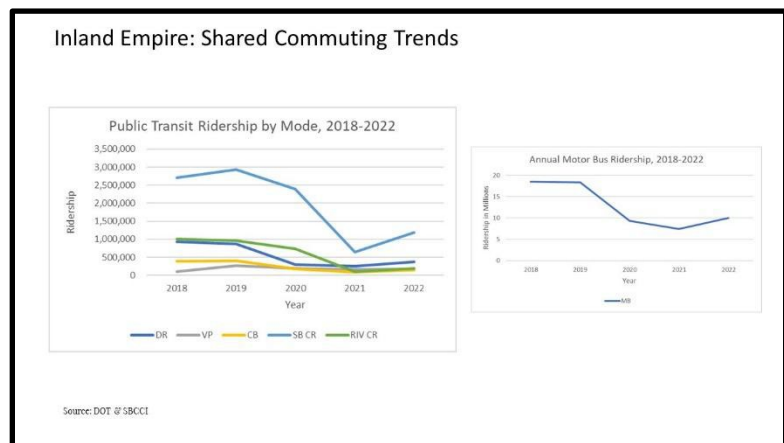
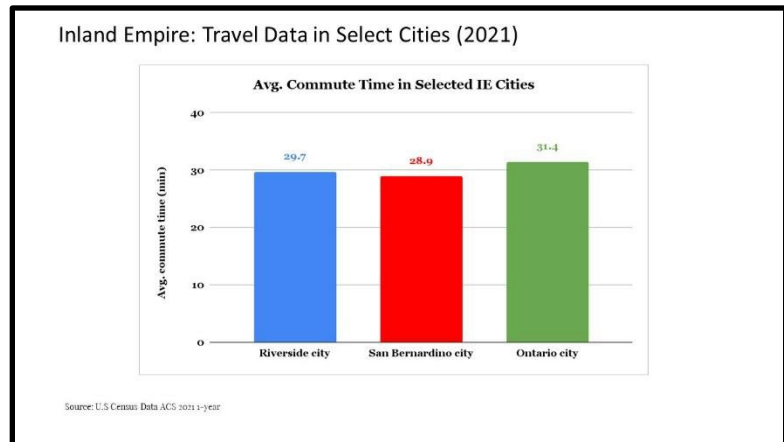
Rogovoy continued the presentation and started talking about the Shared commuter trends and options. He presented a definition for the different modes of transit across counties, there is the VanPool (VP), a method of transportation for a group of people traveling in a single vehicle to a common destination, there is Demand Response (DR), a flexible schedule based bus that is based on the user's needs, there is the common Motor Bus (MB) which is the normal fixed route service,

Commuter Rail (CR) which is the normal rail tracks that are used for shared freight railways, generally used to cover long distances, and finally the Commuter Bus (CB), a bus used for long haul commutes which usually operates in freeways.

He continued by sharing two charts that display ridership per region in the Inland Empire. One of them displaying only MB as it is the most common way of ridership, while the other chart shows the rest of the mechanisms previously mentioned. The graph shows the drop expected in CR in 2020, but it also shows how all methods have been gaining popularity back, CR highlights as the second most widely used way of transportation in the region of Riverside and San Bernardino. It also shows the drop in ridership of 2020 in MB, but also projects an upward trend for the upcoming years which he qualifies as a good thing.

The next thing that he goes on to talk about is the percentage breakdown of public transportation in the IE for the years of 2018 to 2022. In this graph we can see that the MB are by far the most popular type of commute, followed by the San Bernardino CR, following from this, we can assume that the San Bernardino line is more popular by the Riverside line, Rogovoy explains this by saying that it might be because there are more people commuting from the city of San Bernardino since it's "more inland". This graph was especially important to complement what had been previously stated in terms of common ridership usages, and it was also a great resource to see the next piece of data which shows the transportation cost related to income in percentage compared to LA, San Diego, and the rest of the SCAG region:

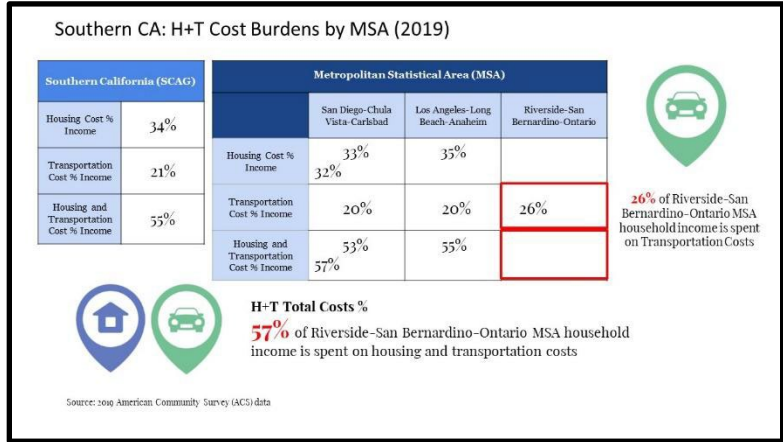
So, what does it mean when people are choosing to drive alone, or commute or choosing to live further out when we look at SoCal? This question is answered by Villalobos. She mentions that housing cost on average is 34% of people 's household income wages, with transportation is not a different story, as it is at 21%, and in total it's basically averaging out that households are spending around 55% of their incomes in just housing and transportation. The graph shows that housing cost



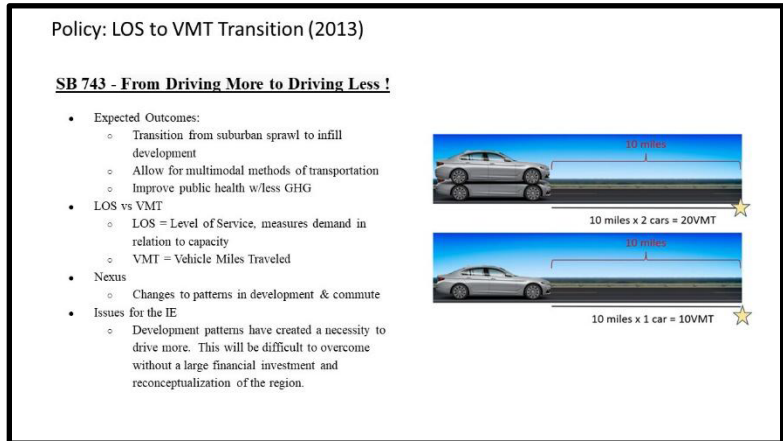
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income is actually a bit more affordable in the Inland Empire, however, when we look at the transportation cost, we see that 26% of income is going towards transportation costs and then we see that this changes the overall to be higher in the region with a total of 57% of household money that is spent just in housing and transportation.

The Dialogue moved on into looking at policy that is meant to solve the issues presented so far. Starting with SB 743, a policy passed since 2013 that is meant to reduce the VMT in all the Californian regions, this acts accordingly with the state's high expectations for reduction in greenhouse gasses. The VMT is a metric of how many miles of travel while Level of Service provides a measure of demand in relation to capacity, the changes that are supposed to be seen in the change of patterns in development and commute. In the IE though, some development patterns have created a need to drive more, this will be difficult to overcome without a large financial investment and reconceptualization of the region.



Next, he started talking about the SB 375. Rogovoy explained that the Sustainable Communities & Climate Protection Program of 2008 was expected to improve public health through greenhouse gas reduction emission, this by integration of housing, transportation and land use. The order is to create sustainable communities' strategies which include the Regional Transportation Plan (RTP) which refers to regulating transportation financing, and the Regional Housing Needs Allocation (RHNA), however, when it comes to this law our region has been a major setback due to development still being spread out, and because there are no quality jobs.



Leffew went on to speak about SB 686, Affirmatively Furthering Fair Housing from 2018. This policy creates new requirements for housing elements due to be revised on or after January 1st of 2021. SB 686 is supposed to conduct an assessment of Fair Housing including existing segregation and inclusion trends, provide a Sites Analysis that evaluates and addresses how particular sites are available to meet the needs of households at all income levels and transform areas of poverty into

areas of opportunity. For the region, “24 out of the 57 IE jurisdictions housing elements are currently out of compliance as of August 2023”.

Finally, Governor Newsom added three more policies into consideration, the SB 561 and the AB 2233 which build upon the success of the Excess Land for Affordable Housing Program. The AB 2592 now requires DGS to prepare a report to the legislature on a streamlined plan to transition underutilized multistory state buildings into housing. This has been looked at as successful because it brought 16 partnerships between state and affordable housing developers, it also produced sustainable, innovative, and cost-effective housing on state-owned excess. It was especially useful in the city of Riverside where 4.07 acres of excess land qualified for the Affordable Housing Project.

Policy: Excess Land for Affordable Housing EO (Passed in 2019)

EON-06-19:

SB 561 and **AB 2233** codify and build upon the success of the Excess Land for Affordable Housing Program.

AB 2592 requires DGS to prepare a report to the Legislature on a streamlined plan to transition underutilized multistory state buildings into housing.

The program is deemed successful because it brought:


- 16 partnerships between the state, affordable housing developers, and local communities
- produced sustainable, innovative, and cost-effective housing on state-owned excess.
- It created a pipeline of no more than 4,400

Source: [new homes in various stages of development](#)
2020 CA.gov | Riverside Affordable Housing Project

Riverside Affordable Housing Project

Location: 2524 Mulberry Street (4.07 acres)

This site is located within an Opportunity Zone and Qualified Census Tract.



Some conclusions drawn by the team were the following:

- Housing and transportation costs increase the further you move away from central areas.
- The Inland Empire is falling behind in housing, jobs, and transportation services and options.
- The region needs to capture more state and federal funding programs to address the challenges its residents face.
- Regional leaders must work together to foster alternative futures for the region.
- Bringing quality jobs to where people live in the region, is just as essential, as bringing houses to jobs.

We have now laid down some of the key data that is especially important to take in mind as we move on to the next topic, in which we are going to have a group of leaders and experts in the field tell us about the impacts of the pandemic that lead to our current state of affairs, and how we can use that to our advantage, to make things right from the beginning.

Telecommuting's Impact on Urban Sprawl

As shown in the section before, the data shows how the pandemic had important impacts in the housing and transportation industries. This section is about housing, covid, and how that has affected transportation patterns. The first speaker in this section will introduce the concept of urban sprawl and provide a strategy that perhaps can be used to build back sustainably.

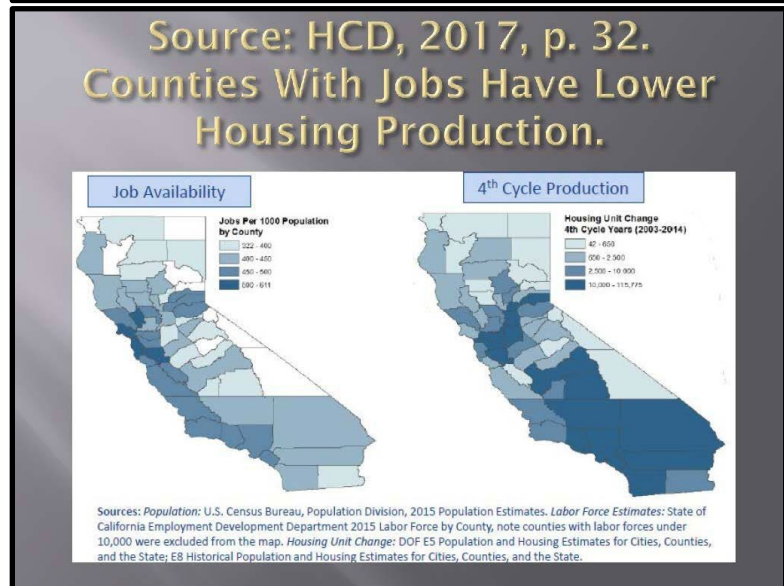
A Vision for SoCal's Urban Sprawl

James Mulvihill, Part of the San Bernardino City Council, Ward 7

James Mulvihill's point of view towards transportation is based on the integration problems within housing and smart growth. Part of "dumb growth" is a concept known as urban sprawl, which is the great expansion of low-density urban development, segregation of commercial and residential land uses, and associated with various design features that encourages automobile dependency. The negative impacts from sprawl include more pollution, loss of wildlife habitat, traffic jams, loss of farmland, increased taxes, increased school costs, deteriorating downtown areas, and loss of community, to name just a few.

"Did anyone here not come by automobile? OK, that is part of dumb growth, we have no options." Southern California, and most of the United States, after the Second World War, developed communities based on the dependency on the automobile. Where people live is separate from where they work, schools, shopping and so on, which requires a person to drive their automobile. He uses housing in

California as an example. Besides Hawaii, California has the highest housing costs in the country,

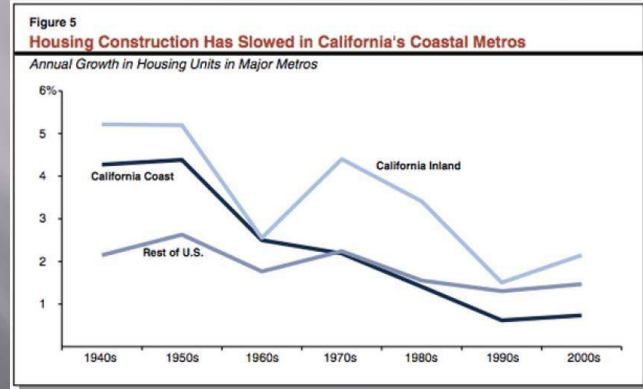


with areas along the coast up to three times more expensive than inland areas. Why, if housing is so high, have no more houses been built? Why is there no more profit in building homes? If housing and jobs are located next to each other, there would not be a transportation problem. That is a large component to congestion. Specific to our region, everyone is trying to go from the Inland Empire to Los Angeles County or Orange County because that is where all of the jobs are. “But of course, they are not producing housing there”, according to Mulvihill.

Why no housing? One of the main issues, especially for a politician in promoting housing in coastal areas is community resistance. This includes, community resistance to new housing, lengthy environmental reviews that reduce or stop housing development, local financial structure favoring nonresidential development and limited vacant, easily developable land, to name a few. What is Smart Growth? Mulvihill explains Smart Growth as “a mix of land uses, it’s four stories or eight stories, compact building design, higher densities, a sense of place identity, preserving open space and farmland.

If you condense and compact growth, you are going to have more land for parks and open space, which goes along with clean air quality.” Alongside Smart Growth are Transit Oriented Developments (TOD) that include a transit station with surrounding pedestrian amenities, higher intensity development nearest the station and decreasing to the edge of the TOD area for compatibility with non-TOD. Also, a compact walkable area with pedestrian connection linking businesses, residential neighborhoods and transit stations, an interconnected street network with walkways, open space/landscaping, and traffic calming features, e.g., curb pop-outs, bicycle treatments, etc. A fine example of smart

Housing Construction Has Slowed in Coastal California. (LAO, 2015)



“Packing House” in Claremont, California.



- ▣ In 1950, Claremont was center of 4000 acres of citrus.
- ▣ In 1965, one million boxes of lemons were packed.
- ▣ The “Packing House” is the remaining image of four major facilities.

growth development can be found in the City of Claremont, California's new Packing House District. The Packing House, which is about a quarter mile from the metro link, contains boutiques and eateries, and hundreds of upscale housing units in nearby locations. This leaves recreational and restaurant areas close by, so people do not have to drive; and the metro link nearby that can take them to downtown Los Angeles and other locations.

Finally, the question

that remains is do TODs provide an opportunity? In the past, from post WWII and up until 2012, there was a reliance on redevelopment agencies "to come in and condemn property, if necessary, through eminent domain". Through this process, construction of buildings, including shopping malls and housing, were possible. However, during Governor Jerry Brown's term, he and the court system eliminated redevelopment agencies in February of 2012.

Is Transit Oriented Development an Opportunity?

Over most of the last 60 years, California cities relied on local Redevelopment Agencies to fund and implement many urban revitalization programs that transformed the state's cities. A similar effort would be necessary to initiate the widespread adoption of TODs.

However, in 2012, in a move to close California's budget deficit, Governor Brown's administration closed all Agencies – thus the entire Redevelopment program was ended.

In conclusion, as Mulvihill stated, "the reality is that you all got here with your cars and of course you didn't have any other option of getting here. If we lived in another city, like San Francisco, the choice would have been different, in other words, some of you would have come with mass transit."

Mulvihill spoke on the transportation challenges faced in an urban sprawl and the importance for smarter and better strategy growth. The next speaker, Stephen Finnegan, is going to talk about how telecommuting during the pandemic has changed trends which will mean a change in strategies as well.

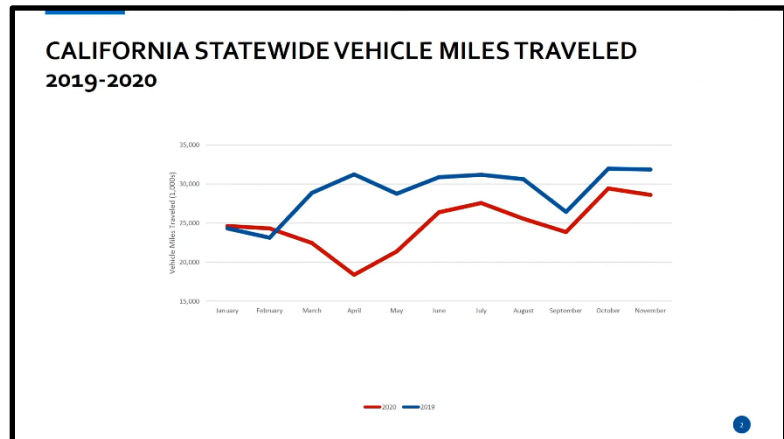
Pandemic Telecommuting Here to Stay?

Stephen Finnegan, Government Affairs Manager at Automobile Club of Southern California (AAA)

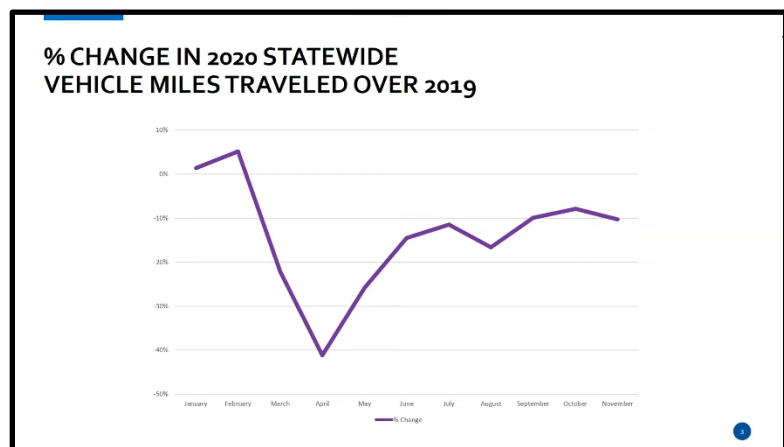
Steve started his talk hinting that he is definitely going to talk about telecommuting trends and if it is here to stay. He described how it is to work back at the office, he stayed at home for a couple of months during the lockdown in 2020 but he came back to the office already by 2021 together with 200 people, although he described that the capacity of the building is for 3000 workers so that offers some other hints into the telecommuting trends back then.

"Is telecommuting here to stay? – Nobody knows for sure" he said. He agreed that it is a big unknown to just predict how the future is going to look like, however we can look at the data:

Finnegan presented a graph which shows the California statewide Vehicle Miles Traveled (VMT) comparing the years of 2019 (pre-covid) to 2020 (covid). In the graph it is shown the clear trend in February where miles traveled in 2020 was about to take the same shape as in 2019, however, the lockdown is visible due to the downwards trend that it went instead. In comparison to 2019 in April where the miles traveled reached its first peak, in 2020 it is shown that it reached the lowest levels of vehicle miles traveled with a difference of more than 10,000 in VMT by thousands (42% drop). Steve pointed out though, that ever since that difference the shapes of the trends have been coming back to normal for the rest of the year, so much so that by November of 2020 we had reached 90% of VMT compared to November of the previous year, he did this by showing on the next graph the same information but this time shown in percentage compared as when it was “normal”. He also reported in that graph that there was an increase in accidents and money that had to be returned to the insured, a clear trend of long mile traveling was also reported which concurred with the information provided initially by Dr. Collins.



In the next slide of his presentation, Steve made a comparison between 12 years ago from 2020 during the time of the great recession in the US and the current Covid-19 pandemic, he attempts to do this as she is trying to answer the questions if we will be coming back to “normal”, see if new data can help us answer the initial question. During times of the great recession, we did see some trends in the way it affected transportation, a lot of people had less money and we did see declines in VMT levels same as now during covid, there was also a lot of predictions that suggested that things wouldn’t get back to the normal scenarios, and even with all of the predictions, Steve said, we were still able to see number in VMT going back to normal, in fact at some point forward we reached the highest VMT ever. In 2020 we will have a similar situation but not the same, in this case we have a lot of people just telecommuting, driving dropped, transit usage dropped, and clearly that indicated an increase in stay at home. The question is, are we not going back then?



The answer according to some, says Finnegan, is that in fact things might have just changed forever. Many companies have announced that they will let their workers work from home for extended periods of time, maybe even indefinitely, it really seems like that is the case and that will have an impact on driving/transit. But many others say that it is not true as we also see some tech companies building massive in person campuses for their workers, data shows as well that traffic in California is back to 90% in comparison to 2019, some places even 100%. It is really hard to tell but the audit seems to agree that we must be ready for all the different scenarios to keep providing the solutions effectively.

Our last speaker, Stephen Finnegan, focused on telecommuting trends and how their impacts reshaped the commuting patterns, transportation behaviors, and VMT. The next speaker, Jack Liebersohn, will develop a little bit more on the topic by bringing up data and real estate.


Five Facts about Remote Work and Real State from Recent Academic Research

Jack Liebersohn, Assistant Professor of Economics at UC Irvine

The first fact showcased by Liebersohn is how the COVID-19 pandemic caused a surge in housing, however, since 2020 there has been no evidence of the surge slowing down. Along with owning a house, more people want a safer and bigger home.

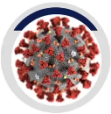
Continuing with this idea, we take a closer look at the data, it tells us that the formation of new households has been on the rise since 2001, and since then the demand has been met with a steadily increasing supply of homes. In 2001, in 2020, and in 2021 there was an increase in the demand. Liebersohn explains this phenomenon away by explaining that this means people are moving out of their parents or out of their roommates and are looking to settle alone. This in turn increases the overall demand for

PAST, PRESENT, AND FUTURE ...




10+ YEARS AGO

- Peak VMT?
- Peak Oil?
- Peak Car?




PANDEMIC

- Driving dropped
- Transit use dropped
- Work at home increased
- Staying at home increased



NOT GOING BACK?

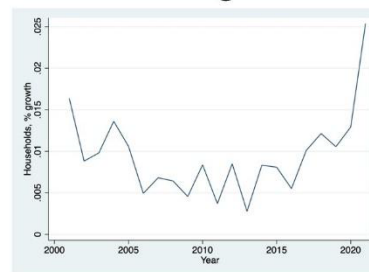
- Things have changed forever / The world will never be the same
- Companies indicate they will let employees work from home indefinitely
- Impacts on driving/transit?



BACK TO THE FUTURE?

- Traffic in CA back to 90% of 2019 / Other places 100%
- "Although traffic was down in 2020, it's not going to become a trend." – TomTom
- Tech companies proceeding with massive new in-person campuses

Fact 1: The COVID-19 Pandemic Increased Demand for Housing

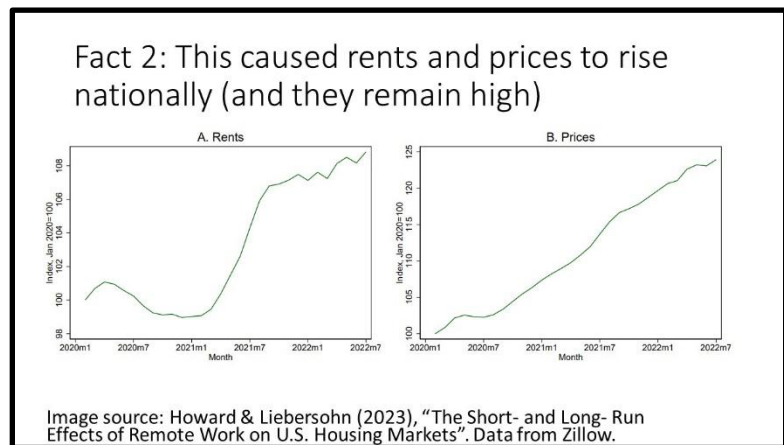


- Home offices
- More time spent at home
- Move out from roommates
- *Some of these trends will continue*

Image source: Ozimek & Carlson (2023), "Remote Work and Household Formation". ACS data.

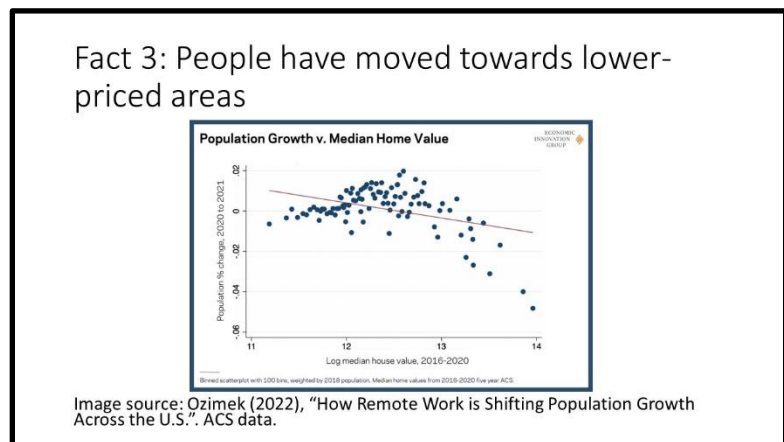
housing, the implication of this as Liebersohn explains is the demand. While it has partially slowed down the overall demand still is showing higher than there is supply.

The second fact as explained by Liebersohn is cost, the house on the left displays the rent over time, with a sharp increase in 2021. Despite adjusting for inflation there still is a lot of data that tells us there is a trend, and that trend is expensive and costly. The data shows that despite being 1 year after the lock downs, the cost still has not returned to the pre-pandemic original cost.



Liebersohn points out that there is some evidence suggesting that rent is falling but unfortunately in the grand scheme of things, it still has not changed and is continuing to stay the same. Homes are dramatically costly. On the right, we are shown a graph that extends from January 2020, we can see that before the pandemic they were a lot more affordable, however as Liebersohn explains, during the Pandemic there is a surge in prices that still has not gone back to the pre-pandemic days. Liebersohn reminds the audience that all of this cost is the result of the increase in demand for housing. Liebersohn notes that despite the increase in interest rates which are reducing mortgages, the trend has little to no change and continues to trend toward more cost.

Liebersohn states the third fact is the shift in the location of where people want and or choose to live. The x-axis gives us the median household value by city, Liebersohn further explains that you can interpret each dot's percentage change. Liebersohn also explains that the y-axis is the population change for each city, this ranges from 2020 to 2021. Liebersohn notes that the farthest

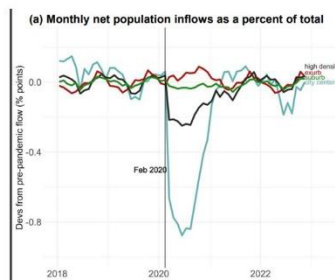


right shows the cities that have less population and are the most expensive and then the cheaper cities are mostly placed on the left. Liebersohn believes that the rise in working from home remotely, has led to people leaving the more expensive cities and opting to live in less expensive cities. This would answer the significant decline in population seen on the graph.

Looking closer, Liebersohn examines Southern California trends rather than the national trend. The graphic shows the population inflows and outflows from different regions in each city, this graph is indexed in 2020. In the middle is the blue line, this lines the population movement into or

out of the cities. The black line tells us the population movement in the high-density regions of the city. The red line tells us the population movement for exurbs and the green line shows the movement for the suburbs. Liebersohn explains that he interprets the graph as since February 2020, the start of the pandemic, there has been a major outflow from the city, however for the high density it is to a “lesser degree” as Liebersohn explains. As for the exurbs, they see movement toward the city and as for the suburbs they are fairly constant in population movement. Liebersohn draws our attention to the big population movements, which all appear to happen in 2021 and early 2022. Another thing he draws our attention to is the fact the population inflow for the city has not reversed, Liebersohn elaborates that this significant shift has not reversed, meaning “this was a one-time shift of people.” As for current trends, the population out of the city does not appear to be similar to the pandemic shift of movement, however, Liebersohn reinforces the idea that the city's population has not fully recovered to the pre-pandemic population.

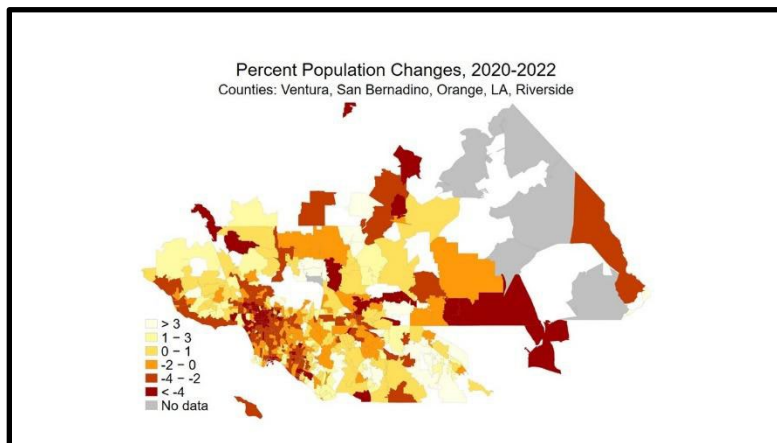
Fact 4: A large part of this is due to moves from CBDs to suburbs



- Outflows from city center and high density areas in 2020
- Trend has slowed but NOT reversed

Image source: Ramani & Bloom (2022), “The Donut Effect of COVID-19 on Cities”. USPS data on address changes.

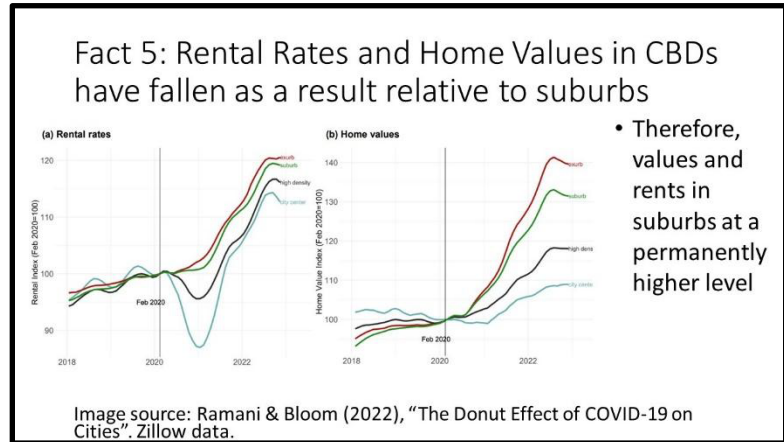
Looking at the specific region of Southern California and showing how population has shifted, Liebersohn was able to make this graph using 5 major counties in Southern California: Ventura, San Bernardino, Orange, LA, and Riverside County. Then after he graphed the percent population changes from 2020 to 2022 and using zip codes to determine population movement. Liebersohn



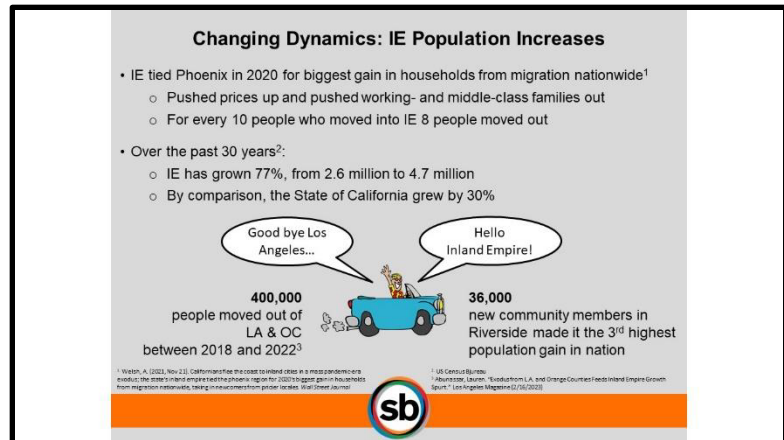
fourth that populations around LA fell 2-4% from all zip codes in LA. However, Liebersohn points out that the decrease in the LA population has led to the rise in population in other places such as San Bernardino. Liebersohn points to evidence that this population change happened during the pandemic but has not reversed and returned to the pre-pandemic era of population. Liebersohn reinforces the idea that due to the rise of remote work, it has given people the option to move out of the more expensive areas and into the cheaper areas. Liebersohn points out that the exurbs are a little more mixed than their downtown counterparts, some zip codes have increased and some have decreased, in other words Liebersohn, describes this as “constant.”

Liebersohn presents the final fact, the rental and home values. On the left it shows the rents changing in each respective area. Each graph is from 2018 to 2020, and Liebersohn notes for the

Rental Rates, that pre-pandemic they are clustered and moving in unison at roughly the same rate of inflation. However, Liebersohn explains that at the beginning of the pandemic in February 2020, at first it goes up steadily then drops down for the cities, and rises in other areas. However, during 2021 there is a sharp increase to all areas: exurbs, suburbs, high density, and cities. There is a trend going slowly down but it has not been at the pre-pandemic levels. As for the Home Values, Liebersohn explains that it is the same thing however, Liebersohn goes on to explain that while pre, during and after the pandemic may be similar to both, for the Home Values, it is the highest in the exurbs more than any other area.



Looking closer at Southern California, Liebersohn uses the previous graph with the same counties but instead shows the House Price Changes between 2020-2022 using zip codes to determine the change. Liebersohn notes that Housing Prices have increased or fallen very little around the Downtown cities such as LA, however outside the city it has increased dramatically, from 30 to in "some cases 40%." This trend as Liebersohn explains continues outward from the cities and the reason behind it is remote work, Liebersohn explains that with being able to move out of the city and affording cheaper homes, it allows them to own an office and go to work remotely



Liebersohn's presentation focused on the analysis of the pandemic driven trends in the housing and population movements. Moving on with the dialogue, Ginger Koblast is going to develop more on the population movement which lead to the rise in prices that the previous speakers have been talking about.

Back to the Office? Traffic Patterns in the Inland Empire

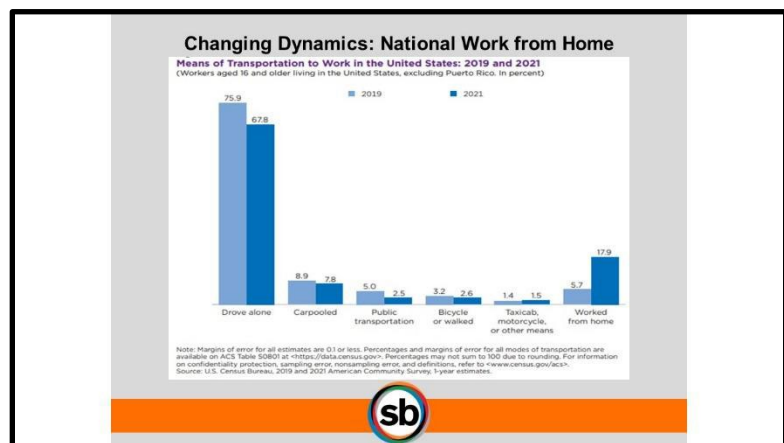
Ginger Koblast, Senior Planner, San Bernardino County Transportation Authority

Koblast starts off the conversation by asking how we plan for the future. She quickly follows up with this question with an answer, "We've realized we really don't know a lot after the pandemic,

that's one thing we learned.” Adding that not many agencies are properly prepared for something like this, but having been through the pandemic we can now properly prepare our organizations for the proper future.

The overall dynamics of the Inland Empire is changing, one of the most evident things to come out of this pandemic is the changes to populations such as population movement out of cities. From 2020, the Inland Empire and Phoenix were tied for having significantly increased household gain. However, because of this rise in people buying homes, it inadvertently increased housing prices and pushed some of the working and middle lower income families to move out; for every 10 people that moved into the Inland Empire 8 moved out. Approximately 400,000 people moved out of Los Angeles and Orange County before and after the Pandemic, and approximately 36,000 new community members in Riverside, making it the 3rd highest population gain in the nation. With this in mind the Inland Empire has grown by 77% from 2.6 million to 4.7 million, to put this in perspective the state of California is growing at 30%, the Inland Empire is growing twice as fast.

An important concept that a previous speaker emphasized was the changing dynamics of the workplace, more specifically how the shift to working from home led to a decrease in overall decrease in transportation as a whole. Driving alone will still be the highest for 2019 and 2021 has had a significant drop; from 75.9 in 2019, dropping 8.1 points to 67.8. Carpooling saw a minor drop and public transportation was cut in half from 5 to 2.5. Walking and bicycling saw a minor dip of 0.6. And interestingly taxicab, motorcycle and other means actually saw a 0.1 increase in points, with all other data suggesting a downward trend this is the only outlier. Working from home has increased dramatically.

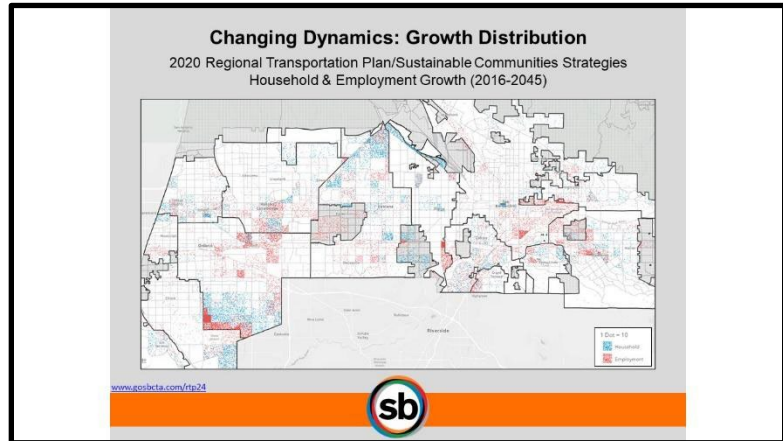


According to census data, the pandemic added to the e-commerce marketplace by a substantial amount. Not only did people switch over from not getting ready and going to work to switch to a fully online lifestyle, but this also applied to how we shopped. Between 2020 and 2021 years combined add to over 218 billion dollars, adding a significant pattern that over the two years e-commerce would exponentially increase and grow, especially Amazon.

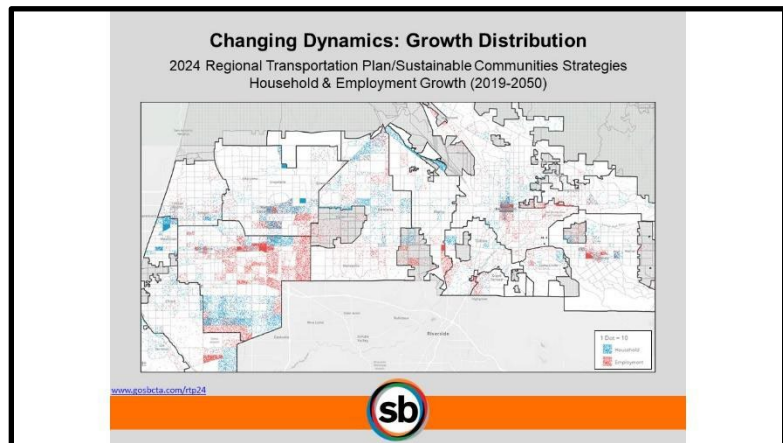
Despite the shift to online workplaces and shopping, nationally big warehousing saw an increase in a number of buildings owned or built with warehousing as its specific purpose. Between 2019 and 2021, warehousing saw a major shift from these distinct times to the highest in 2021 however it was not a major shift but rather a consistent pattern across the board.

years later in 2023, it was found that there was overall less congestion and traffic. Koblast attributes the lessening of traffic congestion to working from home, not counting trips related to other things, and finally how much freight was moved over the highways.

According to big data on the growth distribution in the Inland Empire, the Inland Empire will grow dramatically between 2016 and 2045. To fully understand this graph, each blue dot is 10 occupied households while each red dot is 10 jobs. Comparing this graph to a recent one, 2019 to 2050. Some areas of growth are where no one expected and some parts we see growth but it isn't to the extent as previously thought. It shifts dramatically as now city planners and experts believe that more people will move toward and live near airports instead of expanding in more untouched areas of the land.



SBCTA was given a grant by Caltrans to develop a new Long Range Multimodal Transportation Plan (LRMTP) that will be across all different types of transportation as before, previously SBCTA used to apply the same method and support for types of transportation. However, this new LRMTP will evaluate how each type of transportation will individually receive support and how giving each specific type of transportation funding will help them. Apart from this long-range plan they will also engage with stakeholders more through meeting both in person and online.



Identify and evaluate potential funding to further implement. Examine the current existing policies for each unique mode of transportation, and envision ways these policies can improve. Developing different scenarios regarding the variety of potential funding for all the unique options for transit.

The previous presentations have spoken about a trend in general that might explain the rapid population growth that is happening in the Inland Empire. The next speaker is a leader in the government of Riverside County and he will be speaking about his county's strategy and recommendation to cope with the rapid population growth that both counties in the IE are going through.

Infrastructure as the Key for Housing

Juan C. Perez, Chief Operating Officer of Riverside County

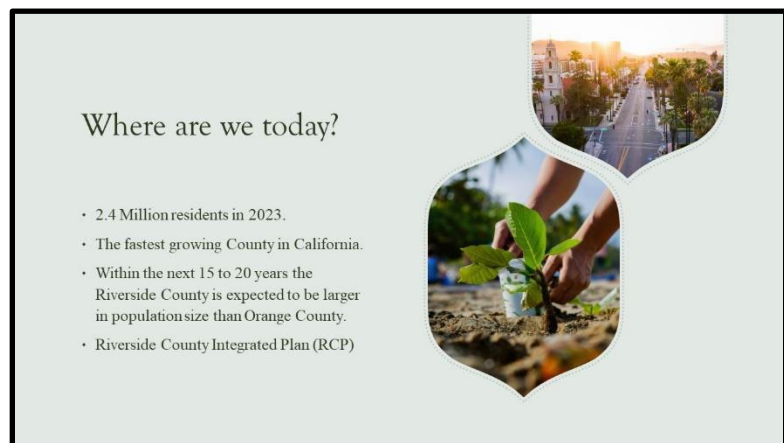
Mr. Perez started the conversation by describing his relationship and experience with the county, giving a brief overview of his career in the county and at the same time introduced what he was going to be talking about. He is going to talk about where the region is in the present (2023) as compared to what was expected or planned 20 years ago, and this will tell us something about how the future might look like.

Where are we today?

Riverside county has a population of about 2.4 million making it the 4th largest county in the state in terms of size and population. It has been the fastest growing county in California because of the 30,000 citizens added to the county every year, and the growth is expected to continue, he said. Within the next 15 to 20 years Riverside County is expected to be larger in population size than Orange County; “It is an exciting time to live here” – he said, as he added remarks on the previous presentation which was about transportation and housing affordability.

Mr. Perez mentioned the Riverside County Integrated Plan (RCP) as a key document from 2003 to guide the county’s future growth in a balanced way. Its purpose is to achieve balanced growth by considering environmental, land use, and transportation aspects in infrastructure development. The county now takes pride in the prioritized land for open space and habitat conservation, he specially

highlighted Riverside’s two large habitat conservation plans as achievements from the RCP. Perez also credited the RCP for fostering the development of new cities in the region highlighting that the last new major cities built in California are all located in Riverside County.



Where do we want to be in the future?

As he went on to talk about the future of the county, Mr. Perez mentioned a crucial point given by the last presentation which was a research project. He said that it was very crucial for the development of the County of Riverside to apply and get different types of federal and state fundings for the development of the city’s infrastructure, he also mentioned that the county has significantly invested in infrastructure and due to this there has been seen many improvements to interchanges and freeways. In addition, he acknowledged another of the conclusions from the research group and stated that as part of the plan for the development of the Riverside County they still had to create the proper infrastructure to attract companies with better and higher-paying jobs

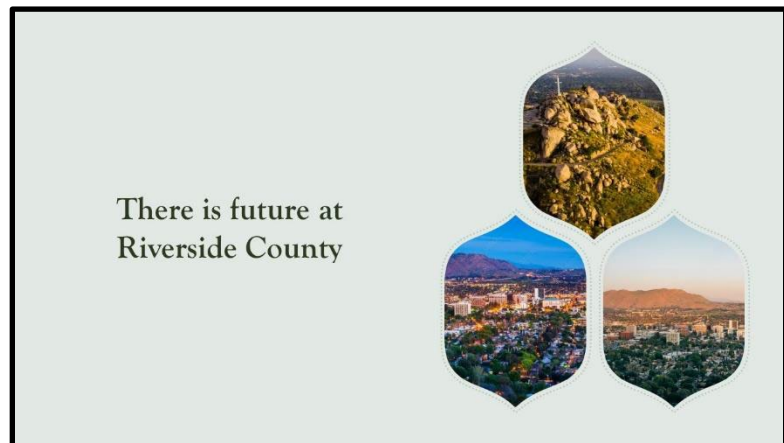
to the area, this would allow people to not have to commute so far to the coast area just to be able to go and get back from their jobs.

Soon after he moved on and discussed the Regional Housing Needs Assessment (RHNA). He started by arguing that while the Inland Empire has experienced significant growth, the state has not provided adequate funding to

invest in the infrastructure needed to accommodate this growth. The Inland Empire is expected to build 40,000 housing units, most of the growth occurring in unincorporated areas, all which are further away from main freeways and existing infrastructure. Building new infrastructure to service these new housing units will be expensive since the region will need to invest in roads, water, sewer, etc. And state mandates on housing development such as SB 743 and 375 make it difficult for housing affordability, so in order for the region to meet all the expectations it needs funding that would be used to invest in infrastructure, thus making housing more affordable.

Finishing his presentation, the COO of Riverside County gave a message of optimism, while highlighting many of the county's best qualities, like high quality of life, natural beauty, a growing cultural scene, etc. And at the same time, he briefly spoke about the importance of collaboration with various stakeholders to achieve the future goals. There needs to be partnerships with educational institutions and with agents from the private sector to bring educational programs aligned with industrial needs, bring business-friendly policies and initiatives, and proper infrastructure development for economic growth.

Data shows that the flight from highly urban areas such as the coastal cities has been accelerated by the pandemic. However, jobs have not followed suit as in the next section will explore what more sustainably mobility will affect commuting.



Approaches to Sustainable Mobility

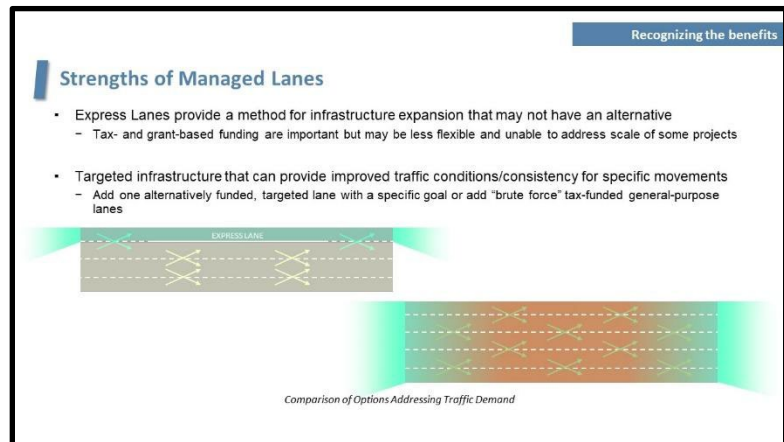
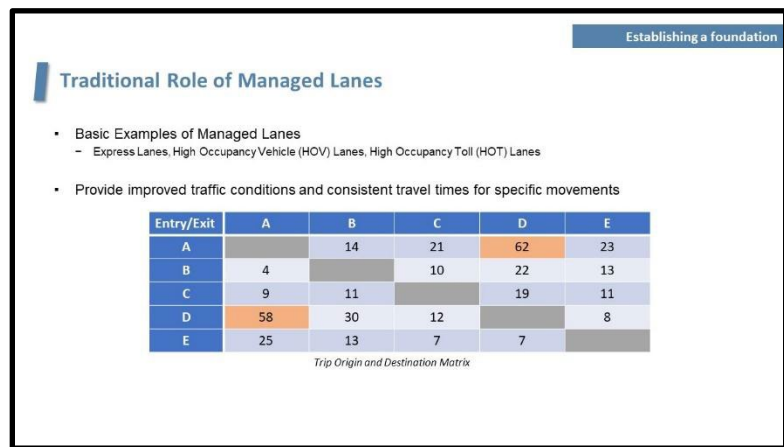
Now this section will focus on the potential future of transportation in the Inland Empire. Experts in this section will discuss the critical role of managed lanes play on the roads and streets and how they ease congestion, the logistics industry cleaner technology impact, high-speed rail with an emphasis on looking at the future of Brightline West high-speed rail project, and a regional commuting program aimed at helping people commute to and from their place of work. These diverse perspectives offer a different lens to view the current and future state of affairs of transportation in the Inland Empire.

The Future of Managed Lanes in the Inland Empire

Richard Van Hying, Southern California Integrated Solutions Director, HNTB

Hying starts off the conversation by asking what is a managed line, and to define it he describes it as “any lane where you are restricting transportation or use of the lane to a subset of the population.” Some examples to

easier understand this concept would be a toll express lane, High Occupancy Vehicle Lane (HOV), and High Occupancy Toll Lane (HOT) just to name a few. Hying also shows an example of a simplified Origin and Destination Matrix. Hying explains that one of the more traditional roles at HNTB is to provide better traffic conditions and consistent travel times. The way this Matrix works tells us that this highway has 5 enter and or exit points represented by A-E. The numbers in the middle represent how many people often take trips between specific points, whether it is A and B or A and C. In this example there is a hotspot between A and D and D and A. We can interpret this as high volume from trips starting in A to D and then ending off in D to A, Hying describes this as a typical commute. Hying explains that if the data shows this high consistency on these sections, then a managed or express lane could potentially ease the traffic



then a managed or express lane could potentially ease the traffic

demand as either lane can be a little bit separated from the non-commute traffic easing congestion between the non-commute and commuting traffic.

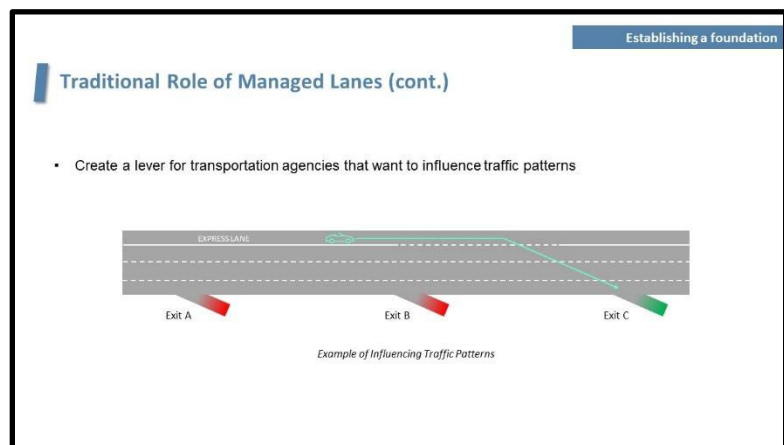
Managed lanes also allow transportation agencies to influence traffic patterns. For example, Hying explains that in this example provided, the red exit lanes A and B are experiencing extreme congestion, exit C perhaps does not have as much congestion, but to relieve the congestion from A and B we would need to perhaps add some sort of striped road allowing the ability to cross. Hying also suggests that to put a physical barrier or a toll.

However, there are some criticisms of managed lanes, one being it has the potential to be difficult for the general public to see the benefits, this is also impacted by the average driver who does not know of the data and how managed lanes help congestion. Hying explains that there are a few ways for the wider public to understand the importance and data of managed lanes. Hying uses the example of San Diego using billboards and signage telling people the estimated travel time between general and express lanes. However, while this works for San Diego Hying notes that this type of signage is not everywhere, therefore it only works situationally. Additionally, Hying also highlights that people argue that tolling is another form of taxation, however Hying notes

that why the infrastructure for managed lanes is being paid back through tolling it does not automatically mean taxation, as the bonds need to be paid back and without paying those bonds back, you then lose the option for bonds to fund public infrastructure.

The strengths of managed lanes and explains that Express Lanes specifically can provide a new method for expanding already existing infrastructure that may have no other alternative. While this can be done with tax and grant-based funding they both have their pros and cons. Tax-based funding is granted to very specific projects while grant-based funding might have some specific requirements that may not be able to be met. Additionally, Hying highlights the issue with scale for both might play a big factor. The next strength Hying highlights is targeted infrastructure that can provide better and improved traffic flow and or better travel time. For example, Hying explains that instead of adding more and more general lanes trying to brute force a solution, adding one Express Lane is a good way to reduce heavy traffic flow and better travel time.

More strengths of managed lanes are they can more easily target the inter-facility and inter-county movements allowing better traffic flow and improved time spent on the road hauling goods. Going more into the details, Hying explains that when coordinating across several states about improving the highway in some way to add three more lanes is a lot of work that might not even work in the end as some states can reject adding more lanes, causing more traffic, the ability to select on lane removes the hassle of trying to add more infrastructure in a complicated manner. The managed



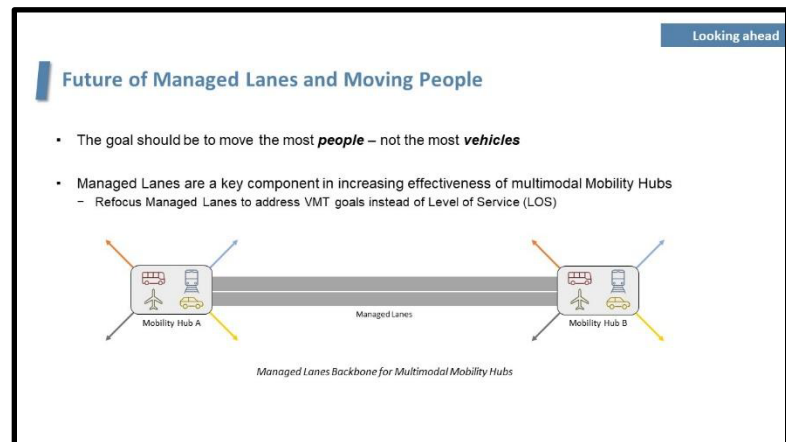
lanes aid equity programs, for example, as Hying explains, transponders can be codified as a tool for specific customers who are qualified to receive discounts.

Moving on to the topic of the future of managed lanes and moving people, Hying highlights that the goal of managed lanes is moving the most people, not the most vehicles. Hying talks about to do, the current method of working as a multi-modal mobility hub, essentially combining several current methods of transportation including aviation, vehicle, rail, and transit; the managed lanes would then provide the means to be able to get around as quickly as possible.

This multimodal transportation system Hying describes has been put into small practice by the city of San Diego, implementing a system where their buses can use the managed lanes to get access to downtown, giving it far more range than what it originally was.

The future of managed lands and the importance of the deeper integration potential it carries, Imagine the many possibilities where all of your transit is linked closely together. As Hying explains, some possibilities include automatically adjusting bus schedules, which take into account the traffic patterns and or incidents on the road. The Dynamically adjusting fares across travel modes means if there is a lot of traffic or an incident, the multi-modal could incentivize you to use a different mode of transportation at a cheaper rate. Suppose that you are an agency that wants to increase people using different modes of travel, you can add incentives for people to take more than just one form of transportation. Hying also highlights the flexible managed lanes with an automatic operating response mode, this would be used to switch lanes more easily reducing congestion.

Hying highlights two major things, as time evolves so does the function of the current managed lanes as Hying believes it will be further integrated into more modes of transportation. Hying believes that multimodal travel will grow within the Inland Empire. However, in order to make these two possible you must support the transportation agencies who aim to achieve this goal.



Hying explained and showed the importance of managed lanes and their ability to alleviate traffic. We now turn to Janice Rutherford, Supervisor of San Bernardino County, she will go over the four principles of transportation according to Mr. William Leonard, champion in civic leadership.

A Regional Perspective: Leonard's View on Transportation

Janice Rutherford, County of San Bernardino Supervisor

Janice Rutherford focused her talk on the transportation principles she believes Bill Leonard would be promoting if he were here today. "I want to remind us of the principles of transportation that guided his thoughts and decisions and suggest that they are the kind of principles that need to guide the decisions and research of this center from here forward, and indeed do good for all of us policy makers and staff to think about as we make transportation decisions."

Janice Rutherford advocates a bottom-up approach to transportation planning. She promoted a transportation system that is customer oriented – taking into consideration what the consumers of the system want. "They want the flexibility, the independence, the comfort, and the safety of their own vehicles. We ought to be taking our brain power and our money and figuring out how we make the individual car more efficient and better both for the consumer and for society as a whole. How do we make that car cleaner? How do we make it more efficient? How do we adapt our road ways and our parking systems, to accommodate the choice that people are making every single day?"

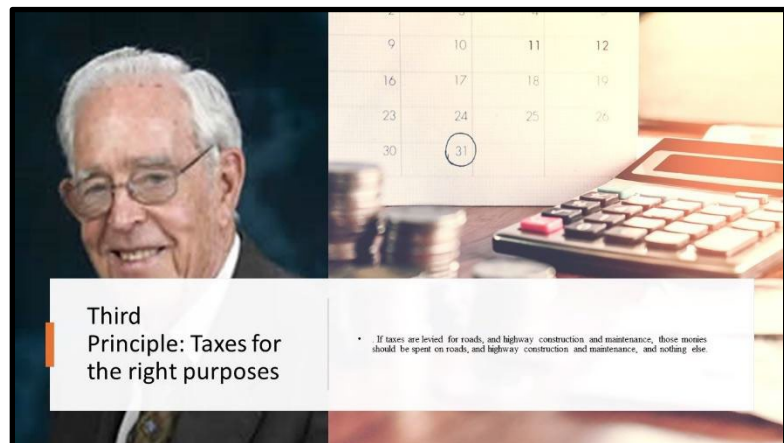


The second principle is that the government, "when coming up with new transportation policies, and does a cost benefit analysis, it really needs to be done from the perspective of the consumer, from the driver, and not from the perspective of the government and the tax system." This is especially true here in the Inland Empire that is a major hub for the logistics industry, providing regional jobs and products for the whole country. Government should respect business decisions on how to ship out their products the most efficient way. "We need to respect the research they have done and work with them instead of against them." If regulations, such as indirect source rules, are imposed on these businesses and shipping companies, it would drive the area back to a recession, companies will leave, the warehouses that people speak ill of, will be gone. "We do not do a cost benefit analysis from the perspective of the consumer, the resident or the businessperson. We do it from the top-down, and it hurts our decision-making."

The third principle that Rutherford spoke on was taxes. If taxes are levied for roads, and highway construction and maintenance, those monies should be spent on roads, and highway construction and maintenance, and nothing else. She stated, “people pay gas taxes, because they expect the roads to be in better condition than they are today.” Additionally, the consumer wants more roads to help them get to where they want to go.



The final principle she talks about is innovation. The Leonard’s were advocates for new technology yet ideas from 30-40 years ago still have not been implemented on our roadways. “How much technology, how much computing power is in the phone that is in your pocket right now? We are not harnessing that to benefit ourselves, to benefit the economy of the region. My hope is that through these conversations that the Leonard Transportation Center is having, you will take on some of these challenges from Leonard's perspective. That you will provide policy makers with research and data that we can actually use to make decisions needed for the Inland Empire.”



The last speaker talked about the four principles to transportation and how their potential could be instrumental to bringing much needed change to our transportation system. The next speaker, Tom Goss, will focus on how electric vehicles help make the logistics industry cleaner at a greater cost to produce and operate.

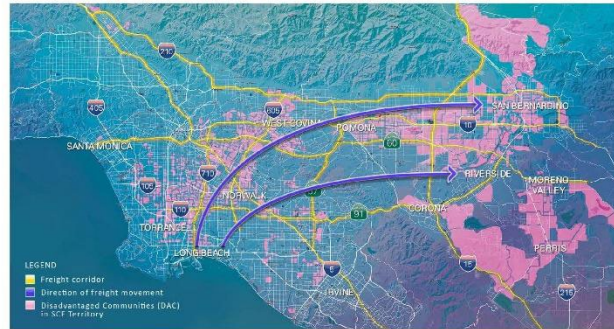
Logistics Boom & Clean Frights in the Inland Empire

Tom Goss, Southern California Edison Director of Environmental Policy

Tom Gross’ talk focused on the need for a balanced approach between the transportation sector and the environment in the Inland Empire. The logistic industry is a large part of the local economy providing jobs for many individuals – particularly in this region that is challenged with a low education rate. Yet, with this growth in logistics and truck traffic comes community challenges with air pollution and environmental health issues.

There are a number of companies with large distribution centers in the Inland Empire. Those companies include Amazon, Sketcher Shoes, and Stater Bros. These distribution warehouses provide a job and income to a demographic of people in the area that includes many without a high school diploma. However, as Gross states, “But one of the problems that it has created is that you have thousands of additional truck trips that add to an already existent heavy pollution load and the two criteria pollutants that are subject to national air qualities which are part of the Clean Air Act.” Diesel emissions are one of the biggest problems as they generate Nitrogen Oxides (NOx) and Particulate Matter (PM). NOx is unique because once it is mixed with volatile organic compounds and sunlight, it creates ozone. Both are harmful to people’s health, particularly leading to high asthma rates, especially for the region’s children.

Air pollution Can Affect Multiple Locations



4

Energy for What's Ahead™

What is the solution to the negative environmental effects and health complications? New rules are being considered at CARB and AQMD to regulate source point pollution at the ports, warehouses, railyards, and airports. There are also a number of initiatives to limit vehicle miles traveled (VMT), but the use of new technologies will be key to the solution. Cleaner vehicles are being developed, with approximately eight to ten companies, including Peterbilt, GM, and Tesla, all designing new heavy-duty trucks with electric drives.

Alternatives to Diesel

- Natural Gas
 - Technology exists now
 - Still contributes to GHG emissions
- Electricity
 - Zero Emission Technology
 - Greater reliance on renewable energy
 - Excess solar generation during the middle of the day



6

Energy for What's Ahead™

Natural gas is an alternative to diesel, but it still contributes to Greenhouse Gas Emissions (GHG). Electricity is a zero-emission technology, and currently there is excess solar generation within the system. This allows for many possibilities and opportunities in the advancement of this technology to improve the negative environmental and health impacts from diesel trucks. Gross stated that

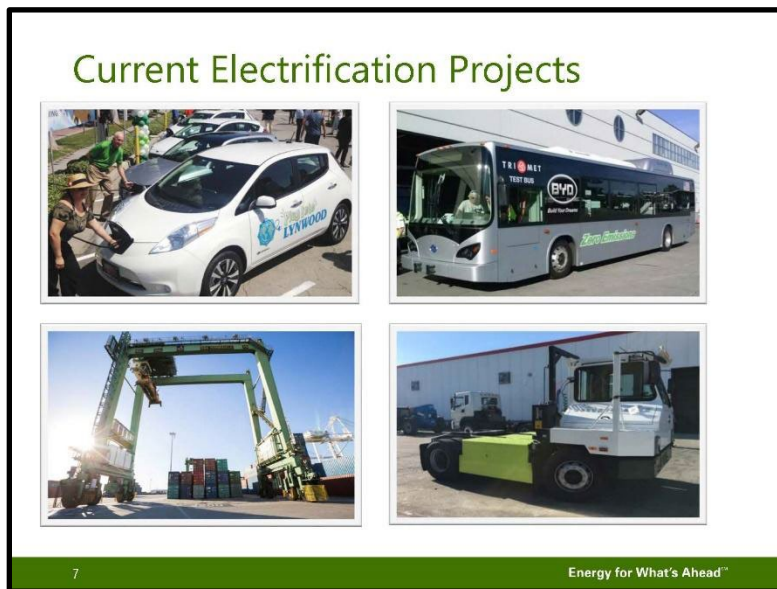
“the California Independent System Operator, is struggling with what do you do with the excess solar generation during the middle of the day” It is projected that if in a few years there are more electric vehicles out in the road, the energy being generated during the middle of the day can be used to power both personal vehicles and vehicles used to move goods.

New technologies allow companies, such as AQMD and Edison, to send a phone call or notify you that your vehicle is fully charged at a specific location. This lets people know to move their vehicles to another parking spot so another vehicle can be charged. During the evening, there is “a lot of wind generation, and the wind generation can charge a lot of vehicles that are parked during the night, and again, you are able to take advantage of the generation of renewable energy.”

The biggest challenge to fully using these new technologies is an undeveloped infrastructure. From this we need to ask “Who bears the cost of infrastructure?” Gross used the example of Edison’s projects at the port terminals. He stated that new construction and engineering has started, but it has not been completed and is expensive. Edison ratepayers are bearing the costs, therefore, the larger the area that is impacted, the lower the individual cost. If the cost is not applied to ratepayers, what would happen if the Port of Long Beach would take on these infrastructure fees? The port is a property owner and a department of the City of Long Beach. This means that taxpayers would have to pay more in taxes to cover those fees for the city. However, if you spread it over all the ratepayers, the feeling is that it is more equitable.

Gross concluded his talk, stating that strong advocacy will play an important role in the adaption of new, cleaner technologies. Projects need to be prioritized as there is not enough funding to do everything. A commitment needs to be made from the private and public sectors to find the best solutions to the region’s problems.

Tom Goss focused on balancing the logistics industry’s economic benefits with environmental sustainability options in the Inland Empire. The next speaker we will focus on is John Gillison, city manager of Rancho Cucamonga, who will focus on a multimodal district aimed at providing all transportation services in one place and will briefly go over the high-speed rail project being built by Brightline West.

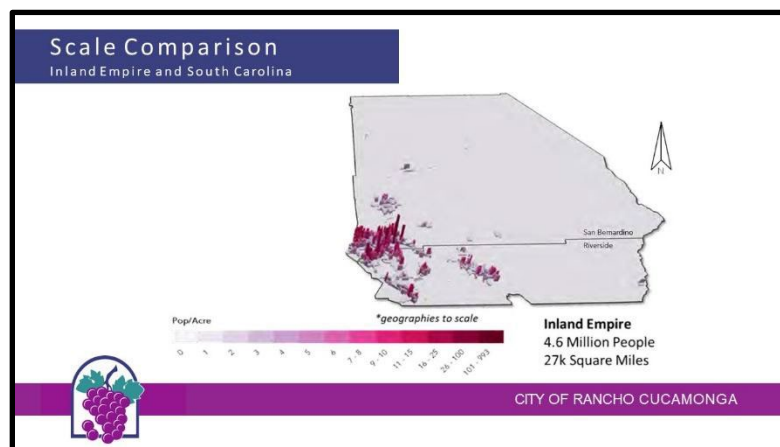


Transformation through Transportation: Cucamonga Station - Multi-Modal Transit Hub

John Gillison, City Manager, City of Rancho Cucamonga

Gillison starts off the conversation by introducing P.A.T.H (People. Amenities. Transportation. Housing). This idea revolves around building more places for people to live, more recreational options and activities, and the use of transportation to get around instead of cars, this in turn would create an “equitable and sustainable community”.

Gillison switches focus to data about the Inland Empire, explaining that the region is expected to grow 20% by the year 2048. The significant increase is impressive but in other regions of SoCal, places are declining in birthrates, notable Orange County and Los Angeles County, as Gillison puts it, “LA County and Orange County have officially entered the era where they are not having enough births to keep pace with their population.” Part of this declining rate, as Gillison puts it, is the fact there is a migration from the coastal areas to the inner areas such as San Bernardino, Gillison attributes this migration to cheaper and affordable places to live. Gillison explains that San Bernardino and Riverside counties are going to grow 20%, in other words, we will be seeing another million people being born “over the next decade or decade and a half.”



The subject of increased population is one of the many subjects many other speakers have spoken about, however, Gillison, displays a map comparing the density of San Bernardino County and South Carolina, showing that San Bernardino County has nowhere near the same density. This shows that while the Inland Empire is growing in terms of population, we should not confuse ourselves with real high density.

Gillison switches focus to creating a multimodal transit district within Rancho Cucamonga, and to do this the chosen places are HART (Haven. Arrow. Transit. Rochester) these four streets will be connected by a transit district in the middle, more specifically at the Cucamonga Station. Some transportation will include high-speed rail, regular rail, BRT (Bus Rapid Transport), an underground tunnel, and an airport. This station located here will allow seamless transfer from one form of transportation to another. This multimodal transportation district was originally just a Metrolink with an airport nearby, but since then has taken a life of its own.

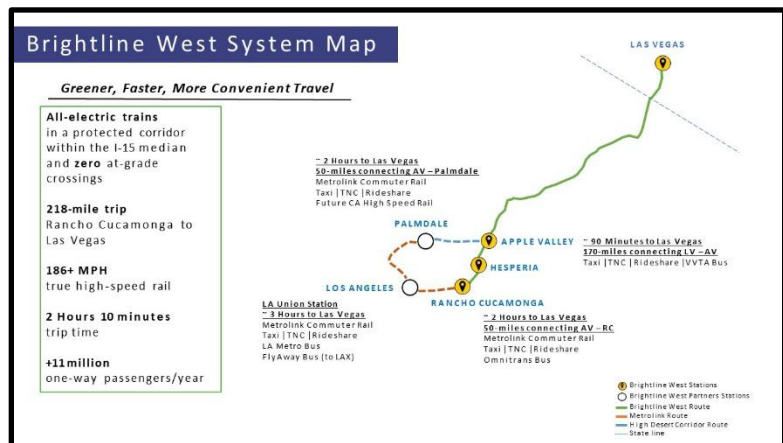
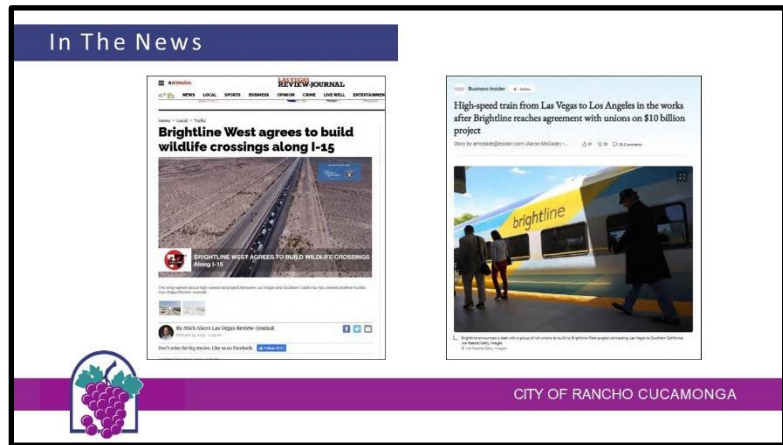
One of the new major topics regarding high-speed rail is the Brightline West and the Olympics, Gillison explains that, when the Olympics come to Los Angeles and Las Vegas, it is going to need serious transportation infrastructure to support this. This is where Brightline West comes into play,

hoping to build and finish before the Olympics; it would allow people a seamless transition from one city to another. LAX will be burdened with all the tourism, celebrities, and athletes flying in that they will choose other options to fly, such as Long Beach, Burbank, and San Bernardino just to name a few. So, there is room to grow and expand the transit infrastructure, to allow seamless travel from one place to another.

This Brightline West high-speed rail will run approximately 218 miles, from Las Vegas to Rancho Cucamonga; the train will be fully electrified and will run off of renewable energy. It is estimated when high-speed rail opens it will cut off 20% of the current cars going to or from Las Vegas to Los Angeles. The go-ahead has been approved for Brightline to start to break ground, and anticipation is high for this project and its potential. However, Gillison points out that it will go and continue to be constructed if the government shuts down it will be a major budget issue.

It is estimated that 11-14 million passengers a year will be using this high-speed rail. For this to be true Brightline has True high-speed rail, which means the train has to be able to achieve 186+ miles per hour (MPH), currently, there are a few up northwest but they reach their max speed below the true high-speed rail. Brightline West high-speed rail is estimated to travel a little over 200 MPH. That estimation will make it more feasible for cities because of the great distances needed to be traveled it will require a lot of speed to pull it all off.

In terms of funding both the San Bernardino County Transportation Authority (SBCTA) and IBank Bond Financing have provided funding to different parts of the project, SBCTA, gave the project \$25 million for Rebuilding America's Infrastructure with Sustainability and Equity (RAISE) grant award. This money is used to fund the final design and the construction of Brightline stations in Hesperia and Apple Valley. The IBank approved a couple of billion dollars of private activity



bond, the reason for seeking out help with funding is it allowed the project to separate itself from the reliance of government funding.

There are many benefits to come from Brightline West high-speed rail; economically, it will create new construction jobs, and start a new high-speed rail industry. The environment even benefits from this high-speed train because it has 400k or more tons of CO2 emissions every year, this would mean the high-speed rail eliminates approximately 700


million vehicles traveled every year and enhances wildlife protection as well. Some safety benefits are a dedicated and protected corridor within the I-15 median. Zero at-grade crossings, and eliminating approximately 75 highway fatalities and injuries each year.

In terms of the economic development in the surrounding areas, it would allow developers in these areas to build new housing and other mixed-use real estate near these high-speed rail stations. Approximately \$7.5 billion just in economic impact alone and in terms of tax revenues, it would provide \$750 million over 10 years. As for connectivity, each station is a multimodal hub and that means it holds many different and various forms of transportation that will be seamless transitions.


This project is a joint effort between Nevada and California, and despite a majority of the construction being in and around California, Nevada is the lead because California already has its own high-speed rail and that would lead to a strange issue where California high-speed rail would compete with itself. Nevada has donated \$600 million to the project, and once the Federal grants start to roll the ability to bond finance will be ready.

In Rancho Cucamonga, there are efforts made to better tie the station to the airport, this is because the station and airport are not within walking distance of each other. Therefore, there are efforts made to tie these two locations together, therefore the only solution to this is going underground via tunnel because going overground would mean interfering with Caltrans which would be an arduous legal and red tape battle. It is currently envisioned that an autonomous vehicle or semi-autonomous underground will carry the riders underground to the airport. West Valley Connector

Brightline West: Fed-State Partnership Grant Application



+



Building 218-mile system within I-15 median:

- All-electric system linking Southern California and Las Vegas
- 50M one-way trips occur annually by car/air within region
- Trains capable of 186 mph or higher speeds


Invested \$600M privately to date to secure:


- ✓ All critical station land and alignment right-of-way
- ✓ Permits and environmental approvals
- ✓ Engineering & pre-construction planning

\$12B U.S. high-speed "demonstration project":

- Applied for \$3.75 billion Fed-State Partnership grant
- Remaining ~70% of funds will be privately funded
- Break ground in Q4'23 and open before 2028 Olympics

Tunnel to ONT Project



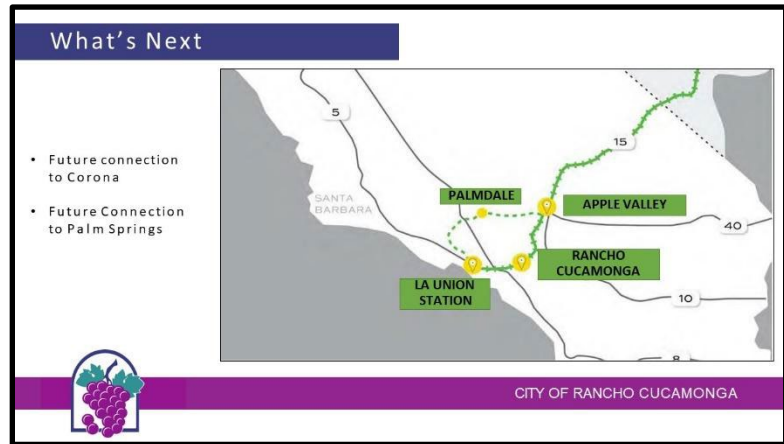



June 2021 Station Concept




uses a 100% zero-emission BRT system that will extend as far as Pomona Regional Transit Center to Victoria Gardens; this would be considered a corridor due to how fast it will be going and due to the lack of stops.

Gillison finally throws his pitch into the next major future plans, Gillison advocates for a future connection to Corona and Palm Springs. Suggesting that the High-speed rail go down the I-15 or the 210 or 91 and tie into Corona and additional would tie into Metrolink and alleviate traffic pressures. Gillison suggests that by putting more effort into public infrastructure and more transit options they will go where they like.



Gillison provided a great discussion and elaborate creation of a multimodal district, aimed at combining all transportation in one place along with going over the high-speed rail project Brightline is currently developing. The next speaker, Brenda Reza will talk about the IE Commuter program and its ability to help everyday people make it to and from work.

IE Commuter

Brenda Reza, Employer Services Representative

Reza starts off the conversation by asking “Who is IE Commuter?” She explains that IE Commuter is a ride of the Riverside County Transportation Commission and San Bernardino's County Transportation Authority, Reza explains that the IE Commuter’s goal is to reduce overall traffic, increase air quality, and to do this they aim to help businesses develop ridesharing options. For example, bussing, trains, or carpooling just to name a few. In order to make this more appealing to businesses, they make it free with a simple sign up.

As a business there are some incentives for using the ride sharing program: no-cost, marketing material, event support, workshops, online webinars, commute logs and South Coast Air Quality Management District Average Vehicle Rideshare (AVR) survey report. Some commuter incentives of using the IE Commuter as a commuter is \$5 a day fee for anyone new to using IE commuter, this is applicable to people in the Riverside and San Bernardino counties. There is also the monthly spotlight, in which you will be presented on their website with your quote. In order to be eligible for this incentive you must already pay \$5 to use the IE Commuter and its services and

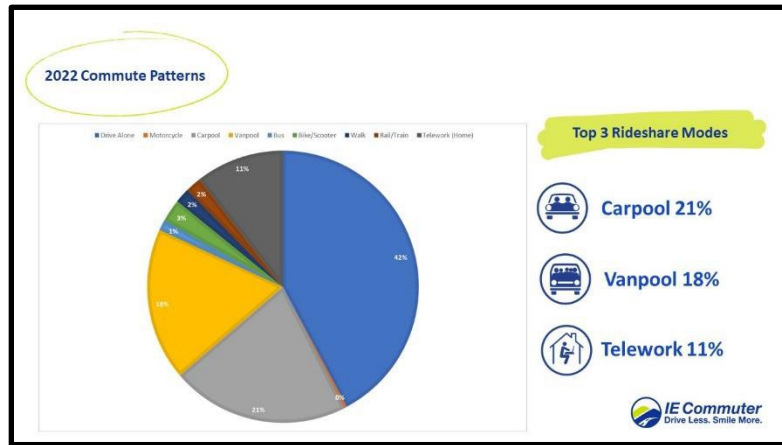
must log at least 8 trips per month. The final incentive they offer is a telework spotlight, to be eligible for this incentive you must log 1 telework day out of the month and your employee must be registered to this telework agreement as well. For both spotlights only two people will be chosen per month. There is also the guaranteed ride home program, which aims to help commuters in times of crisis where they need to head back home for an emergency.

IE Commuter Program Incentives

- \$5/Day**
 - Valid for new commuters in Riverside and San Bernardino counties
- Monthly Rideshare Spotlight**
 - After receiving \$5/Day, automatically enrolled in the monthly spotlight so long as logging 8 trips/month
- Monthly Telework Spotlight**
 - Employer must be registered with telework agreement
 - Must log at least 1 telework day in a month to qualify

IE Commuter is a program of the Riverside County Transportation Commission and San Bernardino County Transportation Authority. Logos for RCTD, sb, cta, and IE Commuter are shown at the bottom.

Reza explain the Commute Pattern in the Inland Empire, the way they get this data as Reza explains is that every time a computer logs a trip, they can record that as data, this data can tell us more than just what they took for travel, it can tell us greenhouse gas emissions captured, vehicle miles reduced, total cost saving of taking of taking a rideshare option, and how many miles traveled. Interestingly she highlights the top 3 rideshare models: 21% is dedicated to carpooling, 18% is dedicated to Vanpooling, and 11% dedicated to telework or better known as remotely working. Reza notes that while these are the top 3 modes, there are still other modes of travel people use, such as walking and biking.



For anyone using the IE Commuter they are not only limited to just taking the bus as their only option for getting around the IE, the IE Commuter also offers bus, vanpool, carpool, telework, biking and walking as their options for getting around. Reza then talks about the Custom Program Development; Reza explains that regardless whether it is a big company or small or if it's close or far the IE Commuter will customize you rideshare specifically to what best works for you. whether it is the Employee Commuter Survey which determine and identify which potential employee best for your rideshare, or the Ride matching which finds which finds other potential employees you can ride with, or the Marketing Support that enables the employee and not the employer to come up with the templates with the help of the IE Commuter, or the Metric and Reports, which details greenhouse gas emissions captured, the vehicle miles reduced, the total cost saving of taking of taking a rideshare option, and how many miles traveled by using the ridesharing program.

Conclusion

The Inland Empire is presenting a unique case study in regional development. Powered by its population increase, economic growth is expected to come as well. However, there are serious issues to take care of in terms of transportation: VMT, housing affordability, infrastructure, and sustainability.

Rapid development patterns have continued to the region's traffic congestion. The constant problem of long commuting times due to the lack of quality jobs in the region, plus the population growth that the two counties are experiencing keep increasing the overall VMT of the region, which creates serious environmental concerns. Luckily though, there are different ways of addressing these issues. Here are the main takeaways for this booklet:

1. Addressing these issues requires a diverse approach

Transit Oriented Development (TOD) and smart growth initiatives integrate housing and employment centers, and that could potentially reduce the reliance of private vehicles and lower the number of miles traveled while creating more sustainable communities as the area develops further. Investments in clean transportation like the ones shown in the booklet are going to prove to be essential in the sustainable growth of the Inland Empire.

2. Significant funding is needed to implement these solutions

As exposed by various speakers throughout the proceeding, there are a couple different ways in which local governors can access resources. The ones mainly mentioned were federal and state grants of infrastructure and sustainability like the Leveraging Grant Programs or the RAISE grants. However, from the private sector, local governments can take advantage of bond financing and collaborations with firms that are suitable for the demands for housing in the IE.

3. The Inland Empire is going to chart its course for the future

Population growth if done right can become substantial economic growth. The last takeaway for this booklet is that this is a moment that will be remembered in the future, the trends that we saw in this booklet in terms of population movement, resource allocation, infrastructure planning, etc. are all leading to a big change, and if it is done right, it can perhaps be the opportunity for the Inland Empire to skyrocket its economic growth, now it depends on what decisions are taken now.

About Leonard Transportation Center

The Leonard Transportation Center (LTC) at California State University, San Bernardino opened in 2006 with a focus on regional transportation needs. The vision of Bill and Barbara Leonard was to create a center that focuses on the unique transportation opportunities and challenges the Inland Empire faces. Today, the LTC is working to expand its research and student engagement programs. Focal points include transportation management and governance issues, development of new technologies, and transnational studies. Their vision is to work collaboratively to seek solutions to assist residents, businesses, government and nonprofit agencies, and international partners to work together on improving sustainability and quality of life in the Inland Empire. For more information, visit www.csusb.edu/ltc

About HNTB

HNTB Corporation is an employee-owned infrastructure solutions firm serving public and private owners and contractors. HNTB's work in California dates back to its founding in 1914. Today, HNTB continues to grow in size and service offerings to clients in California from seven office locations, currently employing more than 350 full-time professionals. With more than a century of service, HNTB understands the life cycle of infrastructure and addresses clients' most complex technical, financial and operational challenges. Professionals nationwide deliver a full range of infrastructure-related services, including award-winning planning, design, program management and construction management. For more information, visit www.hntb.com

About San Bernardino International Airport

Conveniently located in the heart of the Inland Empire, close to major freeways and just 60 miles from Los Angeles, San Bernardino (SBD) International Airport is strategically positioned to meet growing aviation activity, including cargo, business aviation, general aviation, and commercial airlines by providing competitive rates for aviation companies and local businesses looking to stretch their wings and expand their horizons. With extensive stretches of pristine runway and acres of prime land available for aviation development, SBD International Airport is ready to help our community and region reach new destinations.

About San Bernardino Valley College

San Bernardino Valley College will become the college of choice for students in the Inland Empire and will be regarded as the alma mater of successful, lifelong learners. We will build our reputation on the quality of our programs and services and on the safety, comfort, and beauty of our campus. We will hold both our students and ourselves to high standards of achievement and will expect all members of the college community to function as informed, responsible, and active members of society. For more information, visit www.valleycollege



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