

**Metrics for Equity in Transit-Oriented Development:  
A Case for Sustainable Investment in Los Angeles**

Miles K. Anderson

Urban & Environmental Policy  
Senior Comprehensive Project  
May 2017

## EXECUTIVE SUMMARY

Support for public transportation development in Los Angeles County has increased dramatically as residents demand better options to sitting gridlocked in private automobiles. In coordination with a multitude of actors in the transportation planning field, transit-oriented development (TOD) has been championed as a silver bullet with the ability to reverse many effects of car culture. Several times, the population has voted to raise the sales tax to increase funding for the Los Angeles County Metropolitan Transit Authority (Metro) to increase transit quality and service. In response, Metro has prioritized light rail over bus lines to attract wealthier residents to use transit, causing development to intensify around light rail stations and in turn, pricing out lower-income residents that rely on transit, using it at far higher rates. With critical implications on equity and environmental sustainability, this study examines the following research question: **How can TOD in Los Angeles County be evaluated with regard to equity?** To answer this question, this study develops a metric to measure transit-dependent populations in Los Angeles County and measures their change over time to evaluate how transit development has impacted these populations and to ensure that TOD and Los Angeles County as a whole reach their potential. Interviews with stakeholders in the TOD field were conducted to gain further insight, and together, this study finds the following:

- The discussion around transportation equity is robust and political— involving a multitude of stakeholders with varying power relations.
- Collaboration between stakeholders is key in moving forward for transportation equity.
- In the past, equity outcomes have not been Metro’s priorities, but outcomes are slightly increasing as leadership changes in a positive way.
- Metrics for equity need to be developed in a political context and must have clear policy applications.
- TOD is an acronym that is evolving from looking at just one development to a community, or even an entire system.

This study developed the following policy recommendations:

- **Adopt the proposed metric into the Long-Range Transportation Plan and mandate inclusionary zoning in station areas at certain thresholds.**
- **Incentivize collaboration between groups to maximize TOD benefits.**
- **Look to state funding in the face of federal uncertainty.**
- **Explore more (affordable) development.**
- **Further studies should contextualize development around transit.**
- **Emphasize compounding vulnerability indicators.**

<b>1. INTRODUCTION</b>	<b>4</b>
<b>2. THE DEMOGRAPHICS OF TRANSPORTATION AND DISPARITIES IN PUBLIC INVESTMENT</b>	<b>6</b>
2.1 Transit Usage and Demographics	6
2.2 Disparities in Transit Funding	8
<b>3. TOD AS A STRATEGY FOR EQUITABLE DEVELOPMENT</b>	<b>11</b>
3.1 Why TOD?	11
3.2 Gentrification and TOD	12
3.3 Connecting TOD to Jobs	14
3.4 Linking Affordable Housing to TOD to Reduce H+T Costs	14
3.5 Putting it all Together– the Equity Metric	16
3.6 Policy	17
<b>4. LITERATURE REVIEW</b>	<b>20</b>
4.1 Gentrification	20
4.2 Station Area Change	21
4.3 Goals of TOD	23
4.4 Stakeholders in the Process	25
4.5 Informing the Equity Metric	27
<b>5. METHODOLOGY</b>	<b>30</b>
5.1 Methodology	30
5.2 Qualitative Methodology	30
5.3 Oriented Toward Equity: A Rating System for Equitable Transit-Oriented Development	32
5.4 Grading California’s Rail Transit Station Areas	33
5.5 Plan Bay Area 2040: Communities of Concern	34
5.6 CalEnviroScreen	35
5.7 Quantitative Methodology	36
<b>6. FINDINGS</b>	<b>38</b>
6.1 Key Findings	38
6.2 Power Relations	39
6.3 Communication	40
6.4 Metrics for Equity	41
6.5 Equitable Development: Then and Now	42
6.6 The Changing Metro Leadership	45
6.7 TOD as a Changing Acronym	48
<b>7. RECOMMENDATIONS</b>	<b>51</b>
<b>8. CONCLUSION</b>	<b>54</b>
<b>APPENDIX A: TABLES AND FIGURES</b>	<b>58</b>
<b>APPENDIX B: QUALITATIVE INSTRUMENT</b>	<b>67</b>
<b>APPENDIX C: DISCUSSION OF AFFORDABLE HOUSING AND FEDERAL FUNDING</b>	<b>68</b>

# 1. Introduction

Public transportation investments have the power to bring economic growth, mobility and environmental sustainability at the same time that they can reinforce segregation and income inequality. It is at this juncture that Los Angeles County faces a grand opportunity to develop equitably and sustainably. By doing so, low-income residents can be connected to a sophisticated transit network, and through it, jobs, amenities, and a low-carbon lifestyle— leading to sustainable growth for the region. For this reason, it becomes increasingly important to develop tools with which to measure equity outcomes around transit development. This study will use existing literature and interviews from representatives of the transit-oriented development (TOD) field to develop an equity screening metric that will ensure that development is both cognizant and applied, such that future development around transit is equitable, and benefits those who rely most on transit.

In an urban context, transportation is crucial: it determines where we live, where we work, where we interact with people, it is a vessel of the human condition. However, not all modes of transportation are created equal. In the mid-20<sup>th</sup> century, and especially after World War II, the United States experienced a boom in suburbanization that was accompanied by an embrace of car culture at the expense of sophisticated public transportation networks, which carried the stigma of being solely for the poor. More recently, population growth in inner city areas, coupled with urban revitalization projects that reintroduce capital to these areas, has necessitated better options for travelling in this dense environment. Recently, the transportation planning field has embraced the strategy of transit-oriented development (TOD), which seeks to create mixed-use, walkable and pedestrian friendly neighborhoods around high-quality transit

options.<sup>1</sup> TOD operates on the logical principle that providing amenities (perhaps most importantly, households) at a high density around transit will encourage and bolster its use.

However, this TOD vision is challenged by several realities. The first is that reinvestment in the form of transit improvements, such as a new light rail station or a new bus rapid transit (BRT) stop inevitably raises surrounding property values, because these transit options are desirable. These investments are seldom unaccompanied by other groups interested in profiting off of the situation and buying property in the immediate area. Renters are the first to feel these increases in property value, and those without the means to accommodate them are displaced—forced to leave their living situation and their social network. Enticed by the new amenities, wealthier tenants move in. This process is referred to as gentrification— a cycle catalyzed by, for the purposes of this study, a transit investment. This cycle can feed on itself as communities continue to upscale and displace existing residents, which further reduces transit ridership rather than increasing it. To investigate the opportunities and challenges of TOD, this study addresses the following research questions:

- How can TOD in Los Angeles County be evaluated with regard to equity?
  - Why is equity in TOD important, and how has it played out in the past?
  - What metrics can be used to evaluate equity in transportation investments?
  - How is the field around equitable TOD changing?
-

## 2. The Demographics of Transportation and Disparities in Public Investment

### 2.1 Transit Usage and Demographics

Understanding who rides transit and who lives near transit is critical to evaluating the issues that arise from proposed transit development. As of 2000, transit-served metropolitan areas in the US were home to half of the country's residents, seventy percent of its workers, and more than fifty percent of the nation's rental housing.<sup>2</sup> Fifty-eight percent of those commuting to work using transit are renters.<sup>3</sup> These numbers are rising as demand for dense, walkable neighborhoods with lower transportation costs increases. Perhaps unsurprisingly, households living near transit are twice as likely to take transit to work; but this implication is critical as eighty-five percent of all trips made in America are done so by car.<sup>4,5</sup> While car ownership in the United States is nearly universal, income level plays a key role. Ninety-five percent of households making between \$20,000 and \$40,000 a year own at least one car, but only seventy-five percent of those making less than \$20,000 a year own a car.<sup>6</sup> Seventy percent of workers who commute via transit earn less than \$25,000 annually. [see fig. 1, appendix A]<sup>7</sup>

In Los Angeles station areas, median household incomes are some \$15,000 less than at the County level. [fig. 2]<sup>8</sup> While this figure averages station areas across all lines, certain lines

---

<sup>2</sup> Stephanie Pollack, Barry Bluestone, and Chase Billingham, "Maintaining Diversity In America's Transit-Rich Neighborhoods: Tools for Equitable Neighborhood Change," *Dukakis Center for Urban and Regional Planning at Northeastern University* (2010), 10.

<sup>3</sup> *Ibid*, 14.

<sup>4</sup> Will Dominie, "Is Just Growth Smarter Growth? The Effects of Gentrification on Transit Ridership and Driving in Los Angeles' Transit Station Area Neighborhoods," *UCLA for the Bus Riders Union*, (2012), 24.

<sup>5</sup> "The Los Angeles Equity Atlas: Opportunity Mapped," *California Community Foundation and Reconnecting America* (2013), 26.

<sup>6</sup> Dominie, 25.

<sup>7</sup> "The Los Angeles Equity Atlas: Opportunity Mapped," 43.

<sup>8</sup> Amanda Gehrke, Gloria Ohland, Abigail Thorne-Lyman, Elizabeth Wampler, Jeffrey Wood, Sam Zimbabwe, and Winston Dong. "Creating Successful Transit-Oriented Districts in Los Angeles: A

face far higher levels of poverty. Along the Blue and Expo lines, median incomes in 2013 were some \$20,000 less than the County median.<sup>9</sup> Individuals and families in station areas are far more likely to live in poverty as compared to City and County numbers.<sup>10</sup> More than half of the households located adjacent to transit lines are rent burdened, meaning they spend more than thirty-five percent of their income on housing.<sup>11</sup> Individual census tracts in station areas show even more concentrated inequality than station area medians alone.<sup>12</sup>

Just as income level is tied to transit usage, other socioeconomic factors are also highly correlated.<sup>13</sup> Not only do transit-served neighborhoods contribute critically to the regional economy, they are home to concentrated ethnic and racial diversity.<sup>14</sup> In Los Angeles, Latino/a and Black riders are vastly overrepresented as opposed to White riders on public transportation.<sup>15</sup> [fig. 3] In fact, non-White communities use public transit the most, even when controlled for income level.<sup>16</sup> [fig. 4] Also notable with regard to public transit ridership are the changing demographics of Los Angeles County—by 2040 those identifying as Latino/a or Black are projected to comprise two-thirds of the population.<sup>17</sup> [fig. 5]

While there is an immense body of research detailing the problematic intersectionality of these demographics, for the purposes of this paper, it can be concluded that these station area communities have lower incomes, higher rates of unemployment, a higher share of renters and

---

Citywide Toolkit for Achieving Regional Goals.” *Center for Transit-Oriented Development* (2010), 21.

<sup>9</sup> Alex Visotzky, “Transit Oriented Development and Affordable Communities in Los Angeles County: An Opportunity to Serve Neighborhoods and Families Equitably,” *Neighborhood Housing Services of Los Angeles County* (2015), 9.

<sup>10</sup> *Ibid.*, 10.

<sup>11</sup> *Ibid.*, 12.

<sup>12</sup> *Ibid.*, 9.

<sup>13</sup> Dominie, 27.

<sup>14</sup> Pollack et al., “Maintaining Diversity...,” 10.

<sup>15</sup> Dominie, 27.

<sup>16</sup> Vanessa Carter, Manuel Pastor and Madeline Wander, “An Agenda for Equity: A Framework for Building a Just Transportation System in Los Angeles County.” *The Program for Environmental and Regional Equity The University of Southern California*. commissioned by the California Endowment (2013), 6.

<sup>17</sup> *Ibid.*

people of color, and lower levels of educational attainment than the City or the County.<sup>18</sup> These demographics are important, because as income levels rise in tracts around station areas, the share of riders commuting via transit decreases.<sup>19</sup> Thus, these communities are invaluable to Metropolitan Transit Authorities (MTAs), the groups planning and operating transportation networks, as they are far more likely to use and rely on transit for their transportation needs. These neighborhoods contain the highest density of these core riders and thus serve as a base. However, because many of these communities have experienced historic disinvestment and are in many cases renter-majority communities, they are vulnerable to displacement when funding does reach their neighborhoods.

## 2.2 Disparities in Transit Funding

Public investment in transportation is inherently unequal. Nationally, eighty percent of transportation funds are spent in favor of automobile transit, whereas public transit receives only twenty percent.<sup>20</sup> At a state level, 55 cents per person is spent on pedestrian projects, whereas 72 dollars per person is spent on highway projects.<sup>21</sup> Further, most federal money is not allocated to cities or regions themselves, but to state transportation departments, which are far more concerned with large-scale projects such as highway construction as opposed to public transit schemes.<sup>22</sup>

While America's bias toward cars may be unsurprising, there are many hidden subsidies for automobile usage that are taken for granted. The availability of free parking for cars

---

<sup>18</sup> Ibid, 1.

<sup>19</sup> Ibid, 13.

<sup>20</sup> Robert Bullard, "Addressing Urban Transportation Equity in the United States." *Fordham Urban Law Journal* (2004), 1.

<sup>21</sup> Ibid.

<sup>22</sup> Ibid, 3.



contributes to congestion and waste of gas, and parking inclusion in urban development projects drives up their cost and encourages development in areas where land is cheaper, thus, fueling suburban sprawl.<sup>23</sup> In the face of inflation and the rising costs of oil, the federal government has not raised the tax on oil since 1993. The proceeds of this tax feed into the Highway Trust Fund, ensuring a perverse sustainability for highway funding and car usage. The full embrace of car culture in the United States has led to dwindling revenues for public transit, causing many actors at the state level to look to the sales tax as a way to fund mass transit.<sup>24</sup>

Even within public transit there is a severe split in funding. Over the last decade, funding for light rail has increased sixteen percent, while funding for bus lines has decreased by four percent.<sup>25</sup> Though light rail projects are more capital-intensive, cost incredible sums of money, and take far longer to open than bus stops, they have been favored over bus infrastructure. Funding bus lines deals with much poorer and more vulnerable populations and involves more upkeep costs.<sup>26</sup> Recently, MTAs have sought to increase transit ridership by looking to those taking transit less frequently, referred to as discretionary riders, by taking for granted the transit-dependent core riders. By implementing these high-cost rail projects that reach to more suburban areas, local governments and MTAs are favoring low-density, high-income areas as opposed to high-density, low-income areas.<sup>27</sup> Connecting these suburban, affluent populations to job centers such as downtown illustrates that transit funding is intricately tied to demographic characteristics.<sup>28</sup>

Partially due to this lopsided prioritization of light rail construction and funding, the vast majority of TOD projects and plans occur around light rail stations, though riders of light rail

---

<sup>23</sup> Carter et al., 13.

<sup>24</sup> Ibid.

<sup>25</sup> Ibid, 14.

<sup>26</sup> Ibid, 15.

<sup>27</sup> Ibid, 14-15.

<sup>28</sup> Ibid.

comprise only one percent of public transit commuters. [fig. 6]<sup>29</sup> While transit-oriented development at its core is a strategy to increase overall transit ridership, many developers are far more inclined to invest around fixed rail transit lines as opposed to bus lines that are more likely to move. Seventy percent of transit travel occurs by bus, and in Los Angeles, ninety percent of bus riders are people of color, with a median income of \$14,423 per year.<sup>30</sup> While eighty-two percent of rail riders are people of color, their median annual income is \$26,250.<sup>31</sup> Thus, developers will see a higher return for investment around a method of transportation that is used by wealthier, discretionary riders.<sup>32</sup>

---

<sup>29</sup> Dominie, 28.

<sup>30</sup> Carter et al., 14.

<sup>31</sup> Ibid.

<sup>32</sup> Madeline Wander, "An Equity Agenda for Transit-Oriented Development: Planning for Sustainable Growth in Los Angeles' Inner City." *Urban & Environmental Policy Senior Comprehensive Project*. Occidental College: Los Angeles, CA. (2008), 8.

## 3. TOD as a Strategy for Equitable Development

### 3.1 Why TOD?

Incentivizing the use of transit with dense, walkable, livable neighborhoods rich with amenities is a critical strategy to the sustainable growth of Los Angeles County and urban centers around the United States. Transit-oriented development also serves as an opportunity to inject a rhetoric of equity into development by addressing a multitude of issues at once, including gentrification and income segregation, job access and income inequality, and housing affordability. Equitable development can be defined as a process that:

1. Increases access for a population to quality, affordable transportation that links them to employment, amenities, and cultural destinations,
2. Includes a shared distribution of the benefits and burdens that accompany transit investment, and
3. Revolves around partnership in the planning process of these investments, with an emphasis on shared decision-making.<sup>33</sup>

However, these lofty goals and the actors in power must be held accountable to achieve these equitable outcomes. This section details the prominent role TOD can play with regard to the aforementioned issues and posits that an equity screening metric for future development would bring stakeholders together and ensure that development around transit leads to equitable outcomes.

---

<sup>33</sup> Carter et al., 11.

## 3.2 Gentrification and TOD

As concentrated transit investments target inner-city communities, existing residents are often priced out by the rise in living costs associated with these investments. Pollack et al. define gentrification as “a pattern of neighborhood change in which a previously low-income neighborhood experiences reinvestment and revitalization, accompanied by increasing home values and/or rents.”<sup>34</sup> In many cases, this process of gentrification includes displacement— the spatial removal of lower-income residents. While investment can come from the private sector or the public sector, this study specifically examines the effects that new light rail stations have on station area communities— whether compounded by private sector investment or not.<sup>35</sup> While private investment into these disenfranchised communities is also problematic, public investments have slightly more upside from an equity standpoint, as there is more accountability involved with public bodies.<sup>36</sup> This process of transit investment-induced gentrification and displacement is problematic for several reasons. The most relevant to this study are the following:

1. The Los Angeles County Metropolitan Transit Authority (Metro) is a public agency that plans and operates the majority of public transportation operations in Los Angeles County, the most populous county in America. In recent years, increases in sales tax have gone to Metro to improve access to transit and to increase ridership. Though the tax increase affects everyone, the investments made by Metro have catered to choice riders at the expense of the transit-dependent— a group that has been both supporting and relying on transit at the highest rates.

---

<sup>34</sup> Pollack et al., “Maintaining Diversity...,” 2.

<sup>35</sup> Ibid, 17.

<sup>36</sup> Ibid.

2. The process of gentrification and displacement occurs not just in one neighborhood, but many. Displaced residents often have little choice in finding a new affordable household nearby and may have to rely on a motorized form of transportation they did not need before, which has implications for commute times, greenhouse gas emissions, and equity outcomes. Further, residents moving into these transit-served neighborhoods often rely on cars.
3. Transit investment-based gentrification lifts up the concept of development equity. In the context of transit development, equitable outcomes would mean that benefits of development disproportionately favor the existing residents— those using transit at the highest rates. This concept usually manifests itself in inclusionary zoning, which is a policy tool that mandates new residential developments to contain units affordable to the income level of existing residents and ensures that existing residents are favored in the selection process.

Economic theory has long pitted efficiency against equity, causing many players in both the public and private sector to buy into this way of thinking.<sup>37</sup> But TOD has the opportunity to logically serve the underserved. Research shows that equitable investment leads to sustained growth, with equity in transportation planning a clear example— without quality access to jobs for all workers, the region cannot function economically.<sup>38</sup> Similarly, if the main goal of TOD is to reduce vehicle miles traveled and to increase ridership, but transit-dependent populations are priced out of transit access, then TOD is largely a failure.

---

<sup>37</sup> Ibid, 4.

<sup>38</sup> Carter et al., 1.

### 3.3 Connecting TOD to Jobs

TOD plays a central role in addressing the spatial mismatch of households and job centers. Several key technical schools and more than a million jobs are located along Los Angeles' transit lines.<sup>39</sup> Employment growth is significantly more likely to occur within or near existing job centers, and high-wage paying jobs are far more densely packed than low- and moderate-wage paying jobs, so access to transit serves as a critical linkage factor if it is done so equitably. [fig. 7]<sup>40</sup> Seventy percent of workers in downtown Los Angeles have an Associate's Degree or less, and sixty percent of jobs in the City's fastest-growing sector— Health Services— require less than a Bachelor's Degree.<sup>41</sup> Further, being attached to a sophisticated transportation network allows for economic mobility if workers switch jobs or work more than one. TOD thus ensures that congestion and traffic do not place a limit on economic productivity, and ultimately, growth.<sup>42</sup> Studies also find that workers who take transit are more productive, as their commute is more relaxing.<sup>43</sup> The more cars on the road, the more traffic there is, which means less productive workers and a weaker economy.

### 3.4 Linking Affordable Housing to TOD to Reduce H+T Costs

Housing and transportation (H+T) are two of the biggest challenges facing the Los Angeles region. Transportation policy is intricately linked to housing policy— transportation infrastructure connects people to the services they need to access and thus dictates housing

---

<sup>39</sup> Reconnecting America, "Preservation in Transit-Oriented Districts: A Study on the Needs, Priorities, and Tools in Protecting Assisted and Unassisted Housing in the City of Los Angeles," *Los Angeles Housing Department*. (2012), 4.

<sup>40</sup> Gehrke et al., 22; Carter et al., 41.

<sup>41</sup> Reconnecting America, 2-3.

<sup>42</sup> Gehrke et al., 22.

<sup>43</sup> Ibid.

settlement patterns.<sup>44</sup> Equitable TOD has the ability to bridge housing and transportation costs and lower them together— making the region more affordable to all.

The provision of affordable housing through inclusionary zoning is a critical policy lever to ensure equitable outcomes around transit development. While transit funding has ballooned in Los Angeles County, funding for affordable housing has declined precipitously. Funding sources such as Community Development Block Grants, HOME, and HOPE VI programs have lost sizeable swaths of budget. These losses will be compounded by changes in federal leadership for the Departments of Housing and Urban Development. [See Appendix C for a more lengthy discussion.] The loss of affordable housing units and the lack of funds to create more has implications on equity outcomes around transit because between 2012 and 2017, forty percent of expiring units were located within a half mile of light rail stations or BRT stops.<sup>45</sup>

Connecting affordable housing to places with low transportation expenditures like station areas that also contain a mixture of uses is critical to solving the affordability crisis in Los Angeles and to effective TOD.<sup>46, 47</sup> Los Angeles County has some of the highest transportation costs in the nation, with the average County household spending twenty-eight percent of their income on transportation as opposed to just nineteen percent nationwide.<sup>48</sup> The average commute time in Los Angeles is twenty-nine minutes— four minutes longer than the national average, but twelve percent of workers have to commute for more than an hour. Only eight percent of workers nationally have a commute that long.<sup>49</sup>

Reducing transportation costs essentially means reducing distance traveled. Thus, reducing auto dependence and vehicle miles traveled (VMT) through TOD is the most effective

---

<sup>44</sup> Carter et al., 17.

<sup>45</sup> Ibid, 6.

<sup>46</sup> Ibid, 13.

<sup>47</sup> “The Los Angeles Equity Atlas: Opportunity Mapped,” 6.

<sup>48</sup> Reconnecting America, 3.

<sup>49</sup> “The Los Angeles Equity Atlas: Opportunity Mapped,” 43.

and direct way to reduce transportation costs.<sup>50</sup> A 2005 study found that for every dollar saved on cheaper suburban housing, the same household would spend 77 cents more on transportation costs.<sup>51</sup> As a wealthier class demands dense, walkable communities full of amenities, it becomes more and more important to ensure that displacement does not send the transit-dependent to more suburban areas that exacerbate transportation costs.

The national benchmark for affordable housing is set at less than twenty-eight percent of household income spent on rent; and the according national affordable value for both housing and transportation has been provisioned at forty-seven percent.<sup>52</sup> Nationally, the average household spends forty percent on combined housing and transportation.<sup>53</sup> The average Los Angeles station area household spends nearly fifty percent of their income on combined H+T costs, but this value is some ten percent less than the City and nearly twenty percent less than the region. [see fig. 8]<sup>54, 55</sup> Since twenty-eight percent of full-time workers in the County make less than \$25,000 a year, equitable TOD, such that it contains sufficient affordable housing, serves as an opportunity to address these issues in tandem— households in station areas spend less on H+T costs because transit is a more affordable option.

### 3.5 Putting it all Together— the Equity Metric

TOD is expected to address many problems: urban sprawl, climate change, the mismatch between housing and jobs, and the underdevelopment of certain parts of cities among others.<sup>56</sup> Because of the interdisciplinary nature of TOD, the multitudes of angles that can be taken often

---

<sup>50</sup> Gehrke et al., 36.

<sup>51</sup> Ibid, 18.

<sup>52</sup> Gehrke et al., 26.

<sup>53</sup> “The Los Angeles Equity Atlas: Opportunity Mapped,” 6.

<sup>54</sup> Ibid.

<sup>55</sup> Ibid.

<sup>56</sup> Visotzky, 3.



dilute its effectiveness. For example, vested interests including job development, stimulating other economic growth, creating more pedestrian-friendly environments, or increasing accessibility can drown out the rhetoric calling for community benefits or equitable outcomes.<sup>57</sup>

To evaluate goals while mitigating the varying stakeholders within TOD, and most importantly equity outcomes in areas around transit development, a metric containing a suite of indicators should be employed to adequately assess equity in an unbiased way. Because the previous sections are all a small slice of equitable outcomes, the metric would address all things simultaneously. Such a metric would have much to say about the transit-reliant population, as literature emphasizes the intersectionality of demographics in station areas. An equity metric, such as the one that was designed for this study, can quantifiably examine equity outcomes based on the previous sections and longitudinally assess transit-dependent populations over time.

### 3.6 Policy

Perhaps the most significant piece of passed legislation with regard to TOD is Measure R. In 2008, Los Angeles County residents passed the largest voter-approved transit initiative in the nation, and, most surprisingly, it was a measure that increased the sales tax.<sup>58</sup> For 30 years, the half-cent sales tax addition will join Proposition A (1980) and Proposition C (1990), each half-cent additions to the sales tax, to generate some \$34.9 billion by 2039 for public transit expansion. Approximately \$16 billion of this revenue stream will be funneled by Metro into more than 70 new light rail stations along 11 transit lines.<sup>59</sup> Measure R thus represents a shift in perceptions on what public transit can offer the region, and a tremendous opportunity to offer

---

<sup>57</sup> Wander, 17.

<sup>58</sup> Visotzky, 6.

<sup>59</sup> Dominie, 8.

improved public transit to all riders. The recently passed Measure M, adding yet another half-cent hike on the sales tax, affirms this shift.<sup>60</sup>

While these sales tax measures are certainly the building blocks of transit funding in Los Angeles, other policy measures in place have a significant impact on development around transit. Senate Bill 375 (SB 375, passed 2008) mandates each regional Metropolitan Planning Organization (MPO) to create a Sustainable Community Strategy to reduce greenhouse gas emissions through integrated transportation, land use, and housing policies.<sup>61</sup>

These monies join a suite of projects and improvements that are encompassed in Metro's Long Range Transportation Plan (LRTP). Metro states that the LRTP is a "roadmap to improve mobility, provide more transportation options, stimulate our local economy, and create jobs."<sup>62</sup> With the increase of funding from Measure M, Metro is in the process of drafting a new LRTP that will take the County through 2040 [fig. 9]. This increase in revenue allows for an audacious set of projects for both transit and highways that aim to increase mobility in the region. As every action Metro takes is connected to plans and funding from the LRTP, it presents itself as an apt place to embed equity outcomes around these investments. A draft of an expenditure plan for the added funds shows that more than half of Measure M funding will make its way to transit offerings. [fig. 10]

In context of this increase in transportation funding, the six-county region of Los Angeles is expected to add 4 million people by 2035.<sup>63</sup> The Southern California Association of Governments (SCAG) forecasted that by 2021, forty percent, 624,000 of the projected 1.5

---

<sup>60</sup> Alissa Walker, "Measure M: Angelenos vote to tax themselves for better public transit," *CurbedLA*, last modified November 9, 2016, <https://la.curbed.com/2016/11/9/13573924/measure-m-los-angeles-public-transit-results>.

<sup>61</sup> Carter et al., 6.

<sup>62</sup> "Measure M: Metro's Plan to Transform Transportation in LA," *Metro*, last modified 2017, <http://theplan.metro.net/>.

<sup>63</sup> "The Los Angeles Equity Atlas: Opportunity Mapped," 26.

million new dwellings would need to be affordable to very-low and low-income households.<sup>64</sup>

The Sustainable Community Strategy for the region forecasts that of these new 1.5 million households, sixty percent of them will need to be located in SCAG-defined High Quality Transit Areas.<sup>65</sup> In order to meet environmental standards, coordinated investment must ensure that this growth is accommodated equitably to ensure sustainability.

---

<sup>64</sup> Ibid, 24.

<sup>65</sup> Ibid 14.

## 4. Literature Review

### 4.1 Gentrification

Pollack, et al., define gentrification as “a neighborhood change process characterized by increasing property values and incomes.”<sup>66</sup> Pollack et al. also state that “[d]isplacement, whether considered as an inevitable part of gentrification or not, is a pattern of change in which current residents are involuntarily forced to move out because they cannot afford to stay.”<sup>67</sup> Zuk et al. added, “displacement takes many different forms—direct and indirect, physical or economic, and exclusionary—and may result from either investment or disinvestment.”<sup>68</sup> Similarly, some researchers include the process of displacement within the definition of gentrification, defining gentrification as occurring when wealthier residents move into a neighborhood.<sup>69</sup> Zuk et al. find that neighborhoods are changing slowly, but over time, they are becoming more segregated by income, due partly to increases in income inequality—leading to an overall homogenization of communities.<sup>70</sup>

As Zuk et al. introduce, in some cases, public investment into disenfranchised communities can be a form of “state-sponsored gentrification” that begets private sector investment. On the other hand, public investment provides an opportunity to demand that improvements are made for the existing community and that a commitment to equity is a main focal point.

---

<sup>66</sup> Pollack et al., “Maintaining Diversity...,” 16-17.

<sup>67</sup> Ibid.

<sup>68</sup> Miriam Zuk, Ariel H. Bierbaum, Karen Chapple, Karolina Gorska, Anastasia Loukaitou-Sideris, Paul Ong, and Trevor Thomas. “Gentrification, Displacement and the Role of Public Investment: A Literature Review.” (2015), 28.

<sup>69</sup> Pollack et al., “Maintaining Diversity...,” 16.

<sup>70</sup> Zuk et al., 45.

## 4.2 Station Area Change

Bullard introduces transportation as a civil rights issue. Burdens of transportation in the country disproportionately affect low-income people and people of color; and equitable outcomes in transportation policy are necessary in economically viable and sustainable communities.<sup>72</sup> Bullard moves on to identify three subsections of inequities in transit funding: geographic inequities, which state that wherever a transit investment is placed, there is another geography that is marginalized or simply not chosen; social inequities, in which benefits and burdens of transportation investment are distributed disproportionately among population groups; and procedural inequities, such as whether or not there is proper and just decision making between all actors.<sup>73</sup>

There is an overwhelming body of literature that affirms that new rail development leads to an increase in area property values, and while effects on commercial properties and small businesses is less documented, one study found that TOD slowed developments of small businesses relative to the County average.<sup>74</sup> Many studies find this increase in property values accompanied by a restructuring of the demographic composition of the neighborhood.<sup>75,76</sup> However, due to the variation in methods employed, Duncan concludes “[t]he most that one might safely generalize from the body of literature is that properties near stations sell at small to modest premiums (somewhere between zero and ten percent).”<sup>77</sup>

---

<sup>72</sup> Bullard, 9.

<sup>73</sup> Ibid, 3.

<sup>74</sup> Paul Ong, Chhandara Pech, and Rosalie Ray, “TOD impacts on businesses in four Asian American neighborhoods.” *UCLA Center for the Study of Inequality*. (2014), 13.

<sup>75</sup> Dominie, 36.

<sup>76</sup> Casey Dawkins and Rolf Moeckel, “Transit-Induced Gentrification: Who Will Stay, and Who Will Go?” *National Center for Smart Growth* (2014), 4.

<sup>77</sup> Michael Duncan, “Comparing Rail Transit Capitalization Benefits for Single-Family and Condominium Units in San Diego, California,” *Transportation Research Record: Journal of the Transportation Research Board* 2067 no. 1 (2008), 121.

Thus, TOD and reinvestment in urban communities becomes problematic. Pollack et al. find that population growth, non-Hispanic White population growth, total housing growth, and median household income (MHI) experienced greater rates of change in station areas than in the metropolitan statistical area.<sup>78</sup> Dominic finds that “[r]ace, class and car ownership are all extremely strong predictors of transit use.... we can expect that changes in transit use will be magnified in gentrifying neighborhoods with high percentages of extremely low-income households.”<sup>79</sup> Gehrke et al. add that transit lines extend through many of the City’s low- and moderate-income areas, areas that are occupied by a majority of renters, thus, making them more susceptible to an increase in property values than homeowners.<sup>80</sup> One study states the gravity of the situation with the statistic that eighty percent of households in existing as well as planned station areas are renters.<sup>81</sup> Pollack et al. affirm that neighborhoods with high renting populations are far more susceptible to gentrification, as rising rents are among the first costs felt by residents as capital enters a neighborhood.<sup>82</sup> Further, the study adds that many demographic factors intersect in station areas to make these populations especially vulnerable.<sup>83,84</sup>

Faced with demographic change, studies show that in-migration of wealthy residents to station areas directly correlate with lost transit riders and gained drivers— a transition that occurred faster in station areas than in the County.<sup>85,86,87,88,89</sup> Dominic found that gentrification (as defined solely by a loss of low-income households) has a negative and statistically significant

---

<sup>78</sup> Pollack et al., “Maintaining Diversity...,” 23.

<sup>79</sup> Dominic, 27.

<sup>80</sup> Gehrke et al., 20, 52.

<sup>81</sup> Visotzky, 10.

<sup>82</sup> Pollack et al., “Maintaining Diversity...,” 33.

<sup>83</sup> Ibid, 13.

<sup>84</sup> Visotzky, 8.

<sup>85</sup> Ibid, 11.

<sup>86</sup> Pollack et al., “Maintaining Diversity...,” 20.

<sup>87</sup> Reconnecting America, 13.

<sup>88</sup> ACT-LA, “Transit For All: Achieving Equity in Transit-Oriented Development.” (2015), 3.

<sup>89</sup> Visotzky, 1.

relationship with transit ridership, with bus transit usage falling precipitously more than light rail usage.<sup>90,91</sup> Gherke et al. found there is an incredible demand to live near transit, yet nearly 2/3 of this demand will come from households earning less than the City's median income- meaning that expansion of housing supply that caters exclusively to the middle- or upper-class will not be effective.<sup>92</sup> Carter et al. succinctly conclude, "transportation is both mostly used by and needed by people of color."<sup>93</sup>

### 4.3 Goals of TOD

Successful transit-oriented development at its core seeks to increase public transportation ridership. Concurrently, this equates to reducing household vehicle usage, measured by vehicle miles traveled (VMT). By increasing the supply and density of housing and amenities near transit stops, planners hope that transit serves as a viable alternative to the car. One study showed that adding just 5,000 people to a station area could reduce its VMT by nearly thirty percent.<sup>94</sup> The Southern California Association of Governments (SCAG), the regional planning body for the six-county region containing Los Angeles County, found that VMT per capita could be reduced by more than seven percent and vehicle hours traveled (VHT) per capita could be reduced by seventeen percent as a result of more "location efficient land use patterns" and improved transit service.<sup>95</sup> In doing so, TOD also combats urban sprawl by increasing density and intensifying uses. Sprawl not only reinforces classicism and segregation, but also encourages automobile use.

---

<sup>90</sup> Dominic, 49.

<sup>91</sup> Ibid, 38.

<sup>92</sup> Gehrke et al., 20.

<sup>93</sup> Carter et al., 9.

<sup>94</sup> Ibid, 37.

<sup>95</sup> The Southern California Association of Governments, "The 2016-2040 Regional Transportation Plan/ Sustainable Communities Strategy," (2016), 9.

Defining successful outcomes in TOD is important because of the multitude of stakeholders moving towards various objectives.<sup>96</sup> Summarizing the goals identified by existing reports helps to ensure equitable outcomes in TOD by informing future studies, programs, and legislation. The Los Angeles Equity Atlas suggests the following goals for successful TOD: increasing mobility, access and connectivity, preserving and creating affordable housing and managing neighborhood change, supporting economic and workforce development, and investing in healthy communities.<sup>97</sup> Reconnecting America finds that the preservation of affordable housing is one piece of ensuring equitable and successful TOD.<sup>98</sup> Carlton et al. presented the following goals to the City’s since-dissolved TOD cabinet:

<b>Goal</b>	<b>Description</b>
Jobs	Foster attractive and diverse employment opportunities in highly accessible locations.
Housing	In highly accessible locations, foster housing options that meet diverse housing needs.
Quality of Life	In highly accessible locations, foster the provision of basic services and additional community benefits.
Connectivity	Foster diverse transportation options that reduce overall travel time and out of pocket transportation costs.

[fig. 11]<sup>99</sup>

These goals were then related to transit-oriented strategies and policies the city has in place to implement them. Gherke et al. present four main goals for TOD: making housing and transportation affordable, reducing auto-dependence and enhancing transit ridership, promoting

<sup>96</sup> Ibid, 8.

<sup>97</sup> “The Los Angeles Equity Atlas: Opportunity Mapped,” 9.

<sup>98</sup> Reconnecting America, 22.

<sup>99</sup> Ibid, 6.



equitable access to transit, and promoting economic development and job growth.<sup>100</sup> These goals were also used in the study to evaluate how station areas contributed to achieving these objectives. Connecting goals for equitable development around transit to methods that measure equity outcomes is critical for successful TOD. In summation, goals from literature show the interconnected nature of TOD and the variety of expectations found in its implementation.

#### 4.4 Stakeholders in the Process

Literature focuses on the fact that the political fragmentation of stakeholders and actors is one of the key challenges to providing equitable TOD.<sup>101,102</sup> Carter et al. encourage following “money through the maze” and detail the variation of agencies in Los Angeles, their jurisdictions and key capacities as a major challenge to promoting equitable transportation planning.<sup>103</sup> Also, they note is the absence of equity in some groups’ missions and mandates.<sup>104</sup> Gehrke et al. identify the following public partners with a stake in TOD: City Planning, the Planning Commission, Los Angeles Metro, the Los Angeles Transportation Department, the Los Angeles Housing Department, the Mayor’s Office, and even the Los Angeles Unified School District.<sup>105</sup> While private developers and community groups are also necessary groups with which to facilitate TOD plans, the more interagency and interdepartmental collaboration and coordination these groups can manage will maximize the leveraging of resources in support of TOD and accordingly deliver the most benefits to the population most in need– the community groups, neighborhood council members, and other local actors that are often left out of this planning

---

<sup>100</sup> Gehrke et al., 16.

<sup>101</sup> Ibid.

<sup>102</sup> Ian Carlton, Robert Cervero, Michael Rhodes, and Ethan Lavine, “Developing and Implementing the City of Los Angeles’ Transit Corridors Strategy: Coordinated Action toward a Transit-Oriented Metropolis,” (2012), ii.

<sup>103</sup> Carter et al., 23-24.

<sup>104</sup> Ibid, 32.

<sup>105</sup> Gehrke et al., 8.

process. Gehrke et al. affirms that SB 375 provides an opportunity to increase communication between groups, as TOD is one of the most important strategies to reducing greenhouse gas emissions in Los Angeles and across the state and country. The study finds that a broad coalition of groups working together to support SB 375 efforts will inherently increase environmental outcomes at the same time as equity outcomes.<sup>106</sup>

Further, lack of a uniform TOD policy magnifies the political problems.

Carlton et al. drive this point home, wherein they organize City and County documents containing policy or guidelines that relate to transit-orientation, including the Los Angeles General Plan Framework, Land Use/Transportation Policy (a City and MTA joint policy), the Los Angeles 2010 Bicycle Plan, Los Angeles Specific Area plans, the Los Angeles Urban Design Studio City-wide *and* District Design Guidelines, the Los Angeles City Planning Commission Do Real Planning Initiative, the Los Angeles City Planning Commission Urban Design Principles, MTA Joint Development Policies and Procedures, and MTA's Transit-Oriented Planning Grants.<sup>107</sup>

The politicization of the TOD process, characterized by the variance in goals and of stakeholders and their respective power relations, requires an element of cohesion, something that normalizes outcomes. A transportation equity metric that concisely assesses the transit-dependent population and can mark equity outcomes is crucial because equitable TOD is effective TOD. Allowing those that rely on transit to benefit from transit improvements is the best way to maximize these investments and move towards many improvements outlined as goals.

---

<sup>106</sup> Ibid.

<sup>107</sup> Carlton et al., B1-B10.

## 4.5 Informing the Equity Metric

Carter et al. wrote that measurement of metrics within TOD is important because it clarifies communities' expectations and gives government bodies and transit authorities goals and accountability.<sup>108</sup> While there is no one-size-fits-all pattern for TOD, all TOD shares the common goal of reducing VMT.<sup>109,110</sup> Equity in development is central to achieving this goal. However, because demographic change occurs in different neighborhood contexts, there is an abundance of metrics that could be chosen to evaluate equity outcomes around TOD. Carter et al. conclude that the most important metrics are those co-created with community actors.<sup>111</sup>

Many studies have explored the relationship between light rail stations and housing values, likely because housing values are easily available data to collect. The vast majority report that proximity to light rail stations increases housing prices because those households then have reduced transportation costs. While rising real estate values do suggest displacement, gentrification is a more expansive premise, and home price data alone is insufficient to evaluate equity in station areas. Zuk et al. catalogue extensive research that deals with property values before and after light rail is constructed.<sup>112</sup>

Pollack et al. use changes over the 20 year period of 1990-2000 census data to explore differences in population growth, housing units (both total number and tenure), racial and ethnic composition, household income (both median income and households with incomes above \$100,000), housing costs (both gross rents and home values), in-migration, public transit use for commuting, and car ownership for 42 station areas in 12 metropolitan areas.<sup>113</sup> Areas were selected by census block group, and were included in the analysis if the majority of that census

---

<sup>108</sup> Carter et al., 27-28.

<sup>109</sup> Gehrke et al., 17.

<sup>110</sup> Reconnecting America, 1.

<sup>111</sup> Carter et al., 27-28.

<sup>112</sup> Zuk et al., 64-68.

<sup>113</sup> Pollack et al., *Maintaining Diversity*, 56.

block area was within a half-mile radius of the station. A study by Reconnecting America identifies median household income, percent of renter-occupied households, potential change in market strength, and vulnerability of housing stock to identify priority transit-oriented districts for preservation of affordable housing.<sup>114</sup> Gehrke et al. similarly use another set of demographic indicators to evaluate equitable access to transit stops, including median household income, percent renter households, and share of expiring affordable units, yet stations are also made distinct by intensity and use mix. [fig. 12]<sup>115,116</sup> Yet for this study, more telling is the use of neighborhood change indicators, which include changes in educational attainment, family structure, MHI, and income diversity.<sup>117</sup>

Dominie measures gentrification using added high-income households and lost-low income households, but uses several categories of variables to construct his more complex regression analysis, including housing variables (median rents, home sale prices, and ownership: rental ratio) and policy variables (including a dummy variable for park and ride distinction)<sup>118,119</sup> The study uses all census tracts within a half-mile radius and census data from 1990, 2000, and 2010, in addition to the ACS and the 2000 Census transportation planning package.<sup>120,121</sup>

The Reconnecting America report, while focusing on protection of affordable housing units in transit-rich neighborhoods, conducted a spatial evaluation of stations using median household income and percent of renter-occupied households in context of proximity to job

---

<sup>114</sup> Reconnecting America, 9-15.

<sup>115</sup> Gehrke et al., 24.

<sup>116</sup> Ibid, 50.

<sup>117</sup> Ibid.

<sup>118</sup> Dominie, 9.

<sup>119</sup> Ibid, 46.

<sup>120</sup> Ibid, 42.

<sup>121</sup> Ibid.

centers, areas with low T costs, rising property values, access to downtown due to Measure R investments, and vulnerability of housing stock.<sup>122</sup>

---

<sup>122</sup> Reconnecting America, 9-14.

## 5. Methodology

### 5.1 Methodology

In order to fully explore evaluation tools for equity outcomes in TOD, research for this study will include both qualitative and quantitative data collection. The research question, “How can TOD in Los Angeles County be evaluated with regards to equity” is essentially a two-part question. It seeks to evaluate past development and the extent of its equitable outcomes and at the same time work toward a system of metrics that allow future TOD projects to be quantifiably evaluated. As such, data will be collected twofold.

### 5.2 Qualitative Methodology

Because TOD is an interdisciplinary process involving a variety of actors and stakeholders with various amounts of power within the planning process, semi-structured interviews will be held between December 2016 and March 2017 with various representatives of the field. Interviewees were contacted by phone or by email, and interviews were largely collected based on a convenience sample. The following people participated in the study:

- **Cal Hollis, Senior Executive Officer at Metro** was selected because of Metro’s influence over transit operations in the region. Hollis’ role in land acquisition and development was critical in gaining a better understanding of the processes that shape TOD in Los Angeles County.
- **Thomas Yee, Initiative Officer at LA THRIVES.** LA THRIVES convenes actors across various sectors, mirroring how TOD has the opportunity and the challenge to bring a multitude of stakeholders together. Yee works toward equitable and sustainable communities built around transit.

- **Jessica Meaney, Executive Director at Investing in Place**, was referred by other interviewees due to her expertise with transportation equity and her tenure in the field. Investing in Place is a policy research and advocacy group that works to ensure public investments positively impact access to quality transportation for all people. Meaney works to improve safe and complete access to those without cars in the LA region, especially in low-income areas and communities of color.
- **Madeline Wander, Senior Data Analyst at USC / Program for Environmental and Regional Equity**. PERE is a research organization that works in areas such as environmental justice and regional equity. Wander completed her undergraduate degree at Occidental College and has experience in transportation equity issues. She worked extensively on the CalEnviroScreen project that will be discussed below.
- **Chris Goett, Senior Program Officer, Housing and Economic Opportunity at the California Community Foundation**. Goett is in charge of the Smart Growth Program, which works to connect opportunities such as housing and jobs to transit.
- **As well as a member of SCAG that wished to remain anonymous**. SCAG is the planning body for Southern California, which works to develop the regional transportation plan that guides transit buildout and includes an equity screening metric.

Interviews were administered in a somewhat loose structure that was chosen so that each individual could best share their expertise and experiences within the equitable TOD field. For example, each interview began with how the organization or body each interviewee represents interacts with the transportation equity and transportation planning field. The interview instrument seeks to open a conversation that evaluates from different roles, how successful equitable TOD has been, ways to improve, and ways to measure equity. As such, interviews

began with more general questions about TOD and equity, and for each interviewee moved to more specific questions based on that group's involvement with certain projects. [See Appendix B for sample questions]

### 5.3 Oriented Toward Equity: A Rating System for Equitable Transit-Oriented Development

Several pieces of academic research extensively evaluate equitable TOD with a suite of indicators forming a metric, and thus deserve additional attention with regard to developing the metric for this study. One is the Northeastern University's Dukakis Center for Urban and Regional Policy's 2015 study with the Center for Transit-Oriented Development, which seeks to empirically evaluate equity outcomes in station areas in Massachusetts.

The produced "eTOD Score" rating system seeks to measure the capacity for equitable TOD for both bus-rapid transit (BRT) and light rail stations. "It identifies easily quantifiable and comparable built, social, and transit attributes that reduce driving, encourage higher transit ridership, and promote transit equity and accessibility," write the authors.<sup>136</sup> The eTOD score is broken down into ten metrics in three categories: Transit, Orientation, and Development. The ten metrics are as follows: transit access, transit connectivity, non-automobile commuting, transit dependency, income, rental housing, affordability, walkability, residential density, and employment gravity. [fig. 14]<sup>137</sup> Each subscale is then summed into a combined score, from a minimum of 10 points to a maximum of 50 points.<sup>138</sup>

The authors write, "This rating system builds on CTOD's national experience in developing TOD typologies consisting of "place types" and "transit zones," and incorporates the

---

<sup>136</sup> Stephanie Pollack, Anna Gartsman, and Jeff Wood, "Oriented Toward Equity: A Rating System for Equitable Transit-Oriented Development." *Dukakis Center for Urban and Regional Planning at Northeastern University*. (2015), 2

<sup>137</sup> Pollack et al., "Oriented Toward Equity...", 32.

<sup>138</sup> *Ibid*, 13.



Dukakis Center’s efforts to better measure—and understand—transit and TOD equity.”<sup>139</sup> We set out to determine whether a set of measurable station area characteristics could be shown to contribute both to TOD performance in the traditional sense (lower VMT, greater transit usage, catalytic investment) and to improved social equity as reflected in mixed- income housing, enhanced access to transit, and availability of neighborhood-based service amenities.”<sup>140</sup>

Three problems arise from the eTOD score project, the first being that the study does not analyze data longitudinally, which inhibits the ability of trends to be followed. The second is that stations are weighted against one another, rather than to a baseline. Thus, their application to anything larger than the system is relatively limited. Finally, what is stated above, namely, “mixed-income housing, enhanced access to transit, and availability of neighborhood-based service amenities.” are not strongly reflected in the equity metric. Coupled with the fact that data samples are not longitudinal, the Orientation subset of the metric sheds little light on equity outcomes around transit.

## 5.4 Grading California’s Rail Transit Station Areas

Elkind et al.’s project *Grading California’s Rail Transit Station Areas* provides another invaluable resource cataloguing scores for transit stations in California. Like the eTOD score, the project divides metrics into five different categories that in total comprise the following 11 metrics: transit use by residents, transit use by workers, quality of transit reach, transit safety, sum of jobs and households per acre, walkability, policy support for TOD, market performance

---

<sup>139</sup> Ibid, 7.

<sup>140</sup> Ibid.

in real estate, transit affordability, transit dependency, and greenhouse gas emissions.<sup>141</sup> They are included in the appendix for readability. [fig. 15]<sup>142</sup>

While the scorecard project does make it clear that it evaluates station area performance as a whole, only two metrics focus on equity- affordability and transit dependency- and together are weighted at fifteen percent of the total score.<sup>143</sup> Also, this project is not a longitudinal study, so the equity metrics of affordability and transit dependency are even less reliable in evaluating equity outcomes. But like Gehrke et al., it is interesting that the project separated residential, mixed, and employment areas, which may overcomplicate things but is poignant regarding the complexities of a standardized equity metric for TOD.<sup>144</sup>

## 5.5 Plan Bay Area 2040: Communities of Concern

Though the two are often compared, the Bay Area functions as a vastly different entity from Southern California. The Plan Bay Area for 2040, developed by the Metropolitan Transit Commission (MTC; similar to Metro) includes an equity analysis that was developed by a Regional Equity Working Group comprised of members from the Regional Advisory Working Group and MTC's Policy Advisory Council. The equity analysis is composed of three parts, including a title VI analysis, an environmental justice analysis, but most importantly for this study, an equity analysis that identifies "communities of concern".<sup>145</sup> The metric uses a unique method to determine where vulnerable populations reside, and each indicator is weighted differently based on importance and regional population share.

---

<sup>141</sup> Ethan N. Elkind, Michelle Chan, and Tuong-Vi Faber, "Grading California's Rail Transit Station Areas." *Center for Law, Energy & the Environment (CLEE) at University of California, Berkeley School of Law for Next 10.* (2015), 10.

<sup>142</sup> Ibid, 11.

<sup>143</sup> Ibid.

<sup>144</sup> Ibid, 12.

<sup>145</sup> Association of Bay Area Governments and Metropolitan Transit Commission, "Equity Analysis." *Plan Bay Area 2040*, last modified 2017, <http://www.planbayarea.org/2040-plan/plan-details/equity-analysis>.

Low-income tracts, denoted by having thirty percent of their population share under 200 percent of the federal poverty level, to take into account the high cost of living in the Bay Area, are considered to be Communities of Concern if they also meet the seventy percent minority population threshold. Communities of Concern can also be marked if the thirty percent low-income threshold is met in addition to a combination of any three of the six following categories with the corresponding thresholds: Limited English Proficiency; twenty percent, Zero-Vehicle Household; ten percent, Seniors Seventy-five Years and Over; ten percent, People with Disability; twenty-five percent, Single-Parent Family; twenty percent, and Severely Rent-Burdened Household; fifteen percent.<sup>146</sup> The full table is included for readability in the appendix. [fig. 16]

The Communities of Concern Framework is important as it represents just one part of a larger equity-based check that is involved before any transit investments are made. However, the effectiveness of simply transposing this metric over the Southern California region is questionable, as the thresholds on indicators used are catered to regional trends and realities.

## 5.6 CalEnviroScreen

CalEnviroScreen is a tool for snapshot analyses of disadvantaged communities through an environmental justice lens. While the tool makes clear that is not a substitute for cumulative environmental justice based impacts that are looked at under the California Environmental Quality Act (CEQA), CalEnviroScreen is a screening tool that informs other political bodies and policies, such as Senate Bill 535, which requires 25% of cap and trade funds be given to disadvantaged communities.

---

<sup>146</sup> Ibid.

CalEnviroScreen uses a suite of indicators divided into two categories: Pollution Burden and Population Characteristics. Most relevant for this study are the socioeconomic factors, which make up one of two subsections under population characteristics. These indicators include educational attainment, rent burdened low-income households, linguistic isolation, poverty, and unemployment.<sup>147</sup> Since CalEnviroScreen is meant to be utilized as a statewide resource, data points (tracts) are scored against one another as percentiles. While CalEnviroScreen has proven to be a tested instrument for policy implementation in environmental justice circles, it has no mobility indicators that make it a suitable metric for evaluating transportation equity.

## 5.7 Quantitative Methodology

Equity metrics for evaluating TOD seek to increase accountability for public sector actors and both designate example station areas that are doing well, as well as to understand why other station areas are not performing as planned. While successful TOD (such that it increases transit ridership and decreases household vehicle miles traveled) is intertwined with equitable TOD, this study specifically seeks to determine indicators of equity. Many available metrics highlight snapshot analyses— data for one particular year or moment that fail to take into account trends or how transit-dependent populations have changed. This study operates longitudinally to analyze how transit-dependent populations have changed, which will fill a gap in the literature. Indicators were informed in part by insights from interviewees of the qualitative section.

American Community Survey (ACS) data were collected for the years 2005, 2010, and 2015 for all census tracts in Los Angeles County. The chosen indicators fell into one of three categories: Race, Income, or Mobility. With context of existing literature, this study concurs that low-income population, populations of color, and households without car access are

---

<sup>147</sup> Matthew Rodriguez and Lauren Zeise, “Update To The California Communities Environmental Health Screening Tool: CalEnviroScreen 3.0,” *CalEPA and OEHHA*. (2017), 6.

overwhelmingly likely to be transit-reliant, and identifies these three indicators as the most appropriate and succinct way to measure the transit-reliant population.

The two indicators in the Race suite were percent non-White population and percent of those that spoke English at a level less than “very well”. The two indicators in the Income suite were percent of households as renters and median household income. Mobility was measured by the percent of households with 0 cars. Each of the five indicators was weighted equally, and was scored as a percent of the county average. Data were then divided into deciles and assigned a corresponding score from 1 to 10. These five scores were then summed to create a Transit-Dependent Score (TDS) with a minimum of 5 and a maximum of 50, with 5 being the least transit-dependent and 50 being the most transit-dependent. The method assumes that a high TDS equates to more equitable outcomes, because retaining the largest amount of the transit-dependent population should reflect more equity. Data was then added to ArcMap to correspond station areas (census tracts within a half-mile radius of a station) to census tract data.

Example: Census tract 1816 (containing Occidental College)

Suite	Indicator	Tract Data	Tract data as a % of County average	This percent as a decile of all County tracts	Transit-Dependent Score (TDS)
Race	% Nonwhite Population	45%	96%	5	22
	% Speaking English < very well	14%	56%	2	
Income	% Renter	45%	83%	5	
	Median household income	64,500	114%	8	
Mobility	% 0-car households	10%	112%	2	

## 6. Findings

When transit investments and improvements reach neighborhoods, they are often accompanied by real estate speculation and an increase in property values that displaces existing, transit-dependent residents. This is problematic because it negatively impacts all things TOD can impact in a positive way— equity outcomes, greenhouse gas emissions, income segregation, and transit ridership. Metro, which is using public funding (sales tax) to improve transit options, needs to acknowledge that effective TOD is equitable TOD as they have the most power and influence in the process. This study investigated the role of equity in TOD in Los Angeles County, and found the following.

### 6.1 Key Findings

- The discussion around transportation equity is robust and political— involving a multitude of stakeholders with varying power relations.
- Collaboration between stakeholders is key in moving forward for transportation equity.
- In the past, equity outcomes have not been Metro’s priorities, but outcomes are slightly increasing as leadership changes in a positive way.
- Metrics for equity need to be developed in a political context and must have a clear policy application.
- TOD is an acronym that is evolving from looking at just one development to a community, or even an entire system.

## 6.2 Power Relations

It became clear during interviews that a key theme complicating the discussion around equity and transit development was the power dynamic that plays out between actors. Jessica Meaney of Investing in Place began by stating, “many people think Metro is a bus and train agency. They are our county transportation commission: they are the funder, the planner, the designer and the distributor of regional funds.” Madeline Wander of USC PERE reiterated the amount of power, political and otherwise that Metro holds. Based on her work with organizers, Wander said that Metro is often the organizing target—more so than SCAG or the City. “Their investments impact things beyond transportation; [they’re] charged with making decisions that impact things beyond transportation,” she says. Because of the influence Metro has on the region, it interacts with many players, some with more power than others. Thomas Yee of LA THRIVES added, “Metro has taken steps to be more accessible, but even then, those jurisdictions and stakeholders with the most resources have the greatest influence in the [transit development] process.” Wander described the disproportionate amount of power smaller cities in Los Angeles County have in the context of Metro: “half of the County lives in the City of Los Angeles, but I don’t think the city of LA has half of the decision making power... there are mayors of other cities on the Metro board.”

Meaney also brought up the fact that lack of a uniform land use policy means that the biggest investor in the transportation network, Metro, is creating it. Cal Hollis, executive officer at Metro, discussed the political tensions between Metro and city jurisdictions, and acknowledged that Metro has gradually expanded its role over time, but maintained that the building and incentivization of affordable housing, was the responsibility of each individual city. He said, “Only the locals [officials] can make the tough political decision to say, ‘given that

value has been created by the community through its support of transit, we want to claw some of that back.” The same was true for bike lanes and other streetscape improvements, to which Hollis said, “We can’t go out and tell the city we’re going to put a bike lane down your street. We don’t have the authority to do that. However, we can through our funding program provide incentives for those communities that do want to become more transit oriented.” It was more or less implied from non-Metro interviewees that equity should be at the heart of any development and should be upheld by all those involved.

### 6.3 Communication

Chris Goett of the California Community Foundation stated that stakeholders don't all communicate at the same level. “We’re really good at our little silo and we have our graduate degrees, we all have a little common language and common training...[but transportation equity is] this intersectionality is where policy, praxis kind of happens. It's uncomfortable for folks, saying ‘I don't understand what we’re doing on the housing board,’ ‘why are we talking about transit,’ and we have to think about the intersectionality of housing and transit.” Wander said this intersectionality was an opportunity to help bring people together. She described how community-based organizations and policy advocates are figuring out how to work together, but how, often, researchers don’t partner authentically with community based organizations.” Yee echoed that sentiment, saying that such processes are “structurally challenging for community stakeholders to become participants. Policy and planning is often very technical, and meetings are typically conducted in English and during working hours.” Goett added, “I think there [needs to] be dialogue amongst the actors that helps them understand when to push on one and not another and that's hard because we need them all.” Communication is thus critical to ensuring stakeholders come together for equity outcomes.



A SCAG representative said their plans are developed “through collaboration – we do not have the power to construct projects– so we must take feedback from all regional stakeholders to reach consensus.” As an example, during planning of last cycle of the RTP/SCS, “advocates from 33 different organizations came together and proposed new areas of analysis for the Plan. SCAG was able to accommodate about 60% of the requested revisions, and have taken the other recommendations under consideration for the 2020 RTP/SCS.” The sheer volume of people and ideas here should be shocking, and should display the communication challenges that must be bridged to ensure equity in transit development.

## 6.4 Metrics for Equity

Jessica Meaney stated, “you can’t measure equity until you define it... everybody just smears around money based on power and population irrespective of historical need... when you’re in Metro rooms and Metro circles, when they say equity, they mean geographic equity.” To combat this definition, Investing in Place pushed the following three metrics to define equity in transportation: race, income and households with one car or less, and advised to “think less is more with metrics.” Investing in Place challenges researchers pushing superfluous and extensive variables to measure transportation inequity, because, as Meaney stated, “I need something I could pitch in an elevator in 60 seconds and convince an elected official to back.” In short, the many stakeholders involved with TOD need to agree on equity indicators, and the less, the better. Wander agreed that just several key factors could dictate disadvantaged communities. “The legacy of racism, obviously, so communities of color. The legacy of rich people running everything, so income.” However, she also included recent immigration status as something she specifically looked at in her research, as transit usage patterns for recent immigrants vary

significantly from first-generation Americans. Other metrics such as political power, Wander stated, were harder to measure but also important in terms of identifying historical disinvestment.

Implementation of equity outcomes in measures and policies requires just as much rigor as their adoption. Meaney discussed the multiple times in advocacy work she would bump into the following roadblock: “if it's not in the [Long-Range Transportation Plan] LRTP we're not going to do it.” All equity-based implementations need to be firmly tied to actual funding. The LRTP encompasses all of Metro's money, seventy percent of which is currently locally funded through the plethora of sales tax measures. Meaney continued, “some of the ships are sailing on Measure M, but Metro as a whole, as a business, are still there.” She detailed how guidelines for Measure M will be released April 1<sup>st</sup>, then adopted by the board in June. This quick turnaround makes it difficult for advocates to ensure the dollars are being spent equitably. The LRTP, however, is a mainstay, a guiding document that frames investment and development. It thus represents a perfect place to embed a transportation equity screening process that can constantly be referred to—just as the expenditures piece of the LRTP will be carefully monitored, so too could an equity baseline. Ensuring that elected officials can agree with other powerful players on this equity baseline or what constitutes equitable distribution of investment is also critical to the implementation process.

## 6.5 Equitable Development: Then and Now

Well tenured in the field of transportation equity, Meaney summarizes that the history of Los Angeles County is wrapped up in systemic racism that plays out through public policy and the built environment. “LA County has the biggest gap between the rich and the poor in the state of California,” she states, “it is undeniable what is going on with our racial lines and what has gone on with racial lines in this region.” Yee added, “in the 90s and early 2000s, the equity issue

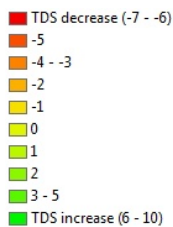
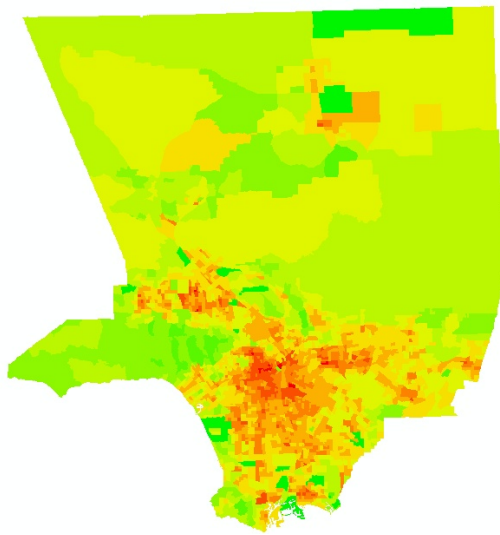
in transportation planning was largely a civil rights issue and a fight between investment in bus and rail transportation options.” While this pattern more or less persists today, Yee stated that issues such as “transit-oriented development, climate change mitigation, active transportation, and advanced mobility were not major issues like they are today. Now, equity issues are much more complex, cross sector, and nuanced.”

Wander added that any sort of equity assessments in Metro planning and development have historically been tangential rather than a core piece of the work. These tensions are still being played out and are resulting in what Meaney called the “suburbanization of poverty”. Not only does the displacement of low-income residents to peripheral areas exacerbate greenhouse gas emissions, which goes against SB 375’s mandated reduction of greenhouse gas emissions, but core riders are spatially excluded from transportation access. Wander and PERE identify transportation as a “sweet spot” where both equity and efficiency can be achieved– if the people who need transportation services the most are being served, it will also be the most efficient use.<sup>148</sup>

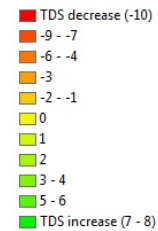
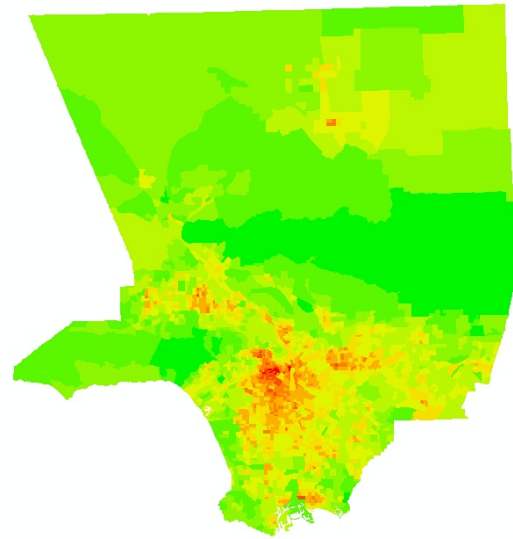
---

<sup>148</sup> Carter et al., 1-2.

Countywide TDS differential: 2005-2010



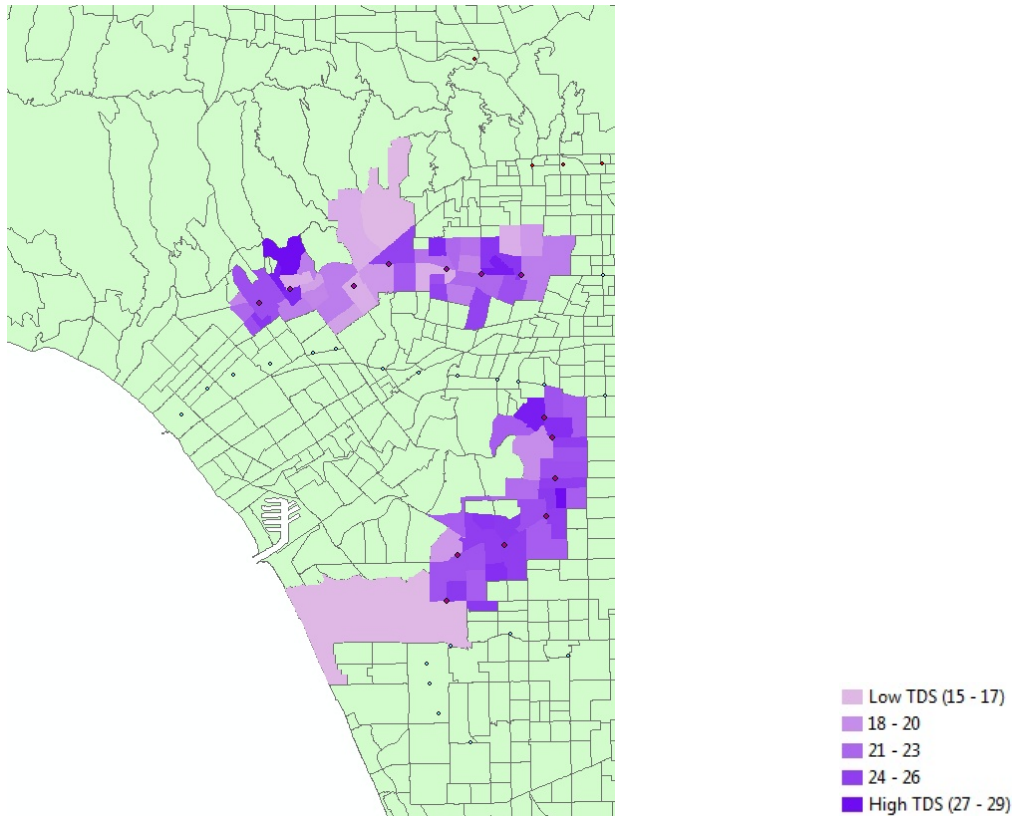
Countywide TDS differential: 2010-2015



The above maps display Transit-Dependent Score (TDS) differentials on a county-wide level. On the left, in 2010, it can be seen that tracts losing transit-dependent populations spread throughout the county. By 2015, the severe recession and retreat of these populations suggests both the suburbanization of poverty—households moving far out, perhaps out of the county all together, and segregation by income—homogenization. This trend is particularly worrisome as transit investments continues to reach out—take for example the Gold Line Foothill Extension, which opened in 2016 and operates slightly further north than the high-TDS pocket northeast of downtown on the 2015 map, [right]. The unique urban form of Los Angeles, one that is polynucleated rather than concentric, has interesting implications for a robust transit system that continues to grow outwards.

The two rail extension projects nearest to implementation are the Crenshaw / LAX line and the Purple Line extension. Using the metric from this study to screen the communities that would be impacted by these investments yields the following map, with darker colors corresponding to higher vulnerability scores.

Screening areas around proposed Purple Line Extension and Crenshaw-LAX Line



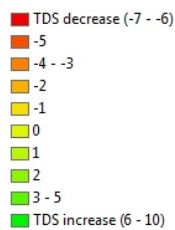
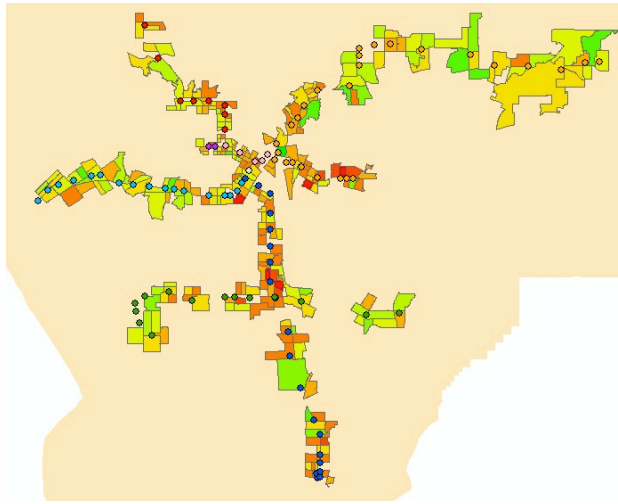
It is clear that both the Purple Line Extension (above) and the Crenshaw/LAX line (below) would have impacts on vulnerable, transit-dependent communities that could thus render these transit improvements significantly impaired in terms of ridership.

## 6.6 The Changing Metro Leadership

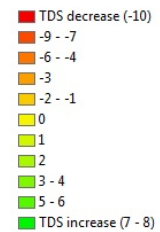
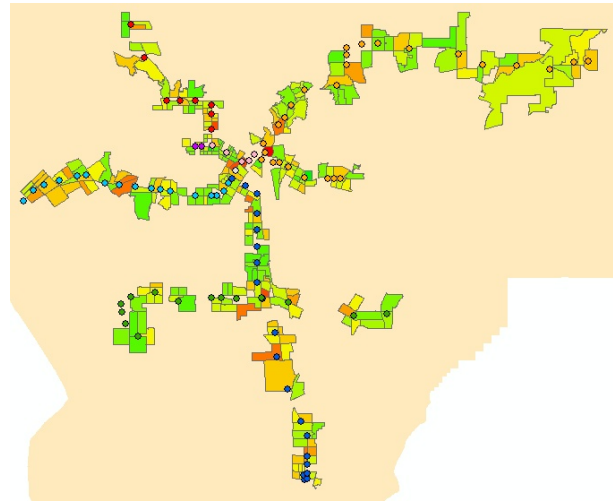
Interviewees supplied the view that traditionally, Metro has been known for prioritizing freeway development and maintenance and neglecting buses (favoring rail lines) and not

concerning themselves with equity outcomes. Wander identifies “a leadership that was super entrenched and kind of old-school, but that's changed, and that's what's really cool, and seems to be providing more opportunities to infuse equity into the work.” Metro CEO Phil Washington and his board have started to understand that their bottom line is directly linked to the ridership, which has been on the decline, says Goett. Metro is now looking more broadly at how their transit stations impact the community. Hollis stated of Washington, “He is not interested in *a* development he is interested in our impact on communities. We look at TOC– transit oriented communities, and how can a community at large be transit oriented. Now you're talking more than a building.” Wander agrees that the opportunity to leverage investments is huge– especially in the context of declining affordable housing funding. By the same token, Hollis posited that Metro's objective is to “create a use that generates, that increases ridership and broadens– in a positive way– the impacts that bringing transit opportunities into a community has. That is our objective. And it is very clear, 180 degrees from where we were when I first got here six years ago.” On the future, Goett said, “moving forward, it's going to be vigilance and advocacy. We need to keep funding organizing and advocacy groups to keep lifting up these issues of racial equity that don't happen by themselves, they don't happen naturally, they're not the path of least resistance, they're complex. We need to keep that drumbeat going so that the next wave of young leaders are stepping into that as a worldview.”

2005-2010 TDS Differential

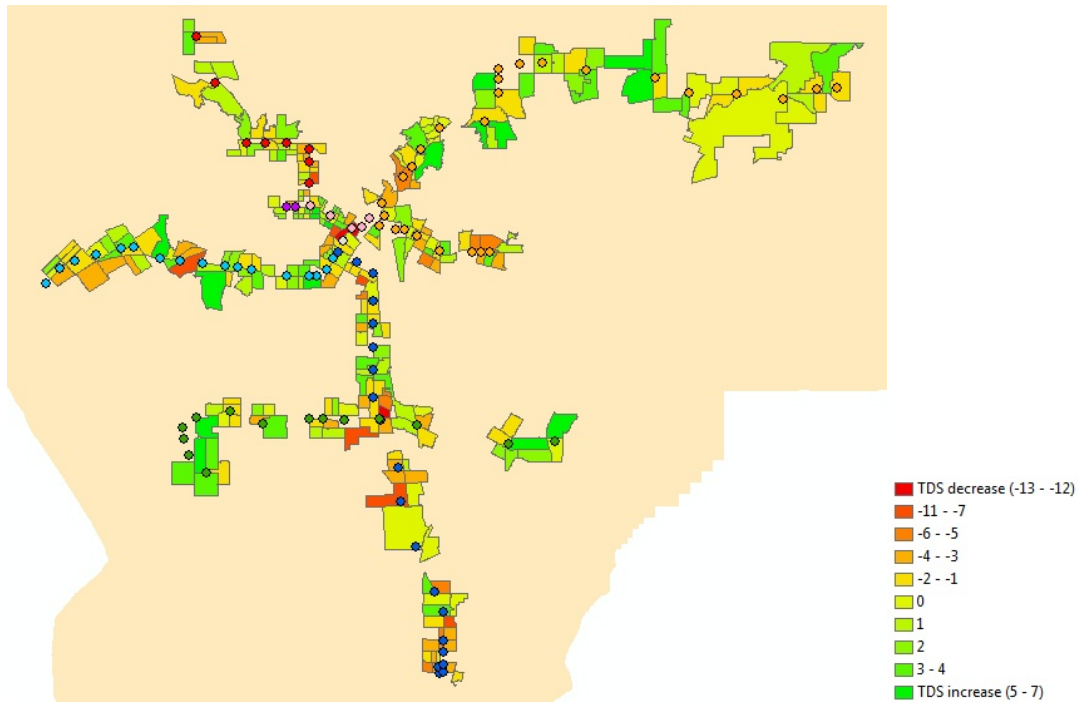


2010-2015 TDS Differential



Consider the above two maps. On the left is the Transit-dependent score differential from 2005 to 2010, with red denoting loss of transit-dependent populations (TDS decrease). On the right is the TDS differential from 2010 to 2015, with green denoting the addition of vulnerable populations (TDS increase). It is clearly seen that high-TDS populations were better retained (and even increased) from 2010 to 2015 than from 2005 to 2010. The below map shows that even with a hole to climb out of, over a ten year span, equity outcomes have increased around light rail stations.

2005-2015 TDS Differential



Transportation equity in Los Angeles County is nowhere near perfect nor ideal. However, the maps above depict the kind of change that is occurring with new leadership across departments and organizations, the hard work of organizers, advocates, lobbyists, and researchers. The maps do not show intensity well, for example, the downtown station areas still have far higher TDS than more peripheral station areas but one point here, two points there— steps are being taken to ensure that public transportation is available for those who need it and use it most.

## 6.7 TOD as a Changing Acronym

Studies and organizations have also identified the necessity of redefining the acronym TOD to mean transit-oriented *districts* rather than transit-oriented development. The latter encourages a more integrated transit system rather than isolated station projects, and more coordinated investment between all facets of the community— not just housing and



transportation.<sup>149</sup> The Los Angeles Equity Atlas stresses the importance of an integrated transport network including bus lines, bike networks, and pedestrian-friendly urban form with the idea that successful TOD should reach a larger swath than just the traditional station area.<sup>150</sup> The so-called “last-mile connections” are also critical to connecting households to transit who live outside of the half-mile station area.<sup>151</sup> Gherke et al. agree with this more broad distinction of TOD as transit-oriented districts that allows for other improvements, such as housing preservation, community development, and mobility patterns.<sup>152</sup> Broader transit networks also allow for economic mobility and maintained connections to various job centers if and when that mobility occurs.<sup>153</sup>

While TOD is a term many larger cities with more sophisticated transportation networks have grown out of, it remains relevant as it encapsulates the often critical relationship between development, ridership, and transit. However, these developments frequently assume the following pattern: a new station is planned, land is bought, the station is developed and opened, to maximize ridership, more development occurs in the station area and amenities are added, causing property values (including rents) to rise and displacing vulnerable populations that cannot account for the swelling prices, culminating in a loss of ridership. Thus, many in the TOD field are now looking more broadly at transportation equity, which works at a larger scale to identify how varying levels of inequities impact the safety of, access to, and quality of ridership for the transit-dependent. The variance between bus funding and rail funding and service, mobility improvements not limited to motorized transit, but rather pedestrian and bike safety,

---

<sup>149</sup> Reconnecting America, vi.

<sup>150</sup> “The Los Angeles Equity Atlas: Opportunity Mapped,” 12.

<sup>151</sup> Ibid.

<sup>152</sup> Gehrke et al., 11, 22.

<sup>153</sup> Ibid, 22.

connectivity to public transportation nodes, and equity that allows the whole region to prosper rather than focusing on one development.

In many ways, transit use is dictated by urban form- bikeability, walkability, accessibility, and density of uses.<sup>154</sup> TOD represents the kind of communities that young urban families are demanding– walkable, diverse, and active. Often called “New Urbanist” communities, home values in these places are holding their value as compared to suburban locations.<sup>155</sup> Elkind et al. analyzed TOD in all station areas in California and concluded, “[g]enerally, the better-performing areas were located in the middle of the transit systems in downtown-like environments, while the poorest-performing areas were located at the outer edges of the system and often the outer edges of the urban areas without significant development.”<sup>156</sup> Kahn finds that census tracts treated with a walk and ride oriented station far more likely to gentrify and experience harsher gentrification than park and ride, showing that dense, walkable stations are in high demand.<sup>157</sup> However, it is critical to note that TOD cannot be deemed successful by aesthetic value alone. In order to ensure equitable outcomes, TOD must be authentic in its ability to increase ridership, and not a scheme with which to profit.

---

<sup>154</sup> Gehrke et al., 40.

<sup>155</sup> Ibid, 13.

<sup>156</sup> Elkind et al., 30.

<sup>157</sup> Matthew Kahn, “Gentrification Trends in New Transit Oriented Communities: Evidence from Fourteen Cities that Expanded and Built Rail Transit Systems,” *Tufts University and UCLA* (2007), 4.

## 7. Recommendations

### **1. Adopt the metric into the LRTP and mandate inclusionary zoning in station areas at certain thresholds.**

The metric used for this study was not created in a vacuum. It was specifically created with few, but poignant indicators that measure transit-dependent populations in Los Angeles County and how they have changed over time. As such, the metric should be used as a screening method to ensure equity outcomes around transit development. Metro should adopt this metric into the LRTP as a strategy for equity and as a strategy to improve ridership. Metro should also adopt a transit-dependent score threshold that increases the necessary inclusionary zoning percentage for future developments in station areas— an additional one point percent of affordable units for every TDS value over twenty. (A TDS value of 28 would have an inclusionary zoning percentage of plus-8.) Adopting this metric would ensure that investments in more vulnerable communities would still positively impact them.

### **2. Incentivize collaboration between groups to maximize TOD benefits.**

It is clear that TOD as a field has a difficulty with collaboration. While policy such as SB 375 provides the opportunity to bring together more actors, there are still many that fall through the cracks. Metro should work with cities to offer incentives such as density bonuses or parking reductions for projects that go above and beyond involving all stakeholders. Clearly, the more stakeholders there are involved, the more the benefits will be distributed.

### **3. Look to state funding in the face of federal uncertainty.**

With federal funding for transportation and affordable housing in a place of uncertainty, the Southern California region should look to state funding sources and attempt to get its fair share. Wander identified one such source, the Affordable Housing Sustainable Communities program (AHSC) that is derived from cap and trade funding that can augment equitable TOD. Programs like AHSC that combine the goals of TOD with the provision of affordable housing are exactly what need to be maximized to ensure equitable outcomes in TOD. This process also forces collaboration and shared working groups to enact the funding.

### **4. Explore more (affordable) development.**

Los Angeles County needs to work the housing gap to close the acute shortage of (especially affordable) housing. Measure S, recently voted down, would have instituted a moratorium on building in an already housing-deficient region. The lack of affordable housing exacerbates displacement effects in transit-dependent communities. The City and County should explore outcomes from Measure JJJ and think about more strict inclusionary zoning or a larger development tax without discouraging residential development. The reelection of Los Angeles Mayor Eric Garcetti brings his focus on transportation equity issues. The recently signed Executive Directive 19 empowers several stakeholders in the field to build transportation and housing infrastructure more efficiently.<sup>158</sup> Momentum can be built from an event such as policy, or even the reelection of Mayor Garcetti, and moving forward, the Los Angeles region needs to address its housing shortage.

---

<sup>158</sup> “Mayor Garcetti Signs Sweeping Executive Directive To Streamline Efforts To House Homeless Angelenos, Build Affordable Housing And Infrastructure, And Reform L.A.’s Planning Process,” *Los Angeles Mayor’s Office*, last modified March 9, 2017, <https://www.lamayor.org/mayor-garcetti-signs-sweeping-executive-directive-streamline-efforts-house-homeless-angelenos-build>.

**5. Further studies should contextualize development around transit.**

Further research should put TDS or a similar metric score in the context of where development is occurring. Since development around transit does not occur at the same rate, exploring the relationship between density of development and the concentration of high-TDS populations in the downtown area should be compared to more peripheral areas to understand the role of development itself instead of just inferring it. Particularly advantageous would be analyzing vulnerability as soon as land is acquired by Metro or when development plans are approved. This analysis would prove effective for particularly dense and transit-served areas.

**6. Emphasize compounding vulnerability indicators.**

Another study should model the Communities of Concern program more closely and overlay indicators visually rather than numerically to better understand compounding vulnerability indicators. Especially poignant is understanding that while race, income, and mobility are surely the most important indicators of transit equity or inequity, many other factors can intersect to make a population vulnerable to future transit investments. Visualizing longitudinally, with several years of data, would give organizations involved in transportation equity a better look at where to target specific programs— a tenant's bike share program might be more effective in an area with fewer cars than an area with lower incomes, but relevant indicators could be hidden by a blanketing overarching metric.

## 8. Conclusion

Los Angeles County residents are speaking up for better transportation options. Metro has amassed a wealth of resources with which to make these improvements. But will these added investments benefit the communities they interact with and impact, or will they benefit outsiders and wealthier residents who don't depend on transit infrastructure at the same rates of existing residents? Ensuring equity outcomes requires vigilance from all actors in the transportation equity field. All stakeholders need to come together to create a shared definition of transportation equity and adopt a screening process to understand the implications of their investments and how it will realistically affect their ridership. This study began with the two-part question of how equity around transit-oriented development could be evaluated, and it has addressed the past, present, and future of this question. Interviewees from the TOD field presented their experiences with the lack of equity in transit development in the past, current policy and programs were detailed through literature, and a metric analyzing transit-dependent populations was developed to ensure future developments follow a trend towards transportation equity.

## Works Cited

- ACT-LA. "Transit For All: Achieving Equity in Transit-Oriented Development." (2015), 1-10.
- Agyeman, Julian and Tom Evans. "Toward Just Sustainability in Urban Communities: Building Equity Rights with Sustainable Solutions." *The Annals of the American Academy of Political and Social Science* 590 (2003), 35-53.
- Association of Bay Area Governments and Metropolitan Transit Commission. "Equity Analysis." *Plan Bay Area 2040*. Last modified 2017. <http://www.planbayarea.org/2040-plan/plan-details/equity-analysis>.
- Barragan, Bianca. "Ballot Measure JJJ: Build Better LA." *CurbedLA*. Last modified October 11, 2016. <http://la.curbed.com/2016/10/11/13238820/explain-ballot-measure-jjj-los-angeles>.
- Barragan, Bianca. "Ballot Measure HHH: Homelessness Reduction and Prevention, Housing, and Facilities Bond." *CurbedLA*. Last modified October 11, 2016. <http://la.curbed.com/2016/10/11/13238618/explain-ballot-measure-hhh-los-angeles>.
- Bromley, Charlotte. "Displacement and Gentrification in Low-Income Communities Connected to the Los Angeles 30/10 Plan: Who is Vulnerable, What Can Be Done to Prevent Deepening Inequality, and How L.A.'s Expanded Transit System Can Succeed." *Urban & Environmental Policy Senior Comprehensive Project*. Occidental College: Los Angeles, CA. (2013), 1-95.
- Bullard, Robert D. "Addressing Urban Transportation Equity in the United States." *Fordham Urban Law Journal*. (2004), 1-36.
- Carlton, Ian, Robert Cervero, Michael Rhodes, and Ethan Lavine. "Developing and Implementing the City of Los Angeles' Transit Corridors Strategy: Coordinated Action toward a Transit-Oriented Metropolis." (2012), 1-86.
- Carter, Vanessa, Manuel Pastor and Madeline Wander. "An Agenda for Equity: A Framework for Building a Just Transportation System in Los Angeles County." *The Program for Environmental and Regional Equity The University of Southern California*. commissioned by the California Endowment (2013), 1-48.
- Chandler, Jenna, Bianca Barragan, and Alissa Walker. "Victories for public transit and parks, and other election results for LA ballot measures." *CurbedLA*. Last modified November 9, 2016. <http://la.curbed.com/2016/11/8/13569616/election-results-los-angeles-ballot-measures>.
- Dawkins, Casey, and Rolf Moeckel. "Transit-Induced Gentrification: Who Will Stay, and Who Will Go?" *National Center for Smart Growth*. Paper presented at Transit, Transit Oriented Development, and Urban Form: A Bi-National Symposium Featuring Paris, France, and Washington, DC October 18, 2014. (2014), 1-28.

- Dominie, Will. "Is Just Growth Smarter Growth? The Effects of Gentrification on Transit Ridership and Driving in Los Angeles' Transit Station Area Neighborhoods." UCLA for the Bus Riders Union, (2012), 1-98.
- Duncan, Michael. "Comparing Rail Transit Capitalization Benefits for Single-Family and Condominium Units in San Diego, California." *Transportation Research Record: Journal of the Transportation Research Board* 2067 no. 1 (2008), 120–30.
- Elkind, Ethan N., Michelle Chan, and Tuong-Vi Faber. "Grading California's Rail Transit Station Areas." *Center for Law, Energy & the Environment (CLEE) at University of California, Berkeley School of Law for Next 10.* (2015), 1-49.
- Executive Office of the President. "America First: A Blueprint Budget to Make America Great Again." *Office of Management and Budget.* (2017) 1-53.
- Gehrke, Amanda, Gloria Ohland, Abigail Thorne-Lyman, Elizabeth Wampler, Jeffrey Wood, Sam Zimbabwe, and Winston Dong. "Creating Successful Transit-Oriented Districts in Los Angeles: A Citywide Toolkit for Achieving Regional Goals." *Center for Transit-Oriented Development* (2010), 1-101.
- Kahn, Matthew E. "Gentrification Trends in New Transit Oriented Communities: Evidence from Fourteen Cities that Expanded and Built Rail Transit Systems." *Tufts University and UCLA* (2007), 1-28.
- "Mayor Garcetti Signs Sweeping Executive Directive To Streamline Efforts To House Homeless Angelenos, Build Affordable Housing And Infrastructure, And Reform L.A.'s Planning Process." *Los Angeles Mayor's Office.* last modified March 9, 2017.  
<https://www.lamayor.org/mayor-garcetti-signs-sweeping-executive-directive-streamline-efforts-house-homeless-angelenos-build>.
- "Measure M: Metro's Plan to Transform Transportation in LA." *Metro.* Last modified 2017.  
<http://theplan.metro.net/>.
- Ong, Paul, Chandara Pech, and Rosalie Ray. "TOD impacts on businesses in four Asian American neighborhoods." *UCLA Center for the Study of Inequality.* (2014), 1-15.
- Pendall, Rolf, Juliet Gainsborough, Kate Lowe, and Mai Nguyen. "Bringing Equity to Transit-Oriented Development: Stations, Systems, and Regional Resilience." Paper presented at *Urban and Regional Policy and its Effects*, Washington, DC, May 21, (2010), 1-34.
- Pollack, Stephanie, Anna Gartsman, and Jeff Wood. "Oriented Toward Equity: A Rating System for Equitable Transit-Oriented Development." *Dukakis Center for Urban and Regional Planning at Northeastern University.* (2015), 1-32.



- Pollack, Stephanie, Barry Bluestone, and Chase Billingham. "Maintaining Diversity In America's Transit-Rich Neighborhoods: Tools for Equitable Neighborhood Change." *Dukakis Center for Urban and Regional Planning at Northeastern University*. (2010), 1-63.
- Reconnecting America. "Preservation in Transit-Oriented Districts: A Study on the Needs, Priorities, and Tools in Protecting Assisted and Unassisted Housing in the City of Los Angeles." *Los Angeles Housing Department*. (2012), 1-40.
- Rodriquez, Matthew, and Lauren Zeise. "Update To The California Communities Environmental Health Screening Tool: CalEnviroScreen 3.0" *CalEPA and OEHHA*. (2017), 1-158.
- Sisson, Patrick. "Proposed Trump budget makes billion-dollar cuts in city transportation, development funds." *Curbed LA*. Last modified March 16, 2017.  
<http://www.curbed.com/2017/3/16/14948030/trump-federal-budget-cities-transportation-urban-infrastructure>.
- "The Los Angeles Equity Atlas: Opportunity Mapped." California Community Foundation and Reconnecting America (2013), 1-82.
- The Southern California Association of Governments. "The 2016-2040 Regional Transportation Plan/ Sustainable Communities Strategy." (2016), 1-202.
- Visotzky, Alex. "Transit Oriented Development and Affordable Communities in Los Angeles County: An Opportunity to Serve Neighborhoods and Families Equitably." *Neighborhood Housing Services of Los Angeles County*. (2015), 1-27.
- Walker, Alissa. "Measure M: Angelenos vote to tax themselves for better public transit." *CurbedLA*. Last modified November 9, 2016.  
<https://la.curbed.com/2016/11/9/13573924/measure-m-los-angeles-public-transit-results>.
- Wander, Madeline. *An Equity Agenda for Transit-Oriented Development: Planning for Sustainable Growth in Los Angeles' Inner City. Urban & Environmental Policy Senior Comprehensive Project*. Occidental College: Los Angeles, CA. (2008), 1-71.
- "What is TOD?" *Reconnecting America*. Last modified 2017.  
<http://reconnectingamerica.org/what-we-do/what-is-tod/>.
- Zuk, Miriam, Ariel H. Bierbaum, Karen Chapple, Karolina Gorska, Anastasia Loukaitou-Sideris, Paul Ong, and Trevor Thomas. "Gentrification, Displacement and the Role of Public Investment: A Literature Review." (2015), 1-76.

## Appendix A: Tables and Figures

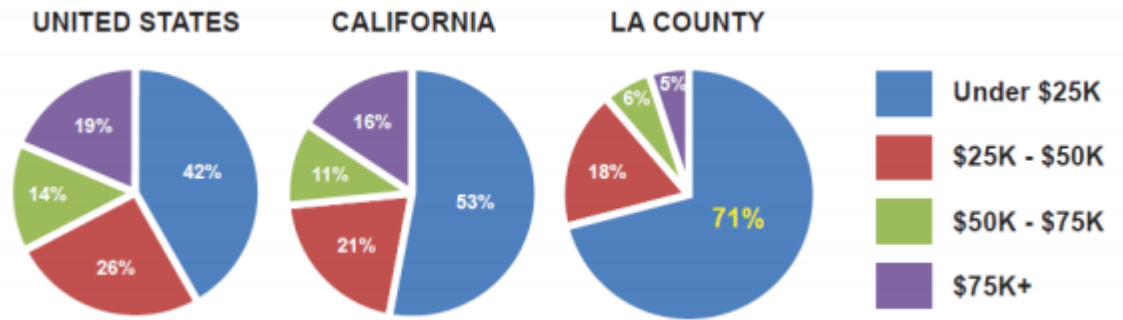


Figure 1: Transit Ridership to Work by Income Level, 2009<sup>159</sup>

	<i>Region</i>	<i>City of Los Angeles</i>	<i>Los Angeles Station Areas</i>
Share Taking Transit, Walking, and Biking to Work	8%	14%	24%
Share Households with 0 or 1 Car(s)	46%	57%	66%
Median Household Income	\$45,280	\$36,687	\$29,726
Share of Renter Households	46%	61%	73%
Average Household Size	3.00	2.83	3.02

Figure 2: Regional, City, and Transit Zone Demographic Characteristics, 2000<sup>160</sup>

<sup>159</sup> The Los Angeles Equity Atlas: Opportunity Mapped, 16.

<sup>160</sup> Gehrke et al., 21.

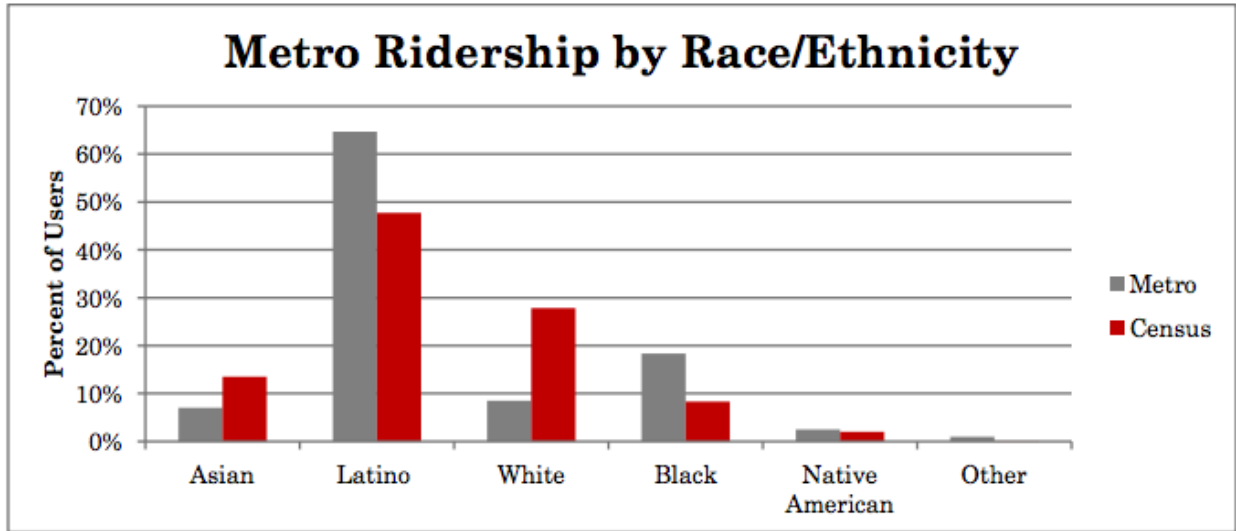


Figure 4: Metro Ridership by Race/Ethnicity<sup>161</sup>

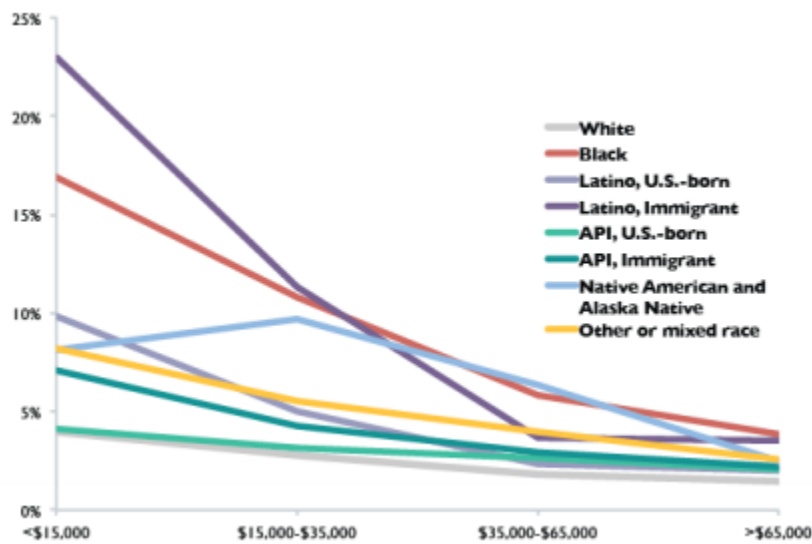


Figure 5: Percent Using Public Transit by Earnings by Race/Ethnicity/Nativity, Los Angeles Metro, 2006-2010<sup>162</sup>

<sup>161</sup> Dominie, 27.

<sup>162</sup> Carter et al., 7.

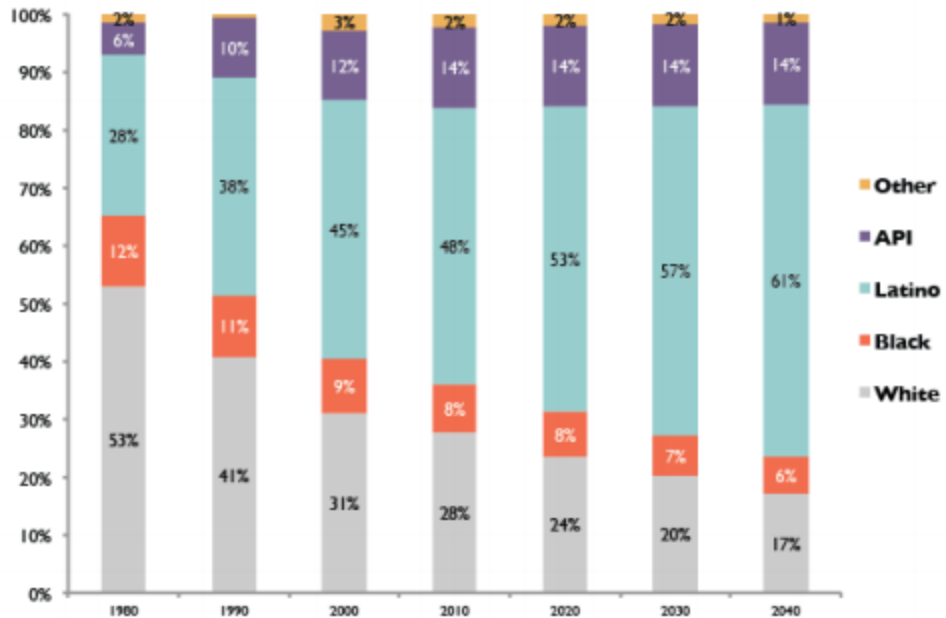


Figure 5: Los Angeles County Changing Demographics<sup>163</sup>

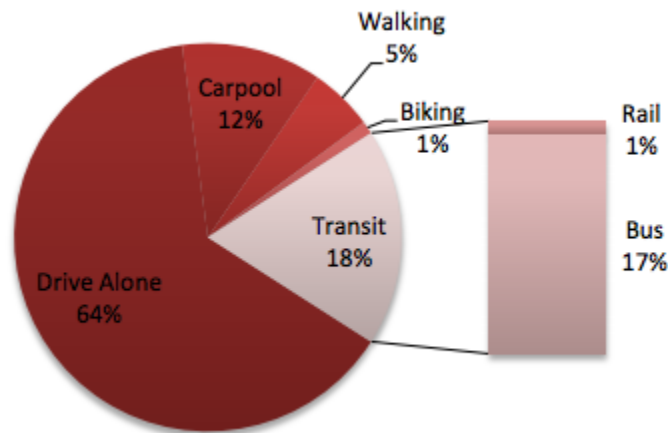


Figure 6: Station Area Commute by Mode, 2006/2010<sup>164</sup>

<sup>163</sup> Carter et al., 8.

<sup>164</sup> Dominic, 28.

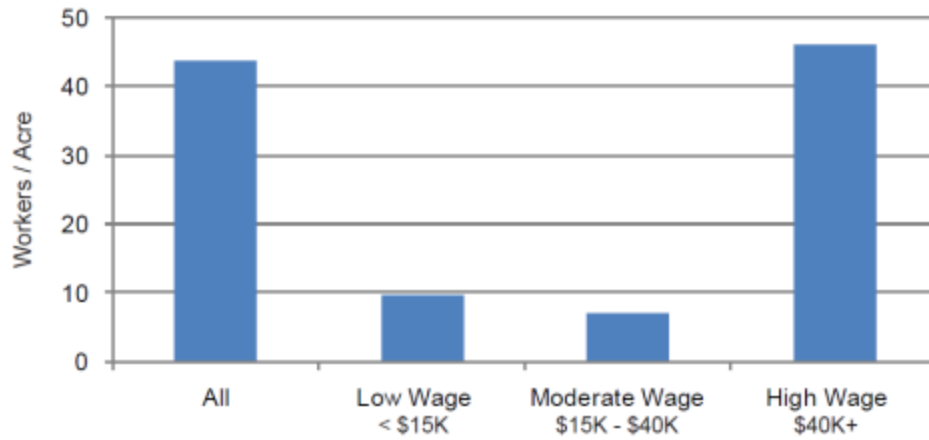


Figure 7: Average Weighted Employment Density by Wage Level, Los Angeles County, 2010<sup>165</sup>

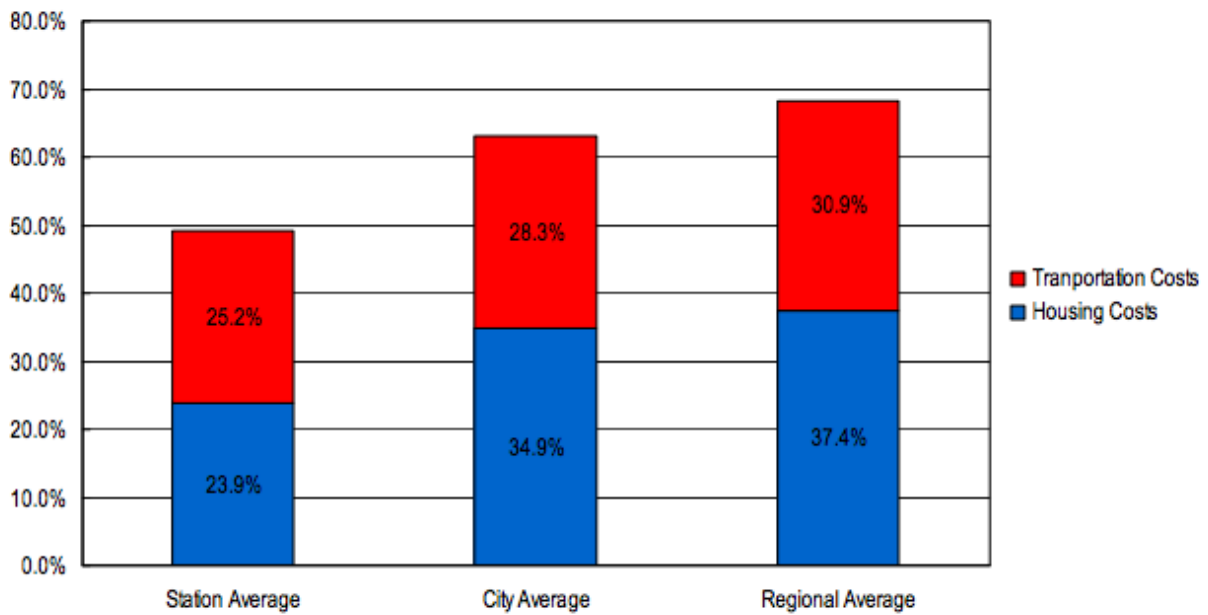


Figure 8: Housing and Transportation Costs in Los Angeles, Comparing Station, City and Region (In Percent of Income Spent)<sup>166</sup>

<sup>165</sup> “The Los Angeles Equity Atlas: Opportunity Mapped,” 41.

<sup>166</sup> Gehrke et al., 26.

## Potential Ballot Measure Structure

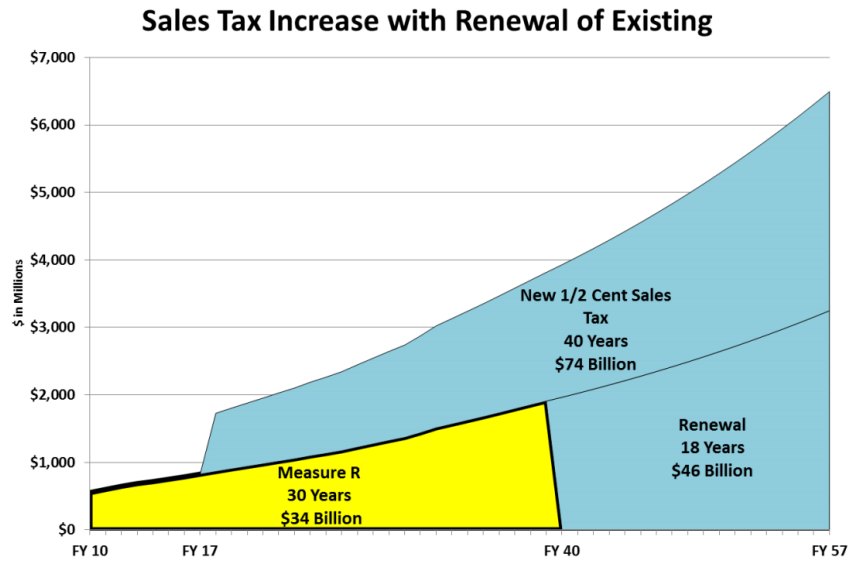


Figure 9: Measure M Funds Increase<sup>167</sup>

## Potential Ballot Measure Expenditure Plan Attachment A

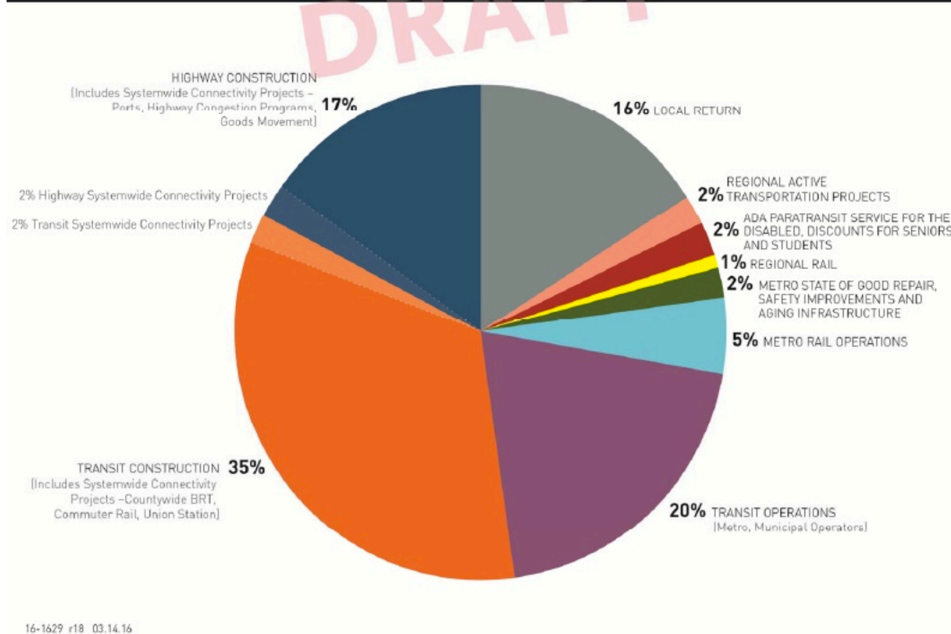


Figure 10: Measure M Expenditures<sup>168</sup>

<sup>167</sup> Metro, “Long Range Transportation Plan- Draft Potential Ballot Measure Expenditure Plan,” *Metro Board Meeting* (March 24, 2016),16.

<sup>168</sup> *Ibid*, 7.

Goal	Description
Jobs	Foster attractive and diverse employment opportunities in highly accessible locations.
Housing	In highly accessible locations, foster housing options that meet diverse housing needs.
Quality of Life	In highly accessible locations, foster the provision of basic services and additional community benefits.
Connectivity	Foster diverse transportation options that reduce overall travel time and out of pocket transportation costs.

Figure 11: Interpretation of the City of Los Angeles' Transit Orientation Goals as of June 2012<sup>169</sup>

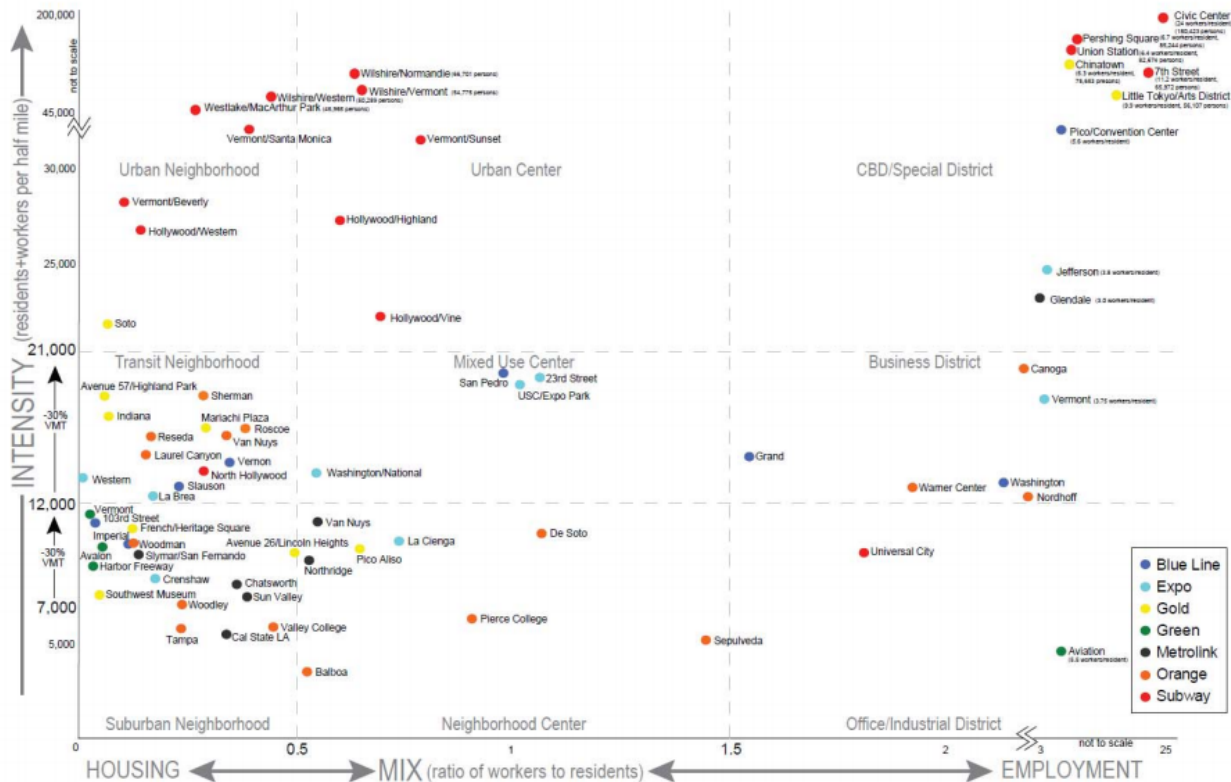


Figure 12: Station Place Types, by Intensity and Use Mix<sup>170</sup>

<sup>169</sup> Carlton et al., 6.

<sup>170</sup> Gehrke et al., 24

Category	Metric	Measure
Transit	Transit Accessibility	Transit Access Shed Index (TAS)
	Transit Connectivity	Transit Connectivity Index (TCI)
	Transit Use	Percentage workers who use transit, bike, or walk to work (ABC)
Orientation	Transit Dependency	Percentage of zero-car households
	Lower Income	Percentage of households with income <\$25,000
	Rental Housing	Percentage of renters
	Affordability	Percentage of income spent on transportation
Development	Walkability	WalkScore®
	Residential Density	Households per acre
	Employment Gravity	Employment gravity measure

Figure 13: Final eTOD Score Attributes<sup>171</sup>

INDICATORS	MEASURES	SOURCE	WEIGHTING
<b>METRIC 1: TRANSIT</b>			
Transit Use: Residents	Percentage of workers who reside in the station area using transit, bike, or walk to work	CCTP (TOD Database)	15%
Transit Use: Workers	Percentage of workers who work in the station area using transit, bike, or walk to work	CCTP (TOD Database)	15%
Transit Quality	Area that can be reached within 30mn by transit scaled by the frequency of service (expressed in km²)	H+T	15%
Transit Safety	Number of reported criminal incidents in the area (for the last 30 days – as sampled in December 2014)	CrimeReports	3%
<b>METRIC 2: LAND USE AND DESIGN</b>			
Activity	Sum of jobs and households per acre	Census (TOD Database)	15%
Walkability	Walk Score (measures distance to amenities, block size and intersection density)	Walk Score	10%
<b>METRIC 3: CONTEXT</b>			
Policies / Plan Preparedness	Planning and policy-making supportive of transit-oriented development	OPR 2012 Survey, Q4, Q10, Q14	5%
Market Performance	Percentage of change in monthly median home value over 5 years	Zillow Index	5%
<b>METRIC 4: EQUITY</b>			
Affordability	Percentage of income spent on transportation + housing	H+T (TOD Database)	10%
Transit Dependency	Percentage of zero-vehicle households	ACS/Census (TOD Database)	5%
<b>METRIC 5: HEALTH AND ENVIRONMENTAL IMPACT</b>			
GHG Emissions	GHG emissions per household	CNT Data	2%

Figure 14: Summary of Metrics, Indicators, Data Sources, and Weighting<sup>172</sup>

<sup>171</sup> Pollack et al., “Oriented Toward Equity...,” 25.

<sup>172</sup> Elkind et al., 11.



**Communities of Concern Framework for Plan Bay Area 2040**

*Definition* – census tracts that have a concentration of BOTH minority AND low-income households, OR that have a concentration of three or more of the remaining six factors (#3 to #8) but only IF they also have a concentration of low-income households.

<i>Disadvantage Factor</i>	<i>% Regional Population</i>	<i>Concentration Threshold</i>
1. Minority	58%	70%
2. Low Income (<200% Federal Poverty Level - FPL)	25%	30%
3. Limited English Proficiency	9%	20%
4. Zero-Vehicle Household	10%	10%
5. Seniors 75 Years and Over	6%	10%
6. People with Disability	9%	25%
7. Single-Parent Family	14%	20%
8. Severely Rent-Burdened Household	11%	15%

Figure 15: Communities of Concern Framework and Indicators<sup>173</sup>

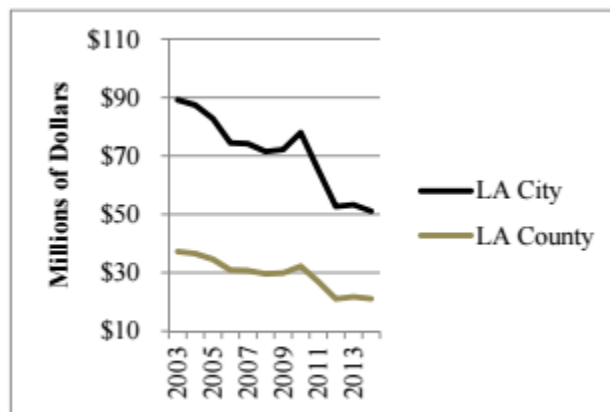


Figure 16: CDBG Funding Allocations to Los Angeles<sup>174</sup>

<sup>173</sup> Association of Bay Area Governments and Metropolitan Transit Commission.

<sup>174</sup> Visoztky, 15.

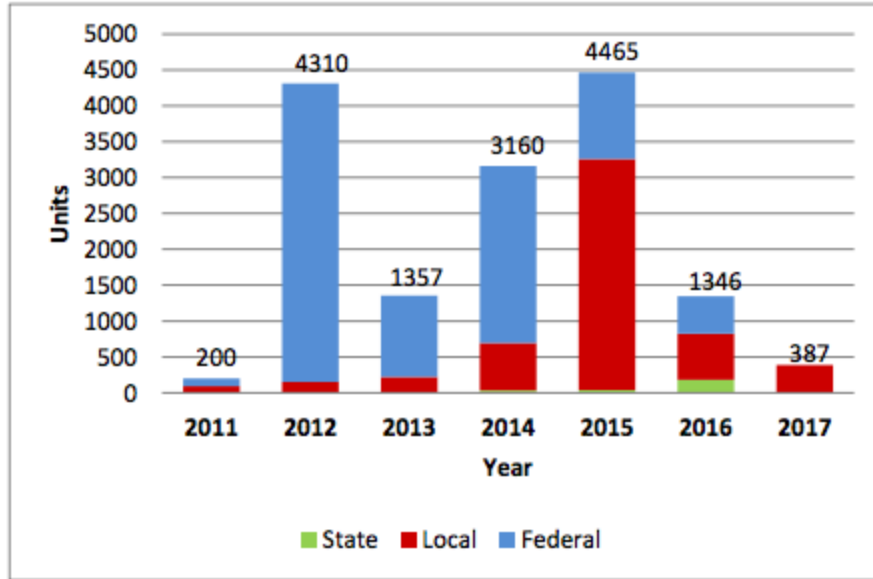


Figure 17: Affordable Housing Units Expiring in the Next Five Years by Primary Agency<sup>175</sup>

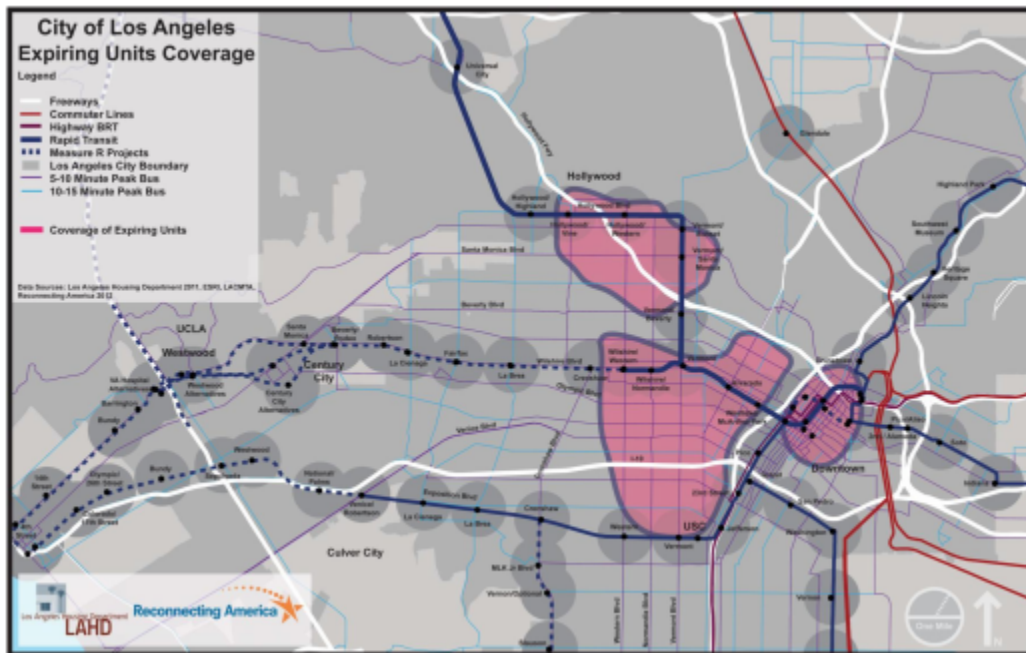


Figure 18: Areas with Concentrations of At-Risk Affordable Units, 2012-2017<sup>176</sup>

<sup>175</sup> Ibid, 6.

<sup>176</sup> Reconnecting America, 14.

## Appendix B: Qualitative Instrument

### Interviewees:

*Cal Hollis, Senior Executive Officer at Metro*

*Thomas Yee, Initiative Officer at LA THRIVES*

*Jessica Meaney, Executive Director at Investing in Place*

*Madeline Wander, Senior Data Analyst at USC / Program for Environmental and Regional Equity*

*Chris Goett, Senior Program Officer, Housing and Economic Opportunity at the California Community Foundation*

*Anonymous Member of the Southern California Association of Governments (SCAG)*

### Sample Interview Questions:

1. How would you define successful transit oriented development (TOD)?
2. How would you evaluate the city's TOD plan with regards to equity?
3. What would equitable TOD look like to you?
4. What metrics would you use to evaluate equitable TOD?
5. What tools do you think should be used to combat displacement around transit?
6. What mechanisms are in place to ensure equity in TOD plans?
7. Who is responsible for community benefits?
8. Is there room for equity in TOD?
9. In what ways does Los Angeles provide lessons for the rest of the country?
10. How can metrics for evaluating equity in TOD help the current situation?

## Appendix C: Discussion of Affordable Housing and Federal Funding

Created specifically to address the shortage of affordable housing funding, Los Angeles' Affordable Housing Trust Fund saw funds from all sources fall from more than \$100 million in 2008 to just \$20 million in 2014.<sup>177</sup> These funding losses can be attributed to the gutting of several key sources of funding, one being the dissolution of Community Redevelopment Agencies (CRAs) in 2011, which accounted for some \$50 million a year for affordable housing.<sup>178</sup> CRAs were a statewide agency required to give twenty percent of their funds to the Trust Fund, but those serving Los Angeles gave twenty-five percent.<sup>179</sup> These funding sources were critical, as they were often the first committed sources of funding for affordable housing projects, which meant easier leveraging of other funding sources.<sup>180</sup> Boomerang revenues, small pieces of revenue generated by CRAs but that persisted even after their dissolution have since been diverted to a general fund, and are no longer earmarked for affordable housing.<sup>181</sup>

Community Development Block Grants (CDBGs) to both the City and the County also fell.<sup>182</sup> [fig. 17] Between 2003 and 2014, federal funding to the City fell from \$89 million to \$51 million, and funding to Los Angeles County fell from \$37 million to \$12 million.<sup>183</sup> As a result of the economic crisis, federal funding for affordable housing also plummeted. In 2012 the CDBG, HOME, and HOPE VI programs lost sizeable swaths of budget.

Facing a hemorrhaging of funding for affordable housing, attention must be focused on the preservation of existing units. A study by the Los Angeles Housing Department (LAHD) in

---

<sup>177</sup> Visotzky, 14.

<sup>178</sup> Reconnecting America, 7.

<sup>179</sup> Visotzky, 15.

<sup>180</sup> Ibid.

<sup>181</sup> Ibid.

<sup>182</sup> Ibid.

<sup>183</sup> Ibid.

2006 found that preservation of an affordable housing unit cost some \$183,000, whereas construction of a new unit cost nearly \$361,000.<sup>184</sup> Between 2006 and 2011, the City permanently lost 2,146 affordable housing units.<sup>185</sup> The City currently has approximately 69,000 affordable housing units in some 1,900 developments.<sup>186</sup> Between 2012 and 2017, nearly 15,000 units will expire. [fig. 18]<sup>187</sup> Forty percent of the units expiring in this time frame are located within a half mile of light rail stations or bus rapid transit (BRT) lines.<sup>188</sup> As it has been stated, the high concentration of renter-occupied units in station areas makes residents very susceptible to displacement. Compounding this issue is the concentration of units at-risk of contract expiration. [fig. 19]<sup>189</sup> Unfortunately, the absence of strong federal and state leadership allows many of these contracts to expire.<sup>190</sup>

Alex Visotzky concludes “[t]he overall picture of affordable housing funding in Los Angeles is one of decline and uncertainty.”<sup>191</sup> Yet with that uncertainty comes optimism. Proposition 41 was approved in 2014, which allocated 600 million to affordable housing development for low-income veterans, though as a statewide measure, it is uncertain what percent of this funding will make its way into the Los Angeles area.<sup>192</sup> The 2016 election cycle saw massive victories for affordable housing, including Measure JJJ, which mandates inclusionary zoning of eleven to twenty-five percent in new rental developments.<sup>193</sup> Measure

---

<sup>184</sup> Reconnecting America, 7.

<sup>185</sup> Ibid.

<sup>186</sup> Ibid, 5.

<sup>187</sup> Ibid, 6.

<sup>188</sup> Ibid, 6.

<sup>189</sup> Ibid, 14.

<sup>190</sup> Rolf Pendall, Juliet Gainsborough, Kate Lowe, and Mai Nguyen, “Bringing Equity to Transit-Oriented Development: Stations, Systems, and Regional Resilience,” Paper presented at *Urban and Regional Policy and its Effects*, Washington, DC, May 21, (2010), 4.

<sup>191</sup> Reconnecting America, 16.

<sup>192</sup> Ibid, 16.

<sup>193</sup> Bianca Barragan, “Ballot Measure JJJ: Build Better LA.” *CurbedLA*, Last modified October 11, 2016, <http://la.curbed.com/2016/10/11/13238820/explain-ballot-measure-jjj-los-angeles>.

HHH, setting aside \$1.2 billion toward services and affordable housing for the homeless, also passed with more than three-quarters of the electorate voting yes.<sup>194,195</sup>

Southern California has aptly been named a “self-help region”, with regard to the funding sources for transit through sales tax, but even so, some thirty percent of Metro’s funding comes from federal sources. As development around transit is a multidisciplinary process, several federal actors will have heavy impacts to the transportation equity field. Ben Carson, secretary of Housing and Urban Development and Elaine Chao, secretary of Transportation hold immense power in federal funding and the power to uproot policies that have previously been in place.

The proposed presidential “budget blueprint”, released in March, has serious implications for transit and affordable housing. The budget for the Department of Transportation is set to be cut by \$2.4 billion, a 13% reduction. “The Budget reduces or eliminates programs that are either inefficient, duplicative of other Federal efforts, or that involve activities that are better delivered by States, localities, or the private sector.”<sup>196</sup> The New Starts program, which funds local transportation projects costing under \$300 million, is set to be frozen. This freeze has implications on two current projects in Los Angeles, the downtown streetcar project as well as the Purple Line phase 3 subway construction.<sup>197</sup> TIGER grants, an economic recovery funding source launched by President Obama in 2009 for road, rail, port, and transit projects would be cut by \$500 million.<sup>198</sup>

---

<sup>194</sup> Bianca Barragan, “Ballot Measure HHH: Homelessness Reduction and Prevention, Housing, and Facilities Bond,” *CurbedLA*, last modified October 11, 2016, <http://la.curbed.com/2016/10/11/13238618/explain-ballot-measure-hhh-los-angeles>.

<sup>195</sup> Jenna Chandler, Bianca Barragan, and Alissa Walker, “Victories for public transit and parks, and other election results for LA ballot measures.” *CurbedLA*, last modified November 9, 2016, <http://la.curbed.com/2016/11/8/13569616/election-results-los-angeles-ballot-measures>.

<sup>196</sup> Executive Office of the President, “America First: A Blueprint Budget to Make America Great Again.” *Office of Management and Budget*, 2017, 35.

<sup>197</sup> Patrick Sisson, “Proposed Trump budget makes billion-dollar cuts in city transportation, development funds,” *Curbed LA*, Last modified March 16, 2017. <http://www.curbed.com/2017/3/16/14948030/trump-federal-budget-cities-transportation-urban-infrastructure>.

<sup>198</sup> *Ibid.*

The budget for the Department of Housing and Urban Development, 2018 states “The Budget also recognizes a greater role for State and local governments and the private sector to address community and economic development needs.”<sup>199</sup> The budget is set to be cut \$6.2 million; a 13.2% reduction. Further, funding for the Community Development Block Grant program has been cut altogether. The CDBG program supports anti-poverty, community development, and infrastructural projects across the country—1,185 city, county, and state governments received CDBG funding in 2016.<sup>200</sup>

The budget also is set to eliminate funding for several “lower priority programs” including the HOME Investment Partnerships Program, Choice neighborhoods, and the Self-help Homeownership Opportunity Program. Some \$1.3 billion could be cut from the public housing capital fund, and some \$600 million from the public housing operating fund.<sup>201</sup> Recall that in many cases, affordable housing is crucial to ensuring that transit-dependent populations retain access to quality transit options.

---

<sup>199</sup> Executive Office of the President, 25.

<sup>200</sup> Ibid.

<sup>201</sup> Ibid.