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Sustainability

Changing Preferences for Transportation and Transit-Oriented Communities Signal a Gradual Move to a Post-Oil Based Society

By JOHN RENNE

While oil remains cheap in 2016, the future remains unpredictable given the finite nature of the resource. There is no better time to shift transportation and housing patterns to minimise and conserve on oil consumption.

During the past decade the United States has re-emerged as an oil-producing nation, stemming from major investments in hydraulic fracturing when oil peaked at over \$140 per barrel. Yet prices have plummeted during the past few years and although this has caused instability for the energy industry, low oil prices have bolstered economic growth in a nation characterised by large vehicles and car-dependent sprawl.

However, unlike past market cycles this trough appears to be different as Americans' preferences for transportation and communities are changing and gradually reducing the importance of oil due to less driving and smaller homes. Key factors in America's gradual move to a post-oil society, especially among the millennial generation, include lower levels of driving due to an increasingly multimodal transportation system, changing societal norms related to shared transportation systems, and a desire to live in walkable and transit-oriented communities.

Multimodal and Shared Transportation Systems

For the past decade vehicle miles travelled (VMTs) per person in the United



States has been declining or flat-lining.¹ Usually, VMTs are positively correlated with oil price and gross domestic product but experts are now investigating the phenomena of “decoupling,” which means that economic growth is possible with less driving and oil consumption. Experts point to cities where driving and oil consumption is low and GDP high, such as New York, Chicago, Boston, San Francisco, Seattle, and most other financial hubs where the use of transit is common in dense urban settings.

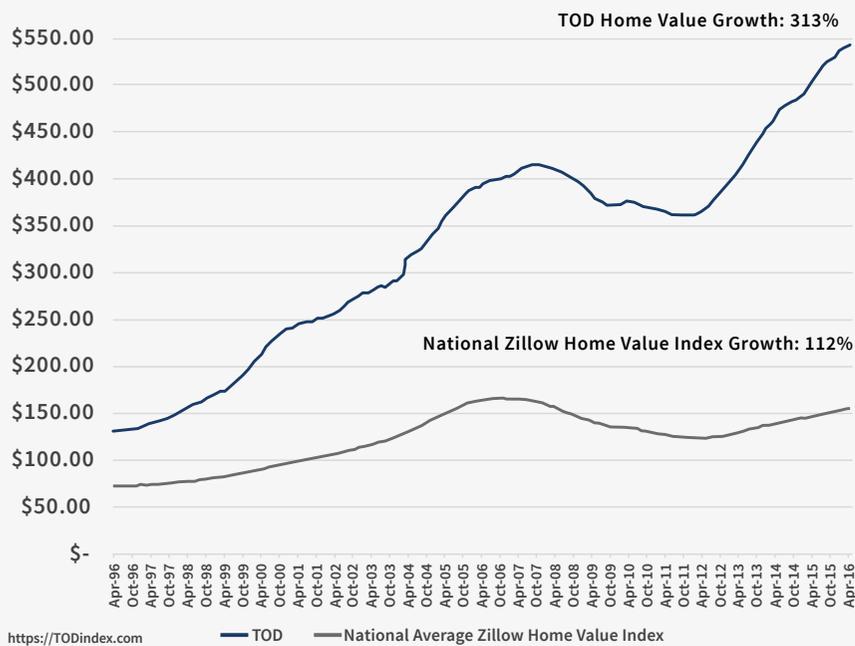
In the United States, millennials are now the largest cohort and studies indicate that they are less interested in driving and are choosing to engage with their peers through social media. A recent study found that changing attitudes and use of virtual mobility

for online shopping and social media accounted for 35-50% of the drop in driving among millennials.²

The level of VMTs is positively correlated with vehicle ownership. The total share of trips by automobile increases from 25.2% to 79.2% when a household purchases just one automobile.³ Transportation planners and public officials interested in policies to reduce driving often focus on ways to reduce vehicle ownership. Because people do not have to pay per trip in their own vehicle, they often have little knowledge about the cost of travel until gasoline prices surge and they notice the higher prices at the pump despite fuel prices accounting for only one-quarter of the total cost of vehicle use. The cost of car ownership and maintenance is usually incurred through monthly billing cycles.

Outlook

FIGURE 1. Home Value Growth in TODs across the United States from April 1996 - April 2016 (price per SF)⁵



After decades of unsuccessful programs to reduce car use and ownership through carpooling, millennials are more comfortable with sharing rides under the banner of apps like Uber and Lyft. In fact, Uber has been one of the most successful start-ups in history and the taxi industry is fighting them for their own survival without much success.

Public transportation is also popular among the younger generation. After decades of decline in ridership, transit across America is on an upward trajectory, due in large part to the expansion of rail systems in many cities across the country, which started in the 1990s and has accelerated during the 21st century. For example, in 2004 Denver voters approved a sales tax that will result in the opening of six new rail lines.

Many cities in America have introduced a new mode of travel during the past five years – public bicycle systems.

This has often occurred with the reallocation of urban street space to expand bicycling infrastructure. For example, in rebuilding New Orleans post-Hurricane Katrina during the past decade the city redistributed over 100 miles of vehicle lanes to enable exclusive and shared facilities for bicyclists. New York, Minneapolis, San Francisco and many other large and mid-sized cities are in the process of doing the same.

America may be at the dawn of a major transportation revolution in autonomous vehicles. Major technology giants, like Google and Apple could become transportation companies of the future. Firms that manage fleets, including the trucking industry and ridesharing companies will be incentivised to adopt autonomous vehicle technology as a way to cut labour costs and increase profits.

Some question the public's willingness to take a ride in a self-driving vehicle due to the perception that

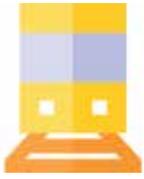
humans can better operate machinery. However, one day in the near future people driving down the highway will notice that the semi-truck next to them is being driven by a robot. At such a point, people might become more willing when they realise that their safety is a factor of the driverless vehicles surrounding them.

Firms like Tesla are working hard to ensure the autonomous car of the future is powered by electrical rather than internal combustion engines. Tesla has designed their vehicles to allow for computer updates that over time will increase the autonomous capabilities. They are also investing heavily in battery technology to ensure that the range of electric vehicles can compete with gasoline engines. Moreover, smart grid technology, which allows homes and vehicles to share batteries could unleash new markets for renewable power as solar collected on a roof could be a low cost fuel for cars.

Transit-Oriented Development

Underpinning the success of multimodal and shared transportation systems are walkable, dense and mixed-use communities connected to rail systems, known as transit-oriented developments (TODs) where people can reduce the distance of travel to reach key destinations. About one-third of all rail stations across the United States have the density and walkability profile to be classified a TOD. Short distances between trips favour walking, biking, public transportation and ridesharing over driving a car, especially when parking is limited and expensive. TODs result in lower VMTs and less oil consumption.

A national study on the views of housing, transportation and community found that when looking to their next move 62% of respondents plan to select a neighbourhood close to shops,



restaurants and offices, 59% plan to downsize their home in favour of a shorter commute, and 52% want to select a neighbourhood with public transportation.⁴

As baby boomers become empty-nesters they are abandoning large single-family homes in suburban and exurban locations in favour of smaller homes in TOD, especially when such locations have higher levels of shopping, food, entertainment and cultural amenities. Millennials are also choosing to pay more to live in city centers and TODs over suburban residential-only communities.

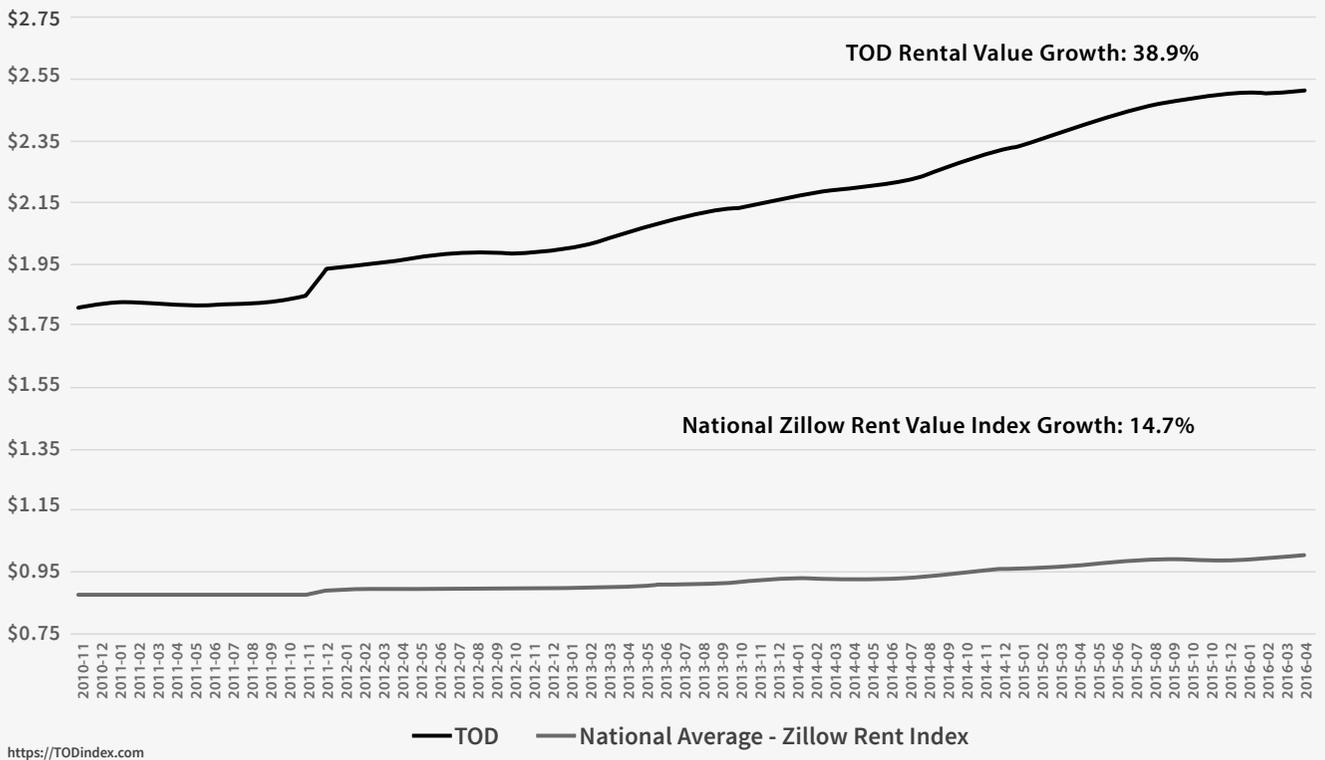
The TOD Index™ tracks home values in zip codes associated with 1,444 train stations in 39 regions across the United States. The data show that over 20 years, the value of the average home in the United States grew from \$73.45 per SF in April 1996 to \$155.80 by April 2016 (see Figure 1 in previous page). Homes in TODs appreciated from \$131.42 per SF to \$542.42 per SF by April 2016. Twenty years ago, the average

home in a TOD was 78% more expensive than the average American home but by April 1996 this margin grew to a difference of 3.5 times. Over the two decades TOD home values have grown by 313% as compared to 112% for the average home in the United States.

The TOD Index™ also reports the rental rates. The data show that in April 2016, apartments in TODs areas rented for \$2.52 per SF as compared to the national average of \$1.01 per SF (see Figure 2). From November 2011 to May 2016, apartments in TODs have appreciated by 39.4% as compared to 15.2% for all rental units nationally.

An increasing segment of the market today prefers to walk to a train station and is willing to pay for that lifestyle. Moreover, the increased housing costs are offset by lower transportation expenditures. TOD residents pay just 14% of their household income on transportation costs, which is even 5% lower than residents that live near rail stations which are not TODs.⁷

FIGURE 2. Rental Growth in TODs across the United States from November 2011 - April 2016 (price per SF)⁶



Outlook

Land use change is typically gradual but change could accelerate when investors and developers recognise the **tremendous market opportunity to build new TODs** near existing and new rail stations across the United States.

Many Americans pay well over 20% of their income on transportation. These cost savings appear to be driving housing markets higher in TOD locations.

A key reason why demand is driving price higher for apartments near rail stations is jobs connectivity. Across all rail stations in the United States, the number of jobs within walking distance to rail outpaces residents by a factor of 3.5 to 1. Rail systems have been built to serve downtown job centers but for decades planners in the United States focused on building park-and-ride as the means to access rail systems to get to work. Therefore, the supply of housing near rail station networks is severely constrained. Moreover, TODs are challenging and expensive to build so supply is not keeping pace with demand but in the post-recession era, more and more developers and communities are getting into the TOD business, which is likely going to drive the next generation of housing growth in America.

The Gradual Post-Oil Shift

Less driving is possible through an increasingly multimodal and shared transportation system. Ridesharing, public transportation, the expansion of bicycle networks, and the promise of autonomous electric vehicles could radically change the way Americans travel and the amount of oil the nation consumes. However, the success of these alternatives to the single-occupant vehicle depends on having the proper patterns of land use to support the density needed to make such modes successful.

Land use change is typically gradual but change could accelerate when investors and developers recognise the tremendous market opportunity to build new TODs near existing and new rail stations across the United States.



Not all TODs need to be characterised by skyscrapers, although many will. European-like villages in America with a mix of buildings from one to eight stories, which could include small-lot single family homes, townhomes, condos and apartments with high quality parks and plazas can enable the housing options to create multi-generational communities. Vibrant main streets in such locations can allow residents to replace driving with walking. This sort of walkable and transit-oriented community design is time-tested across every culture and nation, and existed well before the discovery of petroleum.

While oil remains cheap in 2016, the future remains unpredictable given the finite nature of the resource. There is no better time to shift transportation and housing patterns to minimise and conserve on oil consumption. **EBR**

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