An Economic Summary on the Benefits of Complete Streets

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For 45 years, the Center for Business and Economic Research (CBER) has been conducting applied and data driven research to assist business, government, and the community at large. CBER is a public resource that seeks to extend the benefits of UNLV's expertise through the State of Nevada and the United States.

This white paper briefly highlights the academic research on complete streets judged on three variables: safety, mobility, and economic impacts. CBER reviewed and summarized the academic literature into three sections: One, what makes a "complete street?" Two, what are the findings in academic literature when it comes to the three variables mentioned above? Three, what are the limitations of those findings? Our references and acknowledgments appear on the last page.

What are "Complete Streets"?

According to the U.S. Department of Transportation (DOT), "Complete Streets are streets designed and operated to enable sage use and support mobility for all users. Those include people of all ages and ability, regardless of whether they are traveling as drivers, pedestrians, bicyclists, or public transportation riders. The concept of Complete Streets encompasses many approaches to planning, designing, and operating roadways and rights of way with all users in mind to make the transportation network safer and more efficient."

The Regional Transportation Commission of Southern Nevada (2012) mentions that Complete Streets include the following design elements:

> Promote walking, bicycling, and transit riding
> Provide multiple travel options for those with limited access to cars
> Reduce harmful emissions by encouraging non-motorized transportation
> Improve safety of multiple modes, especially for pedestrians and cyclists
> Improve health conditions with increased physical activity such as walking and cycling
> Improve the economic situation for communities with a possible increase in private investment

FINDINGS: Impacts of "Complete Streets"

CBER focuses on the following three impacts of Complete Streets:

(1) Safety

Complete Streets reduce accidents through comprehensive safety improvements. According to a study, designing streets for pedestrian travel can reduce accidents by about **70 percent**, and safer conditions created by complete streets projects avoided a total **of $18.1 million** in collision and injury costs in one year alone (Smart Growth America, 2015). Smart Growth America's statistics incorporate **37** Complete Streets projects, with one of the cases being in Reno, Nevada. Wells Avenue in Reno experienced a **45 percent** decline in collisions from **128 to 71** after the Complete Streets project, and injuries related to collisions also fell from **45 to 18**. The value of Reno's safer conditions within one year's time **($5.8 million)** exceeded its entire project cost **($4.5 million)**. In Florida, a Complete Streets policy contributed to decreases in the pedestrian fatality rate by **0.5 percent** per quarter (Porter et al., 2018). This is important as Nevada has the **7th** highest pedestrian fatalities per 100,000 population with 1.34, above the U.S. average (including the District of Columbia) of **0.90** (Spotlight on Highway Safety, 2021).

Complete Streets with bicycle facilities also contribute to reduce bicycle-motor vehicle crashes. Hamann and Peek-Asa (2013) found that the presence of an on-road bicycle facility reduces crash risk by as much as **60 percent** with a bicycle lane or shared lane and **38 percent** with bicycle-specific signs by analyzing crash data from the Iowa Department of Transportation from 2007 to 2010. Smart Growth America (2015) also reported that the rate of collision among bicyclists decreased from **2.5 to 0.6** collisions per 100 bicycle trips after the Complete Streets changes.

(2) Mobility

Complete Streets projects provide mobility for all modes of transportation and encourage more multimodal travel. Smart Growth America (2015) found that **3** out of **9** Complete Streets projects showed increases in trips by all three modes. Three other projects posted increased number of bike and pedestrian trips but decreased number of auto travels. For example, in Long Beach, California, one year after construction, bicycle volumes increased **33 percent** and pedestrian activity also increased by about **13 percent**. This is important in that the disabled and elderly can navigate streets more efficiently as they likely have limited access to automobiles (Clifton et al., 2014).

Complete Streets also reduces motor vehicle travel times by increasing the accessibility of other modes of travel. Zlatkovic at el., (2019) estimated that increased street connectivity can also result in a significant reduction in network travel times and delays, ranging between

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9 and 24 percent with a more balanced distribution of traffic flows. The weighted average elasticity of vehicle travel with respect to intersection density and street connectivity is **-0.12**, while the elasticities of walking and transit use were **0.39** and **0.23**, respectively (Ewing and Cervero, 2010). That is, a **1 percent** increase in intersection density and street connectivity, results in a **0.12 percent** decrease in vehicle travel but **0.39** and **0.23** percent increases in walking and transit use, respectively. The authors also insisted that short blocks and many interconnections shorten travel distances.

(3) Economic

Complete Streets reduces the average cost of individual's transportation spending. Residents in Dallas, TX estimated to save an average of **$9,026** annually by taking transit instead of driving, and those in Cleveland, OH estimated to save an average of **$9,576** (Smart Growth America, 2016).

Greater walkability associates with market-value increases for office, retail, and residential properties (Pivo and Fisher, 2011). The authors discovered that a one-unit gain in Walk Score can result in value premiums for office, retail, and apartment properties of **0.9, 0.9 and 0.1 percent**, respectively. Moreover, walkable and well-connected areas can increase tourism (Steuteville, 2021).

Walkable places tend to make positive contribution to labor productivity and economic outcomes (Rohani and Lawrence, 2017). Walking and cycling improvements enhance access to education and employment opportunities, particularly for lower-wage employees as they likely have limited access to a car (Litman, 2021). The author maintained that higher accessibility for non-drivers not only helps achieve social equity but also increases lower-wage labor pool in walkable places, which can reduce business costs and increase productivity and competitiveness. It is estimated that bicycle and pedestrian projects produce **9.6 to 11.4 jobs** per million dollars spent compared to only **7.8 jobs** created by road only projects (Garett-Peltier, 2011). Smart Growth America (2015) noted that **six out of seven** communities reported increases in businesses after Complete Streets projects, and two communities also reported increased retail sales. For instance, the City of Lancaster, CA invested **$11.5 million** for redesigning streets in downtown, which attracted **$130 million** in private investment, resulting in almost doubling tax revenues, **$273 million** in additional economic output, and created **48** new businesses and **802** permanent jobs (CNU, n.d.). Moreover, retail sales also skyrocketed by **96** percent after its redesign (Smart Growth America, 2015).

Complete Streets can contribute to an individual's increased physical activity via walking and bicycling, in turn, helping reduce obesity and risk of chronic disease, which leads to reduce healthcare spending (Jordan and Ivey, 2021; Smart Growth America, 2015). Srinivasan, O'Fallon, and Dearry (2003) argued that the burden of illness is greater among minorities

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and low-income communities. Estimated medical spending related to obesity was as high as **$147 billion** in 2008, about **10 percent** of all medical costs, and obese individuals tended to spend **41.5 percent** higher medical spending when comparing to healthy-weight individuals (Hammond and Levine, 2010).

Limitations

Although there are various benefits especially for pedestrians and bicyclists, certain design elements of Complete Streets intend to slow traffic of motor vehicles. According to the U.S. Census Bureau's American Community Survey, a majority of commuters in Clark County **(78.8 percent)** use their automobiles to get to work and their average one-way commute takes **25.9 minutes**. This implies that Las Vegas has a widely dispersed population, and we must therefore carefully approach how to implement the policies of Complete Streets. The policies should be developed in a way that benefits both non-motorized and motorized travelers. According to our calculation, Clark County's population density was **287.3** per square mile in 2019, much lower than New York City **(27,660)** and Chicago **(11,852)** where Complete Streets and public transportation are well-developed with its high population density.

Safety is also a key factor for promoting uses of Complete Streets. Zhu and Lee (2008) found that despite higher neighborhood-level walkability, the Hispanic students' surroundings had higher crash and crime rates with poor street conditions. The authors concluded that Hispanic children are more likely to live in unsafe area despite higher walkability, while lower walkable areas are perceived to be safer. This invites the question of limitations in enhancing safety in neighborhoods where pedestrian safety is one of many concerns.

Conclusion

We conclude that Clark County should consider implementing Complete Streets policies as they bring a variety of safety, mobility, and economic benefits that were briefly mentioned above. Although Clark County's density level is **287.3** per square mile, certain unincorporated towns and municipals in Clark County post higher levels of population density, ranging from **2,500** in City of North Las Vegas to **6,700** in Spring Valley. Therefore, implementing Complete Streets policies should be more focused on the areas with higher floating and residential populations with an economic anchor that invites density. Areas where complete streets may work well is where there is density due to an economic anchor. Examples include academic facilities such as the UNLV main campus along Maryland Parkway or one of the College of Southern Nevada campuses, sport facilities such as the Raiders Stadium, and workforce hubs such as the Las Vegas Medical District, downtown Summerlin, around the Las Vegas Strip, and UNLV Harry Reid Tech Park.

To find out which areas in Clark County should be prioritized for Complete Streets, CBER

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needs further research in cost benefit analysis and impact studies for specific areas for example. Complete Streets are also recommended to be taken care of to encourage active and long-term use. High crime rates and poor conditions will bring undesired outcomes, such as lower usage of the streets despite high investment costs by the taxpayer.

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