RENOVATING NEW JERSEY'S BUILT ENVIRONMENT:
Addressing Road Safety at the Intersection of Physical and Mental Health

By
Grace Opong
New Jersey Future Intern

NEW JERSEY FUTURE

Renovating New Jersey's Built Environment: Addressing Road Safety at the Intersection of Physical and Mental Health

Policy memo

Grace Opong

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Professor Heather Howard & Micah Tan 01/20/2026

To: Fran O'Connor, Chair of New Jersey Target Zero Commission Working Group, Commissioner of NJ DOT

From: Grace Opong, on behalf of Tim Evans and NJ Future

Subject: Creating a Built Environment That Supports Physical and Mental Wellbeing

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Summary

The elimination of a walkable, grid-like street design in suburbanized New Jersey (NJ) creates decreased levels of physical activity due to both pedestrians' perceived level of safety in the built environment and the feasibility of walking. In addition, there has been a loss of neighborhood community and social cohesion, exacerbating the current epidemic of loneliness and contributing to poor mental health. The aim of this policy memo is to inform the Target Zero Commission (TZC) on the implications of the built environment for the physical and mental health for NJ residents, and to use this discussion as a framework for revising some of the working group's action items.

Background

Currently, 28% of NJ residents struggle with obesity, and that percentage is expected to grow to 47% by 2030 (*Figure 1,* American Diabetes Association). In addition, 2.3 million NJ residents have been revealed to suffer from loneliness or social isolation (Oaks Integrated Care). Clearly, this epidemic of rising non-communicable diseases, coupled with decreasing social cohesion and rising mental health problems, can be viewed as a pressing public health problem for NJ. A variety of factors contribute to this issue, however a major element that is seldom discussed when considering these issues is the impact of the built environment. The built

environment can be described as the land use, street design, and transportation systems that shape the places in which people live, work, and play. All of these environmental structures govern the way people move in their environment, dictating levels of leisure and physical activity (*Figure 2).*

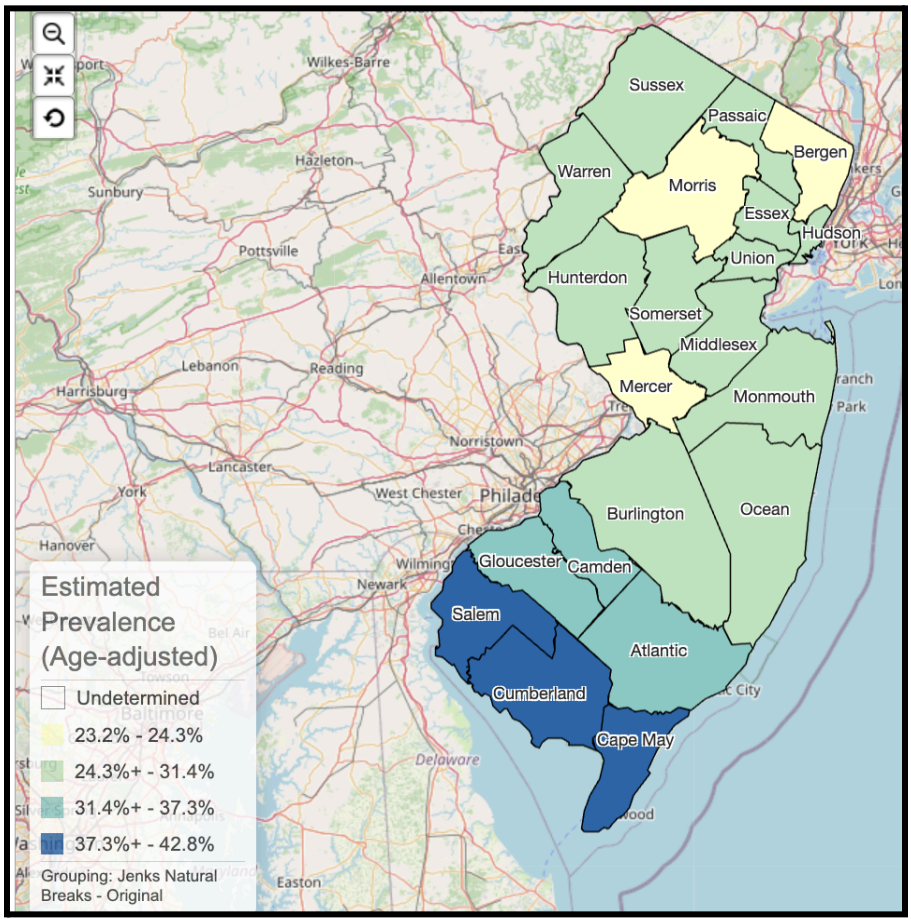

Figure 1: "Prevalence of Obesity Among Adults Aged 20 and Over by County, New Jersey, 2021-2023" NJSHAD

The relationship between neighborhood land use and physical health has been well-defined in the literature, with research suggesting that decreased walkability is associated with a higher predicted ten-year cardiovascular disease risk (Howell et al.) Additionally, more green space and higher neighborhood walkability is associated with a lower type-2 diabetes risk,

demonstrating that an urban design that supports the commute of people could serve as a mechanism for public health revision (De la Fuente). Further, street design elements, such as high-intersection density and high street connectivity have been found to be correlated with decreased incidence of new depression in older adults (Chen et al). Environmental degradation and absence of green space has also been shown to be a critical risk factor in negatively affecting mental health, as people living in communities with less green space report worse mental health (Wang et al.) Simply the presence of well-maintained sidewalks and enjoyable scenery promote walking for exercise (Jackson).

Particularly in NJ, a geographically diverse, yet population-dense state, there is vast variability in the street design network which requires a comprehensive policy framework to develop a built environment that supports the livelihoods of all NJ residents. A huge barrier to citizens taking advantage of the environment for exercise is their perceived level of safety on roads (Soto et al.). NJ pedestrian fatalities recently hit a 36-year high, and at least 687 were killed on roadways in 2024, making it the deadliest year in more than three decades for pedestrians (Donlevy). In 2021, fatal crashes involving cyclists and pedestrians in New Jersey reached their highest number since 1989, proving that road safety is a major obstacle towards walking for exercise (Burns). Research has shown that poor walkability infrastructure can cause road traffic accidents, as insufficient sidewalk maintenance can lead to pedestrians being forced to walk on roadways, and lack of necessary crosswalks increase pedestrian-automobile interaction (Rizvi). While simply correlating high levels of street walkability to decreased pedestrian fatalities in New Jersey is not a clear association to be made, it is important to note that investment in walkability infrastructure is a key variable in increasing road safety in the state.

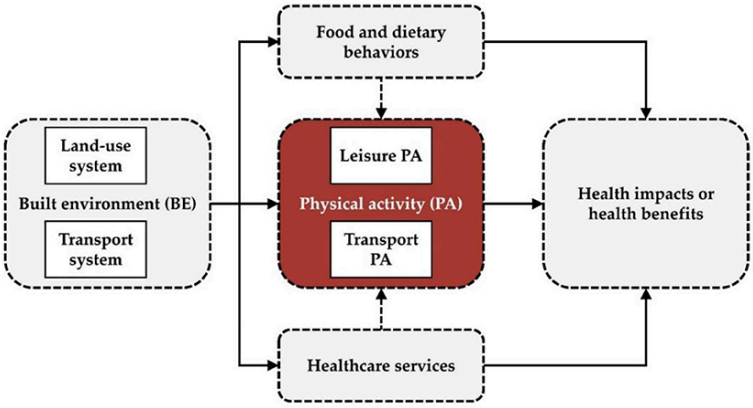

Figure 2: Zhong et al. "Role of Built Environments on Physical Activity and Health Promotion"

The state government has made efforts over the years to mitigate this problem, through implementing "Complete Streets" model policies since 2009, which required future NJ roadway improvement projects to include safe accommodations for all users. As of 2019, these initiatives have expanded to include "Complete and Green Streets" policy guides that serve to encourage communities to create travel networks which promote healthy lifestyles and reduce traffic congestion (Complete & Green Streets for All). In January 2025, Governor Murphy established the New Jersey Target Zero Commission, dedicated to eliminating all roadway fatalities and serious injuries by 2040. With this goal, a Target Zero Action Plan, and subsequent annual reports will be published to report on the progress on said action items in the plan (NJ Target Zero Commission Working Group). The Target Zero Draft Safety Action Plan currently adopts the FHWA's Safe System Approach, in which the plan approaches a revision throughout the transportation system, including the following five categories: Safer People, Safer Roads, Safer Speeds, Safer Vehicles, and Post-Crash Care (Boyle). Additionally, the TZC has included an additional category for "Safer Land Use," which we support, as it includes a broader holistic perspective of developing environmental infrastructure that decreases automobile exposure for New Jerseyans. However, with these following policy recommendations, I propose that the Target Zero Commission should revise and implement more initiatives focusing on the

movement of pedestrians and cyclists in line with the above six categories. Further, efforts should go beyond making roads safer and should also aim to promote the physical and mental health of NJ residents by making them simultaneously more walkable *and* accessible. The Commission has recognized the fact that certain populations that rely on the built environment for transportation are overburdened in traffic fatalities and serious injuries. In this light, the following three recommendations provide more inclusive and specific action items for the safety action plan in order to create a roadway structure that values and supports healthy lives for all NJ residents.

To this end, I urge the Commission to prioritize and refine the following elements outlined in the current published Draft Action Plan (2025):

- Enhance the perceived safety of cyclists on New Jersey's roads, sidewalks, and trails.
    - Promote Successful Implementation of Safety Measures to Residents
- Increase street intersection density and promote transit-oriented development.
    - Encourage mixed-land use development
- Expand and emphasize access to green spaces.

Developed descriptions of the above initiatives are needed for the TZC action plan to ensure a roadway system built to prioritize walking and cycling for transportation, thereby producing a traffic calming effect, decreasing the risk for fatalities and serious injuries, and creating an infrastructure that supports the physical and mental health of all NJ residents.

Policy Recommendations

Enhancing the Perceived Level of Safety

People's perception of the built environment has a direct impact on their physical and mental health in a way that disproportionately affects communities with prevailing low socio-economic status. A study conducted in Perth, Australia has shown that those living in low SES communities perceived their neighborhoods as less attractive and safe for walking, leading to decreased rates of walking for exercise (Giles-Corti). Interestingly enough, these researchers found that although those living in low SES communities were more likely to report a greater presence of sidewalks in their community, they also reported a perceived lack of support for walking due to a perceived high level of traffic and busy roads. Pedestrians' perceived safety is influenced not only by the presence of sidewalks, but also by the surrounding environmental landscape in which those sidewalks are situated. Additionally, this exacerbates a growing public health issue in low-income communities, as non-communicable diseases such as obesity and heart disease, run rampant. In fact, Cumberland, Salem, and Warren counties in New Jersey- areas with lower median incomes- have the highest rates of adult obesity and physical inactivity in the state (*Figure 1*). These communities are often reliant upon micromobile methods (e.g., e-bikes, scooters) for transportation, and this policy recommendation will specifically focus on instituting specific actions for the Target Zero Commission in order to protect and encourage cyclists. The Commission does propose recommendations to, "expand use of protected bike lane designs at intersections to increase visibility and reduce conflicts," and "reallocate existing road space for bicyclists and micromobility users," however these action items are vague and do not effectively address the pervasive problem of injuries to those who travel using micromobile methods (Nieto-Munoz). Currently, many "protected" bike lanes are simply squared off pieces

of asphalt, and cyclists effectively share the road with automobiles, creating a lack of perceived safety, and discouraging cycling as a means of exercise and transport (Azzi). When simply driving next to cyclists that are separated by a painted line, drivers have been shown to pass cyclists 1.25 feet closer, which supports an infrastructure that disregards the needs of the community (Lacke). In fact, a study by the NJDOT found that 70% of New Jerseyans do not cycle due to their lack of trust in motorists (Azzi). Minimal policy interventions such as delineated lanes for cyclists as proposed by the Commission need to be revised to support the transport of cyclists.

A study based on fatality and injury data from 12 U.S. cities found that "cities with protected and separated bike lanes had 44 percent fewer deaths than the average city" (Short). We propose that protected bike lane designs should include vertical separation elements such as curbs, concrete planters, bollards, or raised curbs, which physically protect cyclists and increase citizens' level of perceived safety. To begin, NACTO's (National Association of City Transportation Officials) requirements for protected bike lanes need to be instituted in the Commission's regulation to encourage the development of a built environment that supports physical well-being and decreases traffic-related fatalities. In effect, streets with daily traffic volumes over 6,000 vehicles per day, speeds more than 25mph, and more than one lane, should have well maintained protected bike lanes (Protected Bike Lanes). Additionally, the maintenance of these protected bike lanes is another action item to be included- especially in the colder months- to ensure that safety is prioritized during all months of the year.

Addressing the action item describing the reallocation of existing road space, the Commission should also recommend the analysis of high-crash zones and implement an expansion of road diets in New Jersey to restrict automobile-cyclist conflict points. Road diets

convert four lane roadways into three lane roadways with a center turn lane, and have been supported as a safety measure by the FHWA (Designing a Road Diet). Jersey City's Target Zero plan includes the implementation of a road diet, where removal of the travel lane will be "reallocated for protected bike lanes," and "add nearly 1.3 miles of protected bike lanes to the City's bike network," supporting an actionable step in the revision of the roadway infrastructure that reinforces the safety of New Jerseyans who cycle (Vision Zero). Implementations of these policy recommendations do uncover some limitations in their executions. Road diets may increase traffic congestion, thereby increasing motor vehicle accidents, pedestrian automobile exposure, and delays in public transit buses. Before implementation of road diets, traffic should be monitored for several months prior in order to evaluate the traffic burden shifts that may occur.

It is important to recognize that bike lane development has historically been viewed by some low-income communities as a "mechanism of displacement … after years of neglect," particularly given the positive correlation between biking to work and higher incomes in the District of Columbia (Sayin). Specifically, Yesim Sayin explains that many individuals who are able to bike to work can do so because they live in the expensive urban core, where proximity to high-paying jobs makes cycling a feasible option. As a result, investments in bike lane maintenance and cyclist safety may disproportionately benefit more affluent residents rather than the communities that have experienced long-term infrastructure neglect. In order to ensure that the same communities in which are a main target of the Commission's efforts are not being undermined, there needs to be proper promotion of "dense, mixed-income developments along transit-accessible corridors," while also expanding and improving public transportation so that people are available to afford to live with access to healthier modes of transportation that

simultaneously relieve traffic congestion (thereby increasing road safety) and improve the physical health of residents.

Emphasizing LUM (land use mix) and greater street-intersection density

Land-use mix, or LUM, can be defined as the existence of diverse land use that typically "offers more non-residential destinations for walking journey, and thus may facilitate more transport-related physical activity by residents and reduce the risk of chronic diseases" (Duncan et al.) In addition, a higher LUM has been shown to increase adolescent physical activity, especially when recreational and leisure facilities are included in the diverse land mix (Peng et al.) It is an important marker of how the built environment encourages or discourages WFT (Walking for Transportation), and we applaud the Commission's inclusion of this environmental effort in the following action step:

"Adopt policies that encourage dense, walkable, mixed-use neighborhoods near transit facilities that provide safe and convenient access for all residents."

To revise this initiative, changes to parking minimum regulations, and emphasizing employer-sponsored transit will help support WFT and a safer pedestrian experience. Research has shown that parking minimums around transit stations impede dense mixed-use land transit-oriented development and WFT, through "reinforcing car dependency" (Bose). As it requires an allocation of land for car storage for each building, density of neighborhood decreases, and walkability to desirable destinations (transit centers, shopping centers, grocery stores, etc.) decreases. This places another barrier for New Jerseyans who rely on public transit and also decreases citizen motivation in WFT when land use is prioritized for parking rather than destinations that would encourage walking. This is not a novel idea- eliminating parking

minimums has been done before in Berkeley, California, as the city "prohibited parking minimums for buildings within a half mile of major transit stops" (Grabar). Supported by NJ Future, The NJ Senate has recently passed S-2974, which adopts a progressive percentage decrease on required parking spaces based on proximity to transit centers (Sarlo). However, a stronger elimination is required to usher in transit-oriented development, and consider the marginalized communities using NJTransit.

Additionally, encouraging employer-sponsored transit through incentivizing active commuting, or implementing "parking cash-out" programs, where employers "offer employees the option to take an equivalent cash payment…instead of [the] parking subsidy," can open the option of WFT, or cycling to work (Abou-Zeid, Greenberg). Employer-based transit subsidies may not be the most equitable solution, as research has suggested that low-income individuals are not frequently offered subsidies (Hamre). The inclusion of this action step for the Commission should emphasize to employers to use it for all their employees.

The "dense" neighborhood structure proposed by the Commission can be effectively refined through specific policies that improve street connectivity, with dense street intersections. Street connectivity, described as the "number of intersections per land area unit," has been shown to increase WFT, if adults have a destination within walking distance, otherwise known as utilitarian destinations (Koohsari et. al). This proves that it is not only the presence of intersections, but the combined development of LUM that supports the dense and walkable structure the Commission proposes. I suggest that the Commission recommends a "street connectivity score" when municipal zoning codes are being evaluated, in order to set a foundational basis for future improvements to the street design. This score should effectively

capture the intersection density, and block size, and associated density of utilitarian destinations in the region, in order to assess and promote changes in the future.

Refining Access to Green Spaces

Another important environmental mediator of physical exercise is the accessibility and use of green spaces. In fact, research has shown that exposure to green space can be a predictor of stress level and physical activity, and is even suggested to positively influence the longevity of older adults (Thompson et al. and Takano et al.). As previously discussed, mental health is also implicated in the design of the built environment, demonstrating that development of the walkable natural landscape has a deeper impact. We appreciate the Commission's reference to creating a Statewide Greenway Network Plan to "develop an interconnected network of traffic-separated and off-road paths that provide medium-and long-distance connectivity across the state." Additionally, they seek to "explore opportunities to link NJ trails with trail systems in neighboring states and longer regional networks." A hallmark of New Jersey's greenway network is the D & R Canal, which forms the largest completed trail in the state, for more than 70 miles. However, this current trail system lacks walking and cycling connections between its three main segments, which requires users to navigate through main roads to enter this trail.

In line with this recommendation from the TZC, we propose the following revisions to this trail system:

1) Develop feeder paths from neighborhoods and transit-centers to trail access points, creating a transportation network that can also be used for off-road WFT or cycling
2) Environmentally "audit" New Jersey neighborhoods located far from a trail system

Through creating feeder paths, trail systems can be re-imagined as corridors for commute, decreasing pedestrian contact with vehicles and supporting WFT. Improving access to greenway networks directly from neighborhoods increases physical activity, increases user's perceived level of safety, and possibly decreases stress-levels, serving as an important initiative for inclusion in the TZC action items. Although a more geographically expansive greenway network provides greater opportunity for recreational physical activity, it may not decrease concerns for safety, as these greenway networks often do not provide lighting, serving as a barrier for vulnerable populations such as older adults. To this point, we suggest that the TZC extend their street lighting improvements to frequently used trail systems as well. However, studies have found that the perception of danger is greater than the reality of danger, showing that promotion efforts need to be instituted to encourage New Jerseyans to take advantage of this environmental resource (MBT Metropolitan Branch Trail Safety & Access Study).

Analysis of Recommendations

The above policy options are expansive, and to facilitate its proper implementation, I recommend that the following recommendations are highlighted and prioritized in the inclusion of the Target Zero Draft Safety Action Plan:

1) Development of vertically separated protected bike lanes that are regularly maintained
2) Promotion of Safety and Improved Accessibility of the D & R Canal Tow Path
3) Elimination of Parking Minimums, Especially Near Transit Centers

For recommendation (1), I propose the creation of a partnership between regular cyclists, the New Jersey Bike & Walk Coalition (NJBWC), (an organization already in collaboration with the TZC), as well as NJDOT/NJ Transit to review pathway designs and create a proper maintenance plan to ensure a safe and secure cycling experience.

For recommendation (2), The TZC should emphasize the importance of promotional and marketing strategies about the D & R Path, as well as other New Jersey trails (ex: East Coast Greenway), to encourage their use, and decrease citizens' perceived level of danger. Additionally, the implementation of lighting elements along the trail, or at the trail heads is an initiative that can be included.

Lastly for recommendation (3), the Target Zero Commission should encourage the passage of Senate Bill S2974, and advocate for more extreme parking minimum laws to be implemented.

As aptly noted in the NJ Target Zero Draft Action plan, the implementation of these action items will require a broad cooperation and coordination between various organizations such as the NJ Department of Transportation, NJ Department of Human Services, and also local/municipal transit authorities, as street design does not fall under a singular authority.

Additionally, as NJ is quite a suburbanized state, some advocates for automobile transit often argue that widening highways and roadways reduces traffic congestion, therefore creating more efficient and safer automobile transit. However, as previously mentioned, speeding often accounts for high levels of traffic fatalities, and multi-lane freeways "tend to have higher speeds in the inner lanes, and research has shown a correlation between speed and crash severity" (Harris). It is true that widening can reduce traffic congestion in the short term, before the demand increases, as the amount of money New Jersey taxpayers pay for this road revision only leads to greater suburban sprawl. The initiatives proposed in this paper provide sustainable options for improving the lives of New Jerseyans in a two-fold manner that both increases road safety and increases physical health.

Conclusion

With an ambitious goal, the Target Zero Commission has practically outlined various measures that need to be taken in order to create a safer and healthier future for New Jersey. The policy recommendations outlined in this memo serve as a framework through which the goal of the TZC can be refined through viewing the built environment as an avenue for the betterment of the physical and mental health of all New Jerseyans.

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