IPATH Annual Meeting 1-Day Conference Series – Active Travel
Thursday, 29 June 2023

Accepted Abstract Session 1
10:30 - 12:30 EDT (USA)

Barriers and Assets to Active Travel: A European Perspective
Moderated by: Paulo Anciaes, PhD, IPATH Board of Directors
*Presenting Author is indicated in **BOLD** text*

RESEARCH ABSTRACT

Visualising Barriers to Active Travel with Pakistani Families Living in Bradford. **Zahara Batool** and Kate Pangbourne, University of Leeds, Leeds, United Kingdom

Background
Millions more journeys need to be walked or cycled to meet the UK's Net Zero emissions target by 2050. However, across the UK, we do not yet walk and cycle enough short trips to make a difference. There are several reasons including many people find it difficult to get out of the habit of using a car, there are not enough safe routes for people to use for walking or cycling and lower participation within some communities. This paper reports on a Photovoice (PV) based Participatory Action Research study designed to investigate barriers to active travel in Bradford's Pakistani heritage community. It also investigates the use of PV to encourage critical consciousness of active travel.

Methods
The study recruited eight families from different areas of Bradford. The families were asked to reflect on everyday journeys by discussing photos they take of what matters to them in the travel environment, good and bad. Narrative data in the form of photos and interview transcripts were inductively analysed using Thematic Analysis. The analysis suggested key barriers to walking and cycling could be grouped into four main categories: personal factors, social factors and those related to the local and wider environment.

Results
Cognitive biases and social norms are found to influence people's travel choices. People find it difficult to break the car use habit and weigh-off its benefits with short-term rewards including protection against cold weather, convenience, and the perception of saving time. For the older generation participants, lack of motivation could be an additional barrier. Within the community set-up, the study finds both men and women have their vulnerabilities. There is a growing concern that teenage boys will likely get into a culture of owning fancy cars. The analysis highlighted local barriers in the environment, including fly-tipping, poor driving culture and lack of active travel infrastructure, are some of the challenges which need addressing. The strategy of having cycle lanes next to car lanes is not likely to work unless these lanes are segregated from traffic.

Conclusions

The report concludes that the Pakistani community is motivated to bring lifestyle changes and will be more receptive to walking as it is more culturally accepted compared to cycling. Based on participants' reflection and feedback, the study concludes participatory techniques like Photovoice offer an opportunity to break the status quo for those who are struggling to make a change by raising their social consciousness.

Zahara Batool is a human factors and transport safety expert with a background in transportation engineering. Her research portfolio can be broadly split into two distinct themes. The first relates to human factors in transport and how these can be integrated to bring behavioral change. The second is related to social and cultural dimensions in transport. In recent years, Zahara's research interests have shifted to understanding the interactions between transport, health and its impacts on physical, emotional and social well-being.

RESEARCH ABSTRACT

Stepping Towards Walkable Neighbours: Investigating the Associations between Street Quality and Propensity to Walk. **Zhengyu Wu**, Imperial College London and Paulo Anciaes, University College London, England, United Kingdom

Background
Walking is a healthy and sustainable mode of transport. The association between walking behaviour and the neighbourhood-built environment has been extensively investigated in the literature. In contrast, the relationship with street quality has been overlooked. This study covers this gap by examining the relationship between walking behaviour and street quality in a mixed-use neighbourhood in North London.

Methods
Participants in the survey (n=209) indicated if they go to 10 types of local places (e.g., local shop, park) and if yes, which mode of transport they use. We assessed the quality of all footways (161) and pedestrian crossings (59) in the area using a street audit tool (Pedestrian Environment Review System). We then estimated the walking routes each participant would likely take to each type of place, assuming two alternative behaviours: minimising trip length or maximising average street quality. We then estimated logistic regression models of the usual travel behaviour of each participant regarding each type of local place. The dependent variables assumed three values: not going to the place, go by walking, or go by other modes. The key explanatory variables were the average street quality on the walking route to the place. Control variables included the type of place, route length, and socio-demographics. Separate models were estimated for the two route choice behaviours. As each participant was represented 10 times in the dataset (one for each type of place), errors were clustered by participant.

Results
Both models found a significant negative association between street quality and the odds of using other modes to a particular place vs. walking to that place. In the model assuming individuals maximize street quality, a unit increase in the street quality score reduced the odds of using other modes, compared to walking, by 36% (95% confidence interval: 4%-60%). We found a negative association in the model assuming individuals minimise trip length, but it was insignificant at the 10% level. In both models, the negative associations were stronger for men, individuals over 24 years old, and trips to stations. No significant differences were found among the other nine types of places.

Conclusions

The study highlights the association between street quality and travel behaviour. Better street quality is associated with a higher likelihood of walking, rather than using other modes. City planners should prioritise interventions to improve footways and crossings frequently used to major destinations in a neighbourhood. Such interventions could promote walking.
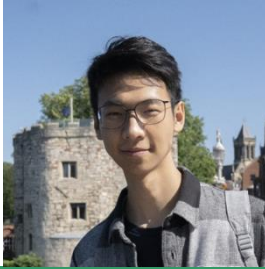
Zhengyu Wu is a Doctoral Researcher at the Centre for Transport Studies, Imperial College London. With a master's degree in Transport, jointly awarded by Imperial College and University College London, his expertise lies in using data analysis to delve into transport-related safety and human factors. Currently, Zhengyu is committed to applying computer vision for risk detection and mitigation in construction site transport and logistics. He firmly believes in the potential of innovative technologies to enhance safety within the transport sector.

RESEARCH ABSTRACT

Netherlands Safe to Move? A Study of Built Environment Moderation Effects on Physical Activity Patterns during COVID-19 Social Distancing Policies in the Netherlands. **Francisco Macedo** and Kevin Raaphorst, Radboud University Nijmegen, Gelderland, Netherlands

Background

The COVID-19 pandemic and the restrictive social distancing measures have caused a decrease in physical activity levels among people, which can have negative long-term effects on mental and physical health. Recent studies suggest that the pandemic's impact on physical activity was not equally distributed across different socioeconomic statuses and neighborhood characteristics. This study aims to evaluate how sensitive are different built environments to policy restrictions in terms of physical activity and identify neighborhood types that either attenuate or catalyze the physical inactivity resulting from those restrictions.

Methods

The study used data from the Nijmegen Exercise Study (NES) in the Netherlands, with a sample size of 9118 participants who reported their demographics, living environment, and domain-specific moderate-to-vigorous physical activity (MVPA) levels for leisure and commuting before and during COVID-19 restrictions from April 2020 to October 2020. The study used unsupervised K-means algorithm to create distinct typologies of the Built Environment, which were used to estimate attenuating and amplifying effects of policy. The impact of policy restrictions on MVPA was estimated using Poisson regression models, and the results were mapped using Geographic Information Systems.

Results

Results from the developed models indicate that stronger restrictions were associated with lower levels of MVPA (average.: -0.378; SE: 0.003). On average, compared to periods with low restrictions, medium to high restrictions led to a reduction in leisure MVPA ranging from 4.61 to 10.60 minutes/ week and commuting MVPA ranging from 10.62 to 16.10 minutes/ week. The moderation analysis demonstrated that certain neighborhood types can amplify the impact of restrictions on physical activity. Specifically, individuals residing in urbanized and dense neighborhoods experienced a comparatively stronger reduction in leisure (average: -0.50, SE: 0.006) and commuting (average: -0.59, SE: 0.006) MVPA during periods of heavy restrictions compared to those living in rural areas. Other neighborhood types related

to sports opportunities, population habits, and building morphology also played significant moderation roles between restrictions and MVPA.

Conclusions

The results of this study offer valuable insights for urban planners and policymakers to better understand how residents in different neighborhoods responded to movement restrictions in the short-term, and the consequences of these behavioral responses on physical activity levels. By combining these findings with other relevant research conducted in the Netherlands during the same period policymakers can identify neighborhoods that are particularly vulnerable to physical inactivity due to movement restrictions, investigate potential long-term effects of past restrictions on physical activity levels.

Francisco Macedo is an Urban/Transport Planner with a demonstrated history of working in the planning and design fields. He has a master's degree in engineering (M.Eng.) focused on Transport Engineering and Urban Planning from Universidade Federal do Ceará. Currently, Francisco is working on a master's degree specializing in spatial planning at Radboud University Nijmegen.

PRACTITIONER ABSTRACT/CASE STUDY

Learning from Past Errors: Consensus Building for the Cycling Plan for the Metropolitan City of Naples (Italy). **Francesca Parliara** and Luigi Biggiero, University of Naples Federico II, Naples, Italy

Informed debate can generate democratic consensus over controversial issues, effective engagement can bring about better policy directions, improved local services, possibly new ways to initiate or plan for a particular situation and a better understanding of the local context by technical experts and community members. Consensus building is a process of seeking unanimous (or near-unanimous) agreement. It involves a good faith effort to meet the interests of all stakeholders. Consensus is reached when everyone agrees with living with whatever is proposed after every effort has been made to meet the interests of all stake-holding parties.

A case study in which the local authority did not work in this direction is represented by the bike lane in the city of Napoli in the south of Italy, introduced in 2012. Indeed, for that intervention no participation from the residents was promoted and the project turned out to be a real failure. However, learning from past errors can help avoiding future mistakes. Specifically, the new cycling plan for the metropolitan city of Naples, promoted in 2022, was conceived with a different approach. Funds have already been allocated to cycling infrastructure in this area with an opportunity to increase the demand for active mobility and boost cycling. The long period of restrictions implemented during the pandemic showed that protecting cycle paths and limiting traffic, vehicle parking and access for private vehicles in urban centres, as well as reducing their speed, are simple interventions favouring inclusive and cycling mobility.

To support these measures, it was considered essential to ensure a participation process, involving local associations, stakeholders, and residents, as well as support from local authorities. Indeed, participation was promoted from the very beginning of the project through a series of activities, i.e. carrying out online surveys; identifying territorial focus and experiential tours.

In this contribution, through the description of the case study, it is demonstrated how important is to engage the public within the wider transportation decision-making process to avoid bad decisions, with negative impacts on the society. The objective is that of promoting transparent, shared, inclusive and sustainable interventions for the well-being of the community.

Francesca Pagliara is Associate Professor in Transportation Engineering, Department of Civil, Architectural and Environmental Engineering, University of Naples Federico II, Naples, Italy. She has been a Visiting Professor at several European and non-European Universities. Francesca is an author of academic books and of more than 100 papers published in scientific journals. She has participated in several research projects. Her main fields of research are the wider socio-economic, impacts of high-speed rail systems, the analysis and quantification of the impact of the transportation system on the tourism market, public engagement in the transportation decision-making process and integrated land-use/transport modelling.

Accepted Abstract Session 2
13:30 - 15:00 EDT (USA)

Tackling Safety and Equity Challenges in Micromobility - Examining Current Issues and Charting a Promising Future
Moderated by: Ipek N. Sener, PhD - IPATH Board of Directors
*Presenting Author is indicated in **BOLD** text*

RESEARCH ABSTRACT

The Evolution of Bicycling as a Means of Transportation in the United States: Key Insights Through an Equity Lens. **Saquib Mohammed Haroon** and Alyssa Ryan, University of Arizona, Tucson, Arizona, United States

Background
Cities worldwide continue to promote bicycling as it is an eco-friendly and cost-effective mode of transportation with numerous physical, mental, and health benefits. However, promoting cycling in caroriented transport systems is a challenge for policymakers who seek to increase social diversity among its users. Many studies have explored how the likelihood of bicycling changes among different socioeconomic groups. However, subgroup analysis amongst socio-economic groups has remained limited. Subgroup analysis is critical to help policymakers identify differences in access, behavior, and outcomes among socio-economic subgroups, which in turn can aid them in devising more equitable and effective policy interventions that promote social inclusion and improve outcomes for all members of society.

Methods
National Household Travel Survey data from 2017, 2009, and 2001 were used to estimate the likeliness of cycling amongst the population of the United States. Summary statistics on the three different datasets were computed, depicting changes in trends in bicycling across the years. Further, a subgroup analysis using logistic regression models was conducted for each socio-economic group considering the impact of other socio-economic groups that affect cycling.

Results

Based on the analysis of the three national household surveys, it was seen that bicycling rates among the U.S. population increased slightly over the years. When gender is segregated, the cycling rate increased significantly over the survey years between 2001 and 2009. However, it remained almost similar between 2009 and 2017, with the number of males using bicycles decreasing slightly in 2017 compared to 2009. Males were more likely to use a bicycle when choosing a transport mode than females. The results of the subgroup analysis indicated that middle-income groups were less likely to bicycle for both males and females. The analysis further revealed that individuals with a higher level of education, particularly those with a degree, were more likely to choose bicycling as a mode of transportation. Moreover, among individuals with a graduate degree, females were more likely to bicycle compared to males, and this trend remained consistent across all three survey years.

Conclusions

The analysis indicates that despite bicycling rates increasing from 2001 to 2017, certain socio-economic groups, such as middle-income groups and people of color with lower education levels, have consistently been underrepresented in the bicycling population. The findings indicate a need for more inclusive policies promoting a sustainable and healthy transportation mode such as bicycling among all socioeconomic subgroups.

Saquib Haroon is a Graduate Research Assistant pursuing his Ph.D. in the Department of Civil & Architectural Engineering & Mechanics at the University of Arizona. His primary research focuses on addressing transportation safety issues and analyzing human behavior. His work involves modeling human factors in transportation and developing models to understand and mitigate transportation systems-related risks. Through his research, Saquib strives to contribute to developing safer and more equitable transportation systems.

RESEARCH ABSTRACT

Examining E-Scooter Risk Factors: A Multi-Level Exploratory Analysis for Safer Urban Mobility. **Pranik Koirala** and Ipek N. Sener[1], Texas A&M Transportation Institute, Austin, Texas, United States

Background

Micromobility plays a pivotal role in urban transportation, and e-scooters have gained widespread popularity in cities across the globe. Nevertheless, as e-scooters emerged, they quickly transitioned from being an exciting mobility option to a transportation mode with many safety concerns. Emerging from this need, this study aimed to provide an in-depth examination of e-scooter safety considerations through an evidence-based approach.

Methods

The study utilized data collected from two primary sources in Austin, Texas, spanning a period of four years (2018 to 2021): hospital emergency room patient records obtained from Dell Seton Medical Center and crash data obtained from TXDOT's Crash Records Information System (CRIS). Furthermore, field data directly from the study area were collected through a three-day field visit to the City of Austin. Data fusion methods were employed to merge hospital data with the CRIS datasets. Text mining techniques were used to identify and extract e-scooter-related crashes within the crash reports. Each e-scooter report was individually examined to gather additional data and verify the information provided in the CRIS dataset. Micro-level-built environment data were examined to gain a deeper

understanding of the relationships between the surrounding environments and e-scooter crashes. Exploratory statistical analyses were conducted to extract meaningful insights from all the datasets.

Results

The effort to merge the hospital patient dataset with the crash records dataset underscored the significance of improving consistency in reporting incidents and injuries, as well as the development and integration of data from diverse sources. The exploratory analysis revealed key insights on e-scooter rider injuries and crash patterns. E-scooter crashes were found to predominantly involve younger men, occur more frequently at nighttime, and often involve higher levels of intoxication. Another notable finding was that e-scooters were primarily at fault in intersection crashes, resulting in more severe injuries. Similarly, vehicles involved in crashes with e-scooters while making a turn were also mostly at fault. The findings highlighted the importance of targeted safety education, interventions addressing alcohol and drug use, infrastructure planning, and time/location-specific measures to enhance e-scooter safety and reduce incidents.

Conclusions

This study contributes to our understanding of the characteristics of e-scooter riders and individuals involved in e-scooter-related crashes using both traditional and non-traditional data sources. The findings provide valuable insights for policymakers, urban planners, and relevant stakeholders in implementing effective strategies to e-scooter safety and promote a safer transportation environment for e-scooter riders and other road users.

1 Corresponding Author: i-sener@tti.tamu.edu, Texas A&M Transportation Institute.

Pranik Koirala is a recent graduate from Texas A&M University where he obtained his degree in Civil Engineering with a specialization in Transportation Engineering. While pursuing his degree, Pranik served as a student researcher at the Texas A&M Transportation Institute. His role involved data-driven problem-solving, with a primary focus on the area of micromobility.

PRACTITIONER/CASE STUDY ABSTRACT

20 Is Plenty for the United States - State of Speed Limits. **Ken McLeod**, League of American Bicyclists, Washington DC, United States

The World Health Organization and more than 100 countries, including the United States, have expressed support for a maximum road travel speed of 20 miles per hour (mph) in areas where vulnerable road users and vehicles mix in a frequent and planned manner, except where strong evidence exists that higher speeds are safe, by signing the Stockholm Declaration on Road Safety in 2020.

However, 20 mph speed limits are rarely found in state speed limit laws. In reviewing statutory speed limits, the League of American Bicyclists could only identify four states that had 20 mph default speed limits for any defined district, excluding school zones that are limited in duration to certain hours of the day. Statutory speed limits that make 20 mph speeds the default speed should support the social norm of driving at 20 mph and an engineering norm of designing streets for compliance with the posted or unposted speed limit of 20 mph.

Instead of 20 mph speed limits, most states set the lowest default speed limit to 25 mph or more. The League found two types of statutory speed limit that could be used to set default speeds of 20 mph:

- Urban/Business districts
  - o 19 states have an urban or business district statutory speed limit of 25 mph.
  - o 14 states make their default speed 30 mph for these districts.
  - o Five states have no district-based statutory speed limit lower than 35 mph.
- Residential districts
  - o 19 states, residential districts have a default speed limit of 25 mph.
  - o 7 states, residential districts have a default speed limit of 30 mph.
  - o 4 states, residential districts have a default speed limit of 35 mph or more.

Existing statutory speed limits largely reflect recommendations from the Uniform Vehicle Code (UVC), which was published from 1926-2000 and has not been updated since 2000. In the 1926 version of the UVC, the default maximum speed for a business district was 20 mph. That was raised to 25 mph in 1938 and in 1956 business districts were merged into urban districts and the recommended maximum speed was raised to 30 mph. The League is unaware of research supporting those increases.

In recent years, advocates have focused on enabling cities to lower speed limits, and districtbased speed limits may provide a metric for understanding the success of normalizing slower, safer, speeds.

At the League of American Bicyclists, **Ken McLeod** leads policy initiatives to improve bicyclist safety, manages the Bicycle Friendly State program and data.bikeleague.org, and provides technical assistance to people and groups working on state and local initiatives. His goals are to promote policies that take advantage of one of the best technologies ever invented – the bicycle - and help people see the future where a Bicycle Friendly America exists for everyone.