International Transport Forum | CPB Corporate Partnership Board

Workshop Summary

Gender Bias in Transportation Data, with a focus on Artificial Intelligence

March on Gender
WOMEN'S EMPOWERMENT AT THE HEART OF THE RECOVERY

Corporate Partnership Board Event

29th March, 2021

OECD BETTER POLICIES FOR BETTER LIVES | 60 YEARS

Gender Bias in Transport Data, with a focus on Artificial Intelligence

Background

The ITF Corporate Partnership Board (CPB) is the International Transport Forum's platform for engaging with the private sector and enriching global transport policy discussion with a business perspective. Corporate Partners provide input to policy discussions by suggesting topics for different workstreams and participating in concrete projects.

In 2019, the CPB launched its Workstream on Gender on International Women's Day, 8 March, discussing the importance of hiring and retaining a diverse workforce. Ultimately, achieving a more diverse and inclusive transport sector requires action from both governments and the private sector.

Gender equality and women's empowerment are integral to achieving the United Nations SDGs. In particular, Goal 5 aims to 'achieve gender equality and empower all women and girls.' This is part of a series of events taking place across the OECD to celebrate the March on Gender.

This workshop followed after a joint and public event with the Science Technology and Innovation Division at the OECD, entitled Addressing the Gender Bias in AI Data[1], which brought together experts to discuss how algorithms that power artificial intelligence can perpetuate gender biases, and how data governance (and AI itself) could help address these biases. Speakers encouraged policymakers to learn more about how AI is created and used, and then to create robust and gender inclusive AI principles, guidelines and codes of ethics, ensuring correct implementation.

Workshop Objectives and Main Points of Discussion

The aims of the workshop were twofold: (1) hearing from Corporate Partnership Board members and guest speakers to identify examples of gender bias in transport data; and (2) discussing the series of policies that could be implemented to help us move forward addressing gender bias.

The workshop was divided into two different sessions. A first 50-minute session was devoted to hearing from three speakers, who shared some finding of gender data gaps and biases in transportation data. This set the stage for a second, 40-minute session, in which participants were welcome to give their feedback, ask questions and discuss about the best ways in which policymakers can address these biases.

[1] Please refer to the replay here.

Workshop Summary

Introductory Remarks

ITF Secretary-General, Young Tae Kim, welcomed all participants at the beginning of the event. Sharon Masterson, Manager of the Corporate Partnership Board, briefly introduced the ITF and the CPB, and gave the floor to Patricia Hu, Director of the Bureau of Transportation Statistics at the United States Department of Transportation, who chaired the event. Ms. Hu outlined the plan for the event and opened the floor to hear from speakers.

Presentations from speakers

1) **Mario Barreto**, Lead Statistician, ITF

Mario spoke about the current situation of transport statistics and suggested ways of bridging data gaps, highlighting the role that the ITF could have in this.

On the one hand, Mario explained that there is very little data disaggregated by sex in transportation, except for road accidents and employment statistics. He stated that **most national statistical offices do not have the structure, the network or the resources to collect this information. There is also not a strong political will on this regard in most countries**.

To better assess the experience of women as transport users, some states have taken initiatives such as developing mobility surveys, although these are costly and are run every 5 to 10 years. Others, such as Sweden, the UK, or Canada are adapting to these needs to be more equitable, **mainstreaming gender in their national statistics offices data collection techniques**. Moreover, given the great advances in AI and data collection methods, especially from the private sector, other sources could help bridge data gaps more quickly (i.e. those that require a sex disaggregation such as driving licenses, car insurance companies, train tickets, public transport travel cards).

Finally, Mario suggested that **the role of the ITF to help national statistics offices in the way they collect data could be benchmarking positive results, suggesting common solutions and sharing best practices**.

2) **Alexandra Millonig**, Senior Scientist at the Austrian Institute of Technology (AIT)

Alexandra focused her intervention on the lessons learned from data biases in the car sharing industry, and suggested ways to overcome the biases encountered.

In a first mapping, it is seen that **car-sharing options are significantly less used by women**. Taking a step back and analysing women mobility behaviour as a whole, it is known that several factors cause differences in behaviour patterns between women and men (i.e. women use public transport more frequently, they tend to trip-chain, there is a larger share of women taking care of children and elderly, etc.). Car sharing providers have tried to understand why this is the case in order to give women better access.

The main lesson learned from the barriers women encountered in using car-sharing apps is the fact that it was assumed that the product was designed for universal use, when it was designed for men. If, for instance, the car is not close by, women with children would tend to dismiss a car-sharing option. Moreover, according to a quantitative study of a car-pooling app active in France since 2015, which uses machine learning to track trips, 90% of the pooling options that had been declined were due to the fact that the prediction that the machine was doing was not accurate. App providers then learnt that is was mainly human factors causing these failures.

To overcome these challenges in access, affordability and ability, car-sharing Alexandra suggested that providers anticipate the barriers faced by women. Thinking of the services' data needs to design them in a more gender-balanced way. The digital divide between men and women is also affecting the quality of data that is being used in car sharing industries, and in the transport sector more broadly.

3) **Imogen Pierce**, Head of City Engagement and Integration, Arrival

Imogen contextualised her intervention around the work of Arrival, and its engagement with city planning data.

UK-based sustainable mobility start-up Arrival creates electric commercial vehicles. Arrival uses a new method of design and manufacture that allows the creation of mini-factories close to urban centre. **These vehicles generate data that, through a number of partnerships with cities, are contributing to the creation of cohesive mobility ecosystems**.

Regarding the vehicle design, there are a number of potential vulnerabilities to creating new and perpetuating old gender biases. Automotive industry designs around its costumer and standards, and reflect on what this means remains necessary, especially when the whole industry is increasingly relying on code to design premises. An

aspect to be addressed is, for example, preventing vans from being designed under male proportions only. The consequences of safety regulations taking average male proportion as default for universal are already well known (i.e. crash test dummies). **A solution would be to customise services and products that are inclusive by default.**

Imogen reflected on how Arrival is using its datasets and AI systems, and which metrics would be better to optimise to provide a more equitable service. Arrival can **design fit-for-purpose and inclusive solutions for cities**, but that is only valuable if the social and cultural challenges of cities are understood. Addressing gender biases in these projections are therefore and imperative to make sure that all citizens have equal access to goods, services, and economic opportunities.

Finally, Imogen stated that an intelligent use of that data could stop the perpetuation of a cycle of biases. Having all these measures in design discussions and plans forces providers to be empathetic and aware. Yet, that is only going to reveal some of the blind spots in urban city planning – the key solution is to have representation of all groups within all levels of the decision-making process.

Sharing Best Practice: Discussion with Participants

After the interventions, participants asked the following questions to the speakers:

- **Are there any tools or mechanisms available to help data producers identify if they are unintentionally generating biased data?**
  - Taking a human-centred approach is a good starting point, identifying several homogeneous groups and the trends in their behaviour has proved to help identify the so-called 'hard to reach' groups.
  - Making sure that data analyses monitor and evaluate behaviours.

- **Are there any best practices at the city-level on inclusive, gender-friendly infrastructure design?**
  - In Charlotte, North Carolina, USA, Arrival has signed a partnership to establish that priorities in the city's sustainability action plans start tackling inequalities prioritising areas that are more vulnerable. For instance, setting out the electrification process of their bus lines in areas that have been more negatively impacted by poor air quality.
- **Has the ITF made any progress in harmonising data requests and developing standards for national and international statistical offices?**
  - The ITF has developed common standards, but not on gender data. We developed a glossary jointly with UNECE. However, there was not a gender approach in transport statistics at the time, so that is still missing. For the ITF to become that platform, the first steps needs to come from NSOs. The hardest part is changing mentalities, so there will be a long process.

Moreover, several participants used the opportunity to showcase some of their work and main challenges encountered, and shared links to studies and datasets. At the European, policy-making level, the DIAMOND and TinnGO projects briefly presented their work:

- **DIAMOND** project analyses and converts data into knowledge with notions of impartiality to support gender inclusion in current and future transport systems from the perspective of women as transport users and as professionals in the sector;

- **TInnGO** is a 3-year research project funded in the context of the HORIZON 2020 Programme of the EU, aiming to create a framework and mechanisms for a sustainable game change in European transport through a transformative strategy of gender and diversity sensitive smart mobility.

Insights from the private sector came from **AXA AI Research**, which has already explored several issues around biases, including gender bias.

Closing Remarks and Next Steps

Participants were welcome to raise some final points. It was agreed that AI creates a range of opportunities for both companies and policy makers working in the transportation sector, and those deploying the technology and collecting the data should address concerns about discrimination and bias, but also about data harmonisation.

Appendix

During the meeting, participants were welcome to share links of different studies relevant to the discussion. These were the links shared in the chat:

AXA AI Research: *Active Fairness Instead of Unawareness* https://arxiv.org/abs/2009.06251 and *Towards the Right Kind of Fairness in AI* https://arxiv.org/abs/2102.08453

HUGIN EXPERT A/S: Bayesian Belief Network to describe characteristics influencing travel satisfaction for surface rail transport: http://demo.hugin.com/example/TravelSatisfaction

ITF's work on gender in transport: https://www.itf-oecd.org/itf-work-gender-transport, and the most recent publication on *The Gender Dimension of the Transport Workforce* https://www.itf-oecd.org/sites/default/files/docs/gender-dimension-transport-workforce.pdf

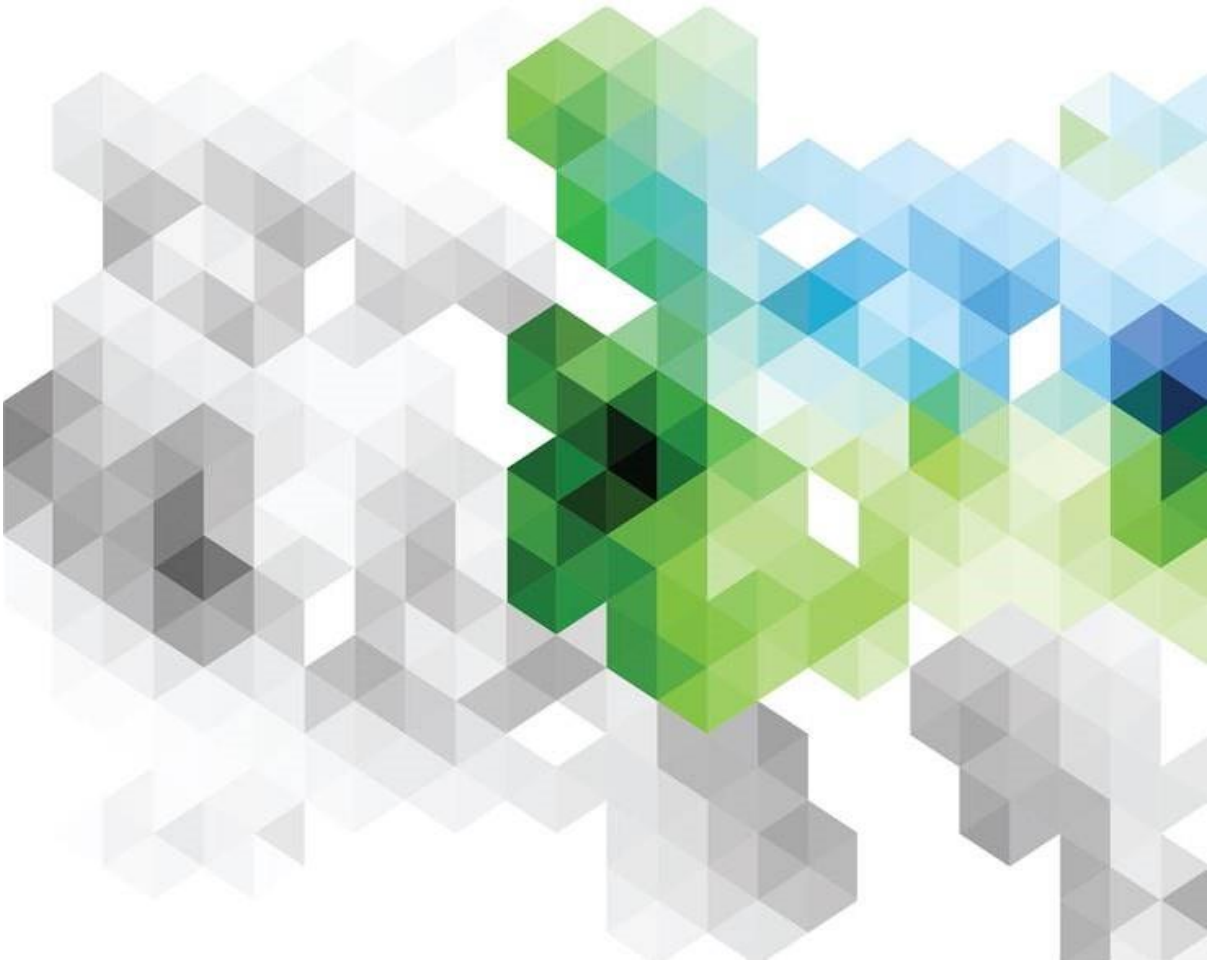
ITF's publication *Governing Transport in the Algorithmic Age*: https://www.itf-oecd.org/governing-transport-algorithmic-age

TInnGO Project:

- Open Data Repository https://tinngo.sboing.net/
- TInnGO project's Paneuropean Transport Gender Observatory, with 10 national hubs https://transportgenderobservatory.eu
- Gender & Diversity Surveys in Transport https://tinngo.sboing.net/surveys/
- Global GPS navigator based on crowdsourcing with Transport Surveys https://sboing.net/ultinavi
- Global platform for incident reporting on transport-gender related issues https://tinngo.sboing.net/incident-reports

Objective or Biased – On the questionable use of Artificial Intelligence for job applications: https://web.br.de/interaktiv/ki-bewerbung/en/

World Bank Online Course on Managing Gender Equality in Transportation (free and self-paced): https://www.worldbank.org/en/news/press-release/2021/03/05/world-bank-and-un-women-launch-course-on-managing-gender-equality-in-transportation



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