Travel in a Post-COVID World: A Few Speculations

Presentation in the “Post-COVID Travel & CECCS’ Air Travel Report” Panel Session
Adams Sustainability Celebration
University of Toronto
November 3, 2020

Eric J. Miller, Ph.D.
Prof., Dept. of Civil & Mineral Engineering
Director, UTTRI
University of Toronto
COVID-19 Disruption

- As with every other aspect of our society, COVID-19 has seriously disrupted our urban transportation system:
  - Disastrous declines in transit ridership & revenues.
  - Shifts to auto usage.
  - Exacerbated inequities.
  - On the positive side:
    • Reduced GHGs & air pollution.
    • Increased walking & biking.
    • Experimentation with alternative street usage.
Density & Social Distancing

- COVID is a “direct attack” on the whole raison d’etre of cities to bring people together to interact.
Long-term impacts of COVID-19? (1)

- More working from home?
- Increased suburbanization (or even “ex-urbanization”)?
- Permanent loss of transit ridership?
- Increased use of ridehailing services?
- Reduced activity in central cities?
Long-term impacts of COVID-19? (2)

- The future is very difficult to foresee.
- Some shifts will undoubtedly occur; e.g., some people will continue to work at home.
- But current consensus seems to be that there will be very strong pressures to “return to normal”.
- Cities are very resilient; there are good reasons for why they are constructed the way they are:
  - “Containers of civilization”.
  - Markets.
  - Agglomeration.
  - Innovation.
On-going disruption

- But the transportation system was undergoing significant & numerous disruptions pre-COVID and will continue to be shaped by these post-COVID.
- Just as COVID is the biggest public health crisis in a century, we are in the midst of the biggest change in transportation & mobility in a century (since the early 1900’s).
Disruptions (1): New technologies & services

- Connected
- Autonomous
- Electric

Traditional public transportation services, such as buses and trains

Vanpools, carpools, shuttles, transport network companies (TNCs) and rideshare pools

Carsharing, bikesharing, scooter sharing in all its forms
Disruptions (2): ICT, IoT, AI & Big Data

- At the same time, the technology that is so disrupting transportation services is also generating massive amounts of new data about travel behaviour that potentially will allow us to view travel in new ways:
  - Very large samples.
  - Dynamic, time-series.
  - But (usually) lacking socio-economics.

- New analysis and computing methods are enabling the analysis of these huge new datasets (machine learning, etc.) that will provide exciting new insights into how to design & operate our systems,
Disruptions (3): Global Urbanization

- The challenge of planning/building the world’s emerging cities & mega-cities is enormous, but world stability, etc., etc. depends on getting the 21st century urban world “right”.
- A “first-order” world-wide problem that is not being adequately addressed in most cases.
Disruptions (4): The quest for social & economic equity
The search for sustainability ...

- Transportation & sustainability – the “triple bottom line” is still calling us:
  - Environmental:
    - GHGs.
    - Air pollution.
    - Land use.
  - Social:
    - Equitable access.
    - Environmental justice.
  - Economic/fiscal:
    - System affordability.
    - Sustaining the urban economy.

- Despite all the technological developments, at the end of the day, we still have three basic ways of moving people in cities:
  - Automobile (whether autonomous or not, electric or not, privately owned or not).
  - Public transit (what is its future in the face of technological change?)
  - Active transportation (walking, biking; not sure e-scooters qualify, ...)
Urban Form

- The transportation – land use interaction remains fundamental & critical.
- How we build urban form determines what we can do (effectively, efficiently, equitably) with transportation.
- Urban design at both the micro (neighbourhood) and macro (city/region) levels is critical.
- How we accommodate continuing urban growth in terms of urban design – integrated with “smart” transportation design will largely determine the overall sustainability & resilience of our world.

The ILUTE research team throughout the years & in happier times.

May we see these days again!

LET’S DISCUSS!

Integrated, Land-Use, Transportation, Environment