DISCLAIMER

This presentation reflects the views of the authors only and does not reflect the views or policies of Transport Canada. Neither Transport Canada, nor its employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy or completeness of any information contained in this presentation, or process described herein, and assumes no responsibility for anyone's use of the information.

Cette présentation est disponible en anglais seulement.

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

Impacts of COVID-19 and TRB's Related Research

Maintaining Connected and Automated Vehicle Readiness Activities in Canada: Virtual Workshop
July 14, 2020

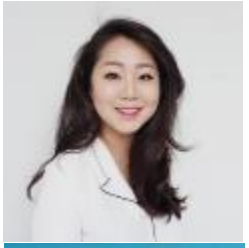
TRB AV/SM FORUM
AUTOMATED VEHICLES + SHARED MOBILITY

Mission

Bring together public, private, and research organizations to share perspectives on critical issues for deploying automated vehicles and shared mobility. Discuss, identify, and facilitate fact-based research needed to deploy these technologies how and when it will inform policy to meet long-term goals:

- Increase safety
- Reduce congestion
- Enhance accessibility
- Increase environmental and energy sustainability
- Encourage economic development and equity

May 13, 2020 Presentations



Effect of COVID-19 on AVs
Annie Chang
SAE International

Effect of COVID-19 on AVs
Ed Straub
SAE International

Effect of COVID-19 on Shared Mobility
Susan Shaheen
UC Berkeley

COVID-19 and New Paradigms?
Tim Papandreou
Emerging Transport Advisors

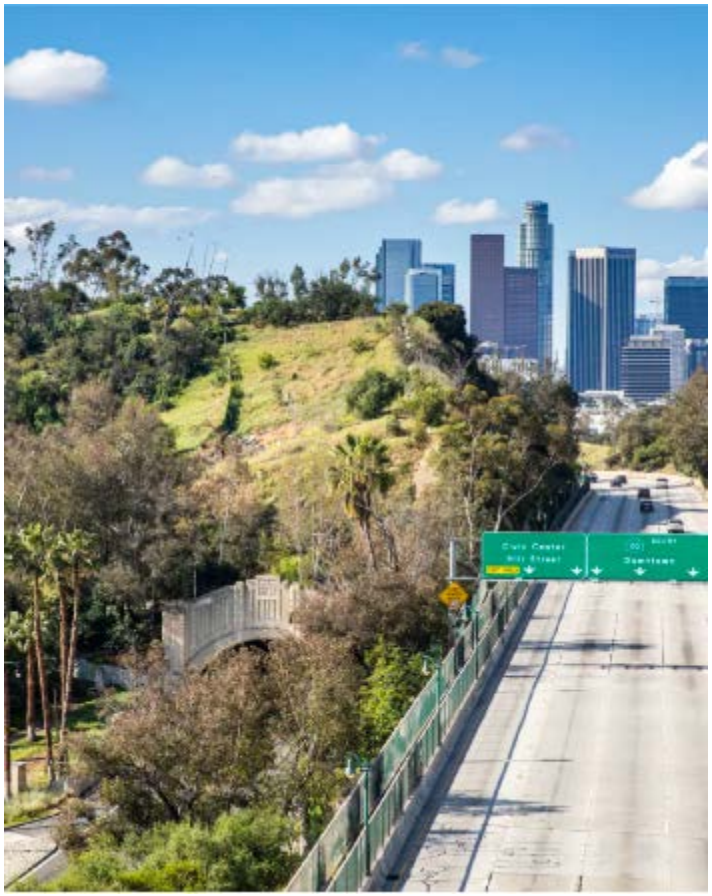
Steven Shladover
UC Berkeley PATH

Paul Ajegba
Michigan DOT

Sandra Larson
Stanley Consultants


762
CA49819
8152
Clean Air Vehicle
Video, Phone & Conference Rooms.
Meet Happy | zoom

COVID-19: It's Bad



- Economic recession causing devastating impacts on employment and transportation
- Gas tax revenue reductions
  - VMT down: 39% in Detroit, 39% in Miami, 44% in Los Angeles, 49% in Dallas, 52% in Seattle
- Public transit reducing schedules, routes, and operating hours
- Many drivers getting more reckless
- Shared mobility companies redirecting service, closures, and layoffs
- Need to quickly address immediate job and transportation impacts and restore safe / healthy mobility

COVID-19's Effects on AVs

Technology Development

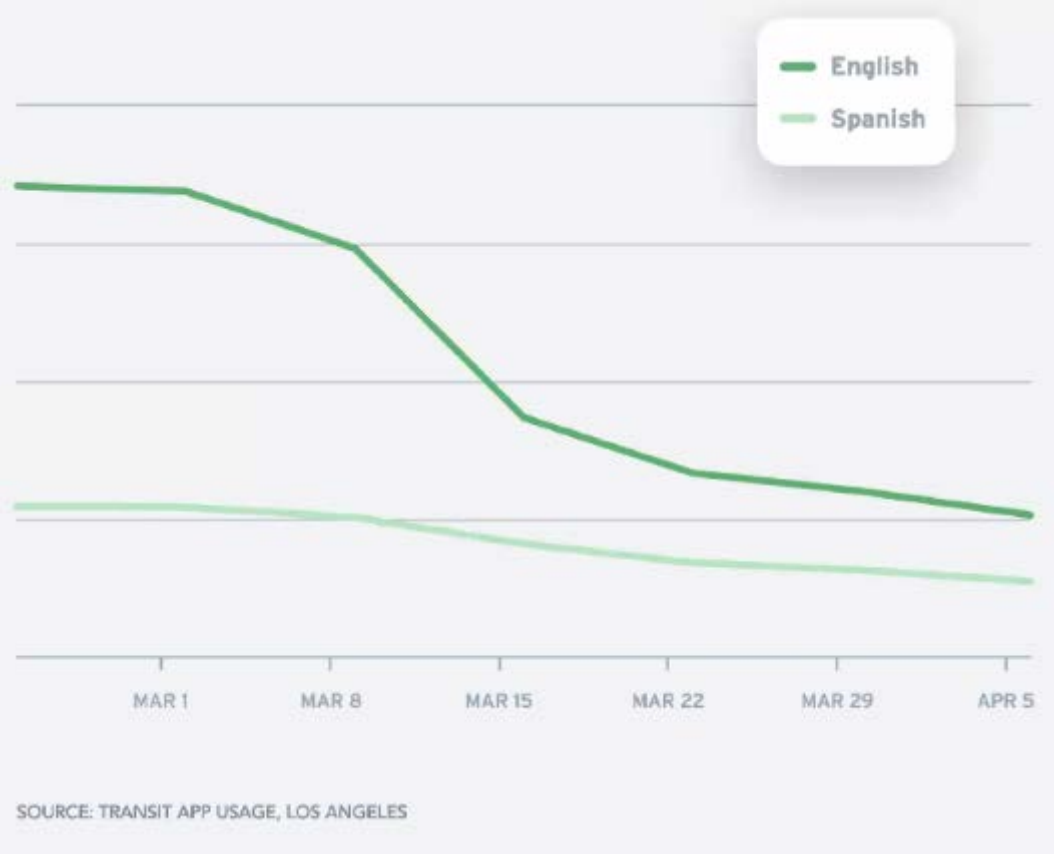
- Fundamentals
- Component performance and development
- System level simulation
- Physical testing protocols
- Investment

Deployment

- Rethinking use cases
- User behavior and preferences
- Personal use/transit
  - Riskier driver behavior prior to stay-at-home orders
  - Decreased use of transit and ridehailing
  - Protocols/risk mitigation measures

Transit App Survey

- Active public transit users skewed toward low-income households
- Food service and healthcare represent greatest percentage of travelers
- Very little mode shift for those still traveling (U.S. and Canada)
- Spanish speakers more likely to continue using public transit



Social Equity Considerations

- Critical to understand interrelationships among job and food access, housing, public health, and mobility
- Need to ensure lack of mobility does not exacerbate poverty and homelessness
- Opportunities for public transit operators, cities, and private companies to advance mobility needs and strengthen economic resilience, particularly for most vulnerable populations

COVID-19 Opportunities

- 6% drop in CO2 emissions predicted in 2020
- VMT and number of car crashes down
- Active transport policies:
  - Milan announces 22 miles of streets to be converted to pedestrian / bicycle space
  - Buenos Aires expanding active transportation infrastructure
- Opportunities for slow streets, telecommuting, shared mobility and public transit options
- Focus on policy, partnerships, and people
- Create more equitable, innovative, sustainable, and resilient transportation

Micromobility Policy Response

Favorable Developments

- Free/discounted memberships/use for small businesses and/or public (Kansas City, Memphis)
- Free/discounted memberships for essential workers (Boston, Brookline, Chicago, Salt Lake City, Washington DC)
- Shared micromobility service workers deemed essential (Baltimore)
- Used for restaurant deliveries (Syracuse)

Unfavorable Developments

- *Ban/ceased operations* due to COVID-19 transmission concerns (Miami, Sacramento)

Financial Crisis Looming

Shared mobility and transit can help households that will no longer be able to afford a personal vehicle as a result of having to make critical choices between food, healthcare, and paying their rent.

We must focus on people's needs as this crisis unfolds.

Current and *Possible* Future

	Response (6-24 Months)	Recovery (~2-3+ Years)	Mitigation	Preparation
Macroeconomic Environment	• Disruptions to supply chains and labor • Lower oil prices	• Recovery in auto and mobility service sectors • Oil prices return to pre-COVID ranges	• Auto and mobility sectors increase use of automation in supply chains • Monitor infectious diseases	• Enhanced cleaning protocols • Continuity of operations and of mobility/delivery plans
Consumer Behavior	Shifts away from higher occupancy modes; increases in deliveries and telecommuting	Uncertain / depends on length/depth of pandemic and recession; policy levers	Consumers continue social distancing and physical travel substitution	Consumers prepared for future outbreaks (masks, gloves, social distancing, etc.)
Policy Environment	• Economic stimulus • Support for public transit, telecommuting	Policies to reduce VMT/GHG emissions (e.g., telecommuting, HOVs, active transport)	Transport sector implements practices to prevent infectious disease	Transport sector implements practices to respond to infectious disease (increased cleaning, etc.)
Technology Response	Testing AVs for contactless applications	EV and AV adoption delays due to virus and economic disruption	Industry develops cleaning protocols for AVs (e.g., UV light)	AVs ready for future infectious disease scenarios

TRB's COVID-19/ public health/ pandemic research

Communicable Disease

(Some of the) Existing Research

- Decision-making frameworks
- Aviation's role in spreading/reducing outbreak
- Transit's connection to health care
- Legal issues of transit emergency preparedness
- Network models to evaluate outbreak control strategies

Transportation Funding

- Transportation agency right-sizing guidance
- Analysis of transportation spending in 2009's ARRA bill
- Communication strategies to solidify public support for new funding options
- Public-private partnership analysis
- Prioritization of investment projects

Supply Chains and COVID-19

- Evaluation process for freight network disruptions and their economic effects
- Models for dual-route distribution strategies
- Recommendations to mitigate supply chain disruptions
- Port resilience and post-incident plans
- Supply chain resilience lessons from hurricanes

Disease and Biothreats

- NCHRP: *A Guide to Transportation's Role in Public Health Disasters*
- ACRP: *Preparing Airports for Communicable Diseases on Arriving Flights*
- Quarantining at ports of entry
- Use of robotics in hazardous environments
- Passenger screening techniques
- Modal legal issues in public health response

Teleworking

- Transportation revenue
- Transportation demand management programs
- Trip patterns of teleworkers
- Economic opportunities in rural areas
- Effectiveness of commuter benefits

Forecasting

- Travel forecasting methods
- Pedestrian and bicyclist perceptions
- Modeling asset management
- Freight and passenger models
- Recreational travel demand
- Assessing accuracy of forecasts

Some Lessons from COVID-19

- Driving declined, but crashes did not decline proportionately
- Curbside permitting is newly important
- Parcel delivery has (metaphorically) exploded
- Semi-automation at ports/warehouses has paid off
- Construction (often) continuing or increasing
- Ships extended contracts

Katherine Kortum

Senior Program Officer

Transportation Research Board

kkortum@nas.edu