

# Public Health and Health Equity Considerations of AVs in California



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PRODUCED BY TRANSPO GROUP FOR THE CALIFORNIA DEPARTMENT OF PUBLIC HEALTH

# Potential Health Impacts

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- Impacts to Active Transportation
- Greenhouse Gas Emissions/Air Pollution
- Traffic Safety
- Mental Health
- Potential Impacts of 5G Wireless Technology



# Health Equity Considerations

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- **Accessibility**

- Access to Transportation for All Income Levels
- Cost of Using AVs
- Distribution of Transportation Services
- Accessibility and Mobility for People with Disabilities
- Accessibility and Mobility for Non-Drivers
- Rural Equity Issues

- **Job Loss from Automation**

- **Exposure to Traffic and Associated Impacts**
- **Personal Safety for Vulnerable Passengers**

# Primary Determinants of Impacts

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- The degree to which transportation is shared
- The degree to which transportation is electrified, and the sources of electrical generation
- Other public policies
  - Safe operation of AVs
  - Access to convenient and affordable transportation for all income levels
  - Access to convenient and affordable transportation for people of all abilities
  - Access to convenient and affordable transportation for people in rural areas
  - Access to job training and new jobs to replace those lost to automation
  - Safe use of 5G or other wireless transmission technology
  - Measures to improve personal safety for people on shared ride vehicles and buses

# Range of Potential Outcomes

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## **Scenario 1**

No Policies Addressing Public Health & Health Equity Impacts of AVs are Enacted

## **Scenario 2**

Modest Policies Addressing Public Health & Health Equity Impacts of AVs Are Enacted

## **Scenario 3**

Assertive Policies Enacted to Achieve Health & Health Equity Benefits of AVs



# Scenario 2

## Modest Policies Enacted

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- Modest incentives for electric vehicles
- Modest subsidies for transit-related services and services for people with disabilities
- Safety regulations
- Provisions for access to transportation services for people without credit cards or smart phones
- Dedicated lanes for shared AVs on some freeways
- Requirements to make boarding and disembarking easier for people with disabilities who typically need assistance
- Measures enacted to improve personal safety for vulnerable passengers

# Scenario 3

## Assertive Policies Enacted

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- Pricing, time, and location incentives for sharing rides
- Regulations requiring electric vehicles
- Subsidies for transit-related services and services for people with disabilities
- Regulations requiring an adequate number of vehicles providing service to the public are accessible
- Aggressive vehicle safety regulations
- Provisions for access to transportation services for people without credit cards or smart phones
- Adequate job training and adequate efforts to ensure that people who lose jobs to automation have other employment options available
- Land use planning promoting compact development, and significantly reducing parking
- Regulations prevent the widespread use of 5G wireless technology, or other transmission technology, until research shows that it can be used safely
- Measures enacted to improve personal safety for vulnerable passengers

# Table Colors

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**BLUE** = Positive impact

**RED** = Negative impact

**YELLOW** = Impact not clear, neutral, not applicable



# Impacts on Active Transportation

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	<b>Scenario 1</b>	<b>Scenario 2</b>	<b>Scenario 3</b>
Safer to walk/bike	Blue	Blue	Blue
Increase in walking/biking related to safety gain	Yellow	Blue	Blue
Impact from volume of vehicles	Red	Yellow	Blue
Transit support reduces vehicles	Yellow	Blue	Blue
Incentives reduce VMT and increase safety	Yellow	Yellow	Blue
Road diets allocate more space to walk/bike	Yellow	Yellow	Blue
Streets become livelier	Yellow	Yellow	Blue
Safer due to vehicle-to-pedestrian/bicycle communication	Blue	Yellow	Blue
Vehicle-to-pedestrian communication makes streets safer to cross	Blue	Yellow	Blue
Land use planning reduces walking/bicycling distance	Yellow	Yellow	Blue

# Greenhouse Gases and Air Pollution

	<b>Scenario 1</b>	<b>Scenario 2</b>	<b>Scenario 3</b>
VMT increases	Red	Red	Blue
Suburban sprawl further increases VMT	Red	Red	Blue
Suburban form reduces walking/biking/transit	Red	Red	Blue
Zero-occupant vehicles increase VMT	Red	Red	Blue
Transit ridership decreases	Red	Red	Blue
People share rides more for commuting	Blue	Blue	Blue
Transit support offsets some ridership loss	Yellow	Blue	Blue
More electric vehicles	Yellow	Blue	Blue
All electric vehicles	Yellow	Yellow	Blue
Incentives for ridesharing reduce VMT	Yellow	Yellow	Blue
Increase in walk/bike reduce VMT	Yellow	Yellow	Blue
Land use planning reduces VMT	Yellow	Yellow	Blue

# Access to Transportation for All Income Levels

	Scenario 1	Scenario 2	Scenario 3
Reductions in app-based rides improve access	Blue	Blue	Blue
Racial discrimination from drivers eliminated	Blue	Blue	Blue
Reductions in congestion improve access	Blue	Blue	Blue
Induced travel offsets congestion benefits	Red	Red	Yellow
Bicycling and walking improve low-cost options	Blue	Blue	Blue
Profit-based services leave some areas underserved	Red	Red	Yellow
Public transit ridership and service decline	Red	Yellow	Yellow
Services unavailable to those without credit cards/smart phones	Red	Blue	Yellow
Transit subsidies increase service	Yellow	Blue	Blue
Access card services to those without credit cards/smart phones	Yellow	Blue	Blue
More ride sharing services available improve access	Yellow	Yellow	Blue
Bicycling and walking become safer and provide low-cost option	Blue	Blue	Blue
Pricing, time, & location incentives provide affordable options	Yellow	Yellow	Blue
Land use planning brings cost of building housing down	Yellow	Yellow	Blue
Lower building costs enable people to live in more neighborhoods	Yellow	Yellow	Blue
Parking lots and structures converted to housing or parks	Yellow	Yellow	Blue

# Accessibility and Mobility for People with Disabilities

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	<b>Scenario 1</b>	<b>Scenario 2</b>	<b>Scenario 3</b>
Cost of accessible service decreases	Blue	Blue	Blue
Accessible services more available in profitable areas	Yellow	Yellow	Blue
Services may be too expensive for some low-income people	Red	Red	Yellow
Language barriers prevent some people from using ride services	Red	Red	Yellow
Requirements ensure adequate number of accessible vehicles	Yellow	Yellow	Blue
Pricing, time, and location incentives create more options	Yellow	Yellow	Blue
With special provisions for people who need assistance, more can ride	Red	Blue	Blue
Special language provisions eliminate language barriers	Yellow	Yellow	Blue

# Job Losses from Automation

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	<b>Scenario 1</b>	<b>Scenario 2</b>	<b>Scenario 3</b>
A high % of TNC, taxi, bus, delivery drivers will lose their jobs	Red	Red	Red
People who manufacture and service cars will lose jobs	Yellow	Yellow	Red
Job training prepares people for other jobs	Yellow	Yellow	Blue
Industrial policy creates jobs for those lost to automation	Yellow	Yellow	Blue

# Exposure to Traffic and Associated Impacts

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	<b>Scenario 1</b>	<b>Scenario 2</b>	<b>Scenario 3</b>
Induced travel increases emissions, noise, congestion and crashes	Red	Red	Yellow
People in urban areas and near freeways will have most exposure	Red	Red	Yellow
Electrification will nearly eliminate noise and emissions	Yellow	Yellow	Blue
As VMT decreases, exposure to noise, congestion and emissions will decrease	Yellow	Yellow	Blue
People in urban areas and near freeways will benefit most	Yellow	Yellow	Blue

# Public Policies to Address Health and Health Equity Outcomes

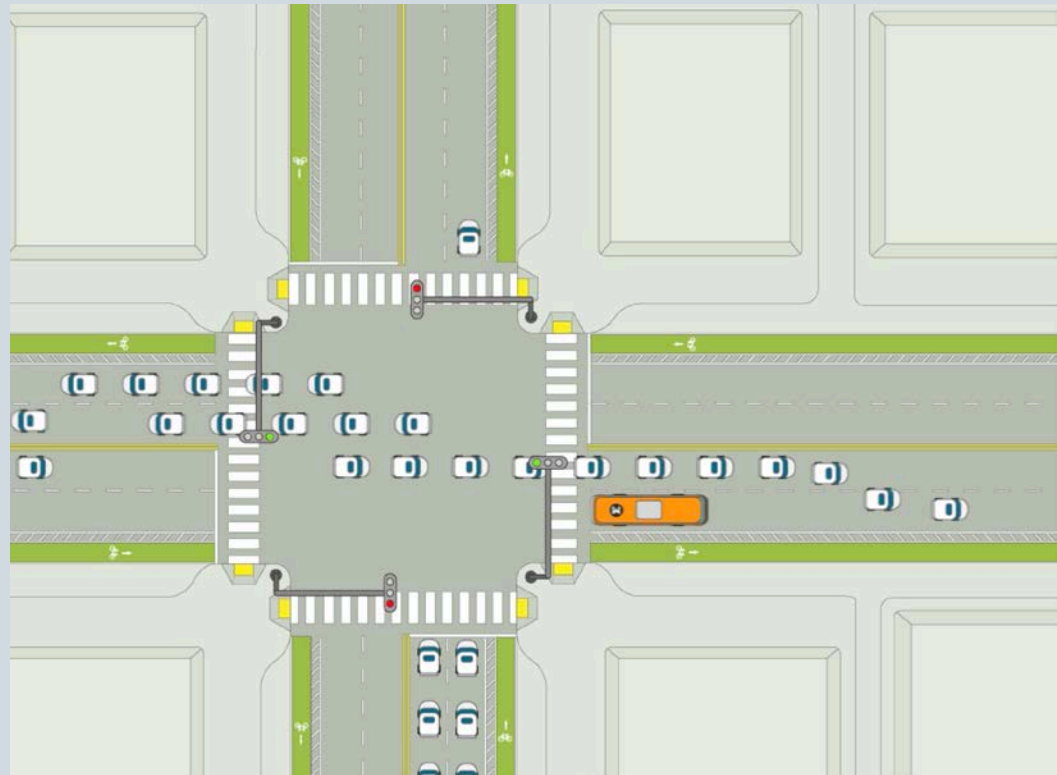
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- Policies to encourage sharing of rides
- Policies to electrify transportation with clean energy sources
- Miscellaneous policies

# Policies to Encourage Sharing of Rides

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- Pricing
- Providing time advantages
- Providing locational incentives





# Policies to Electrify Transportation With Clean Energy Sources

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- Tax credits and subsidies to purchase
- Mandate that after a certain date, all vehicles are electric
- Ensure that charging stations are well distributed
- Shift to clean energy sources

# Miscellaneous Policies

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- Policies to ensure safe operation
- Policies to ensure access to convenient and affordable transportation for all income levels
- Access to convenient and affordable transportation for people with disabilities
- Access to convenient and affordable transportation for people in rural areas
- Access to job training and new jobs to replace those lost to automation
- Land use policies that reduce the need for travel, and make development conducive to walking, bicycling, and transit
- 5G wireless technology should be permitted for widespread adoption only after research demonstrates that it is safe.
- Efforts should be made to improve personal safety for people sharing rides.

# Opportunities for Local Governments to Participate

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- Maintain streets well
- Plan streets for lower demand in the future
- Consider adding communications technology to streets
- Curb management will become important
- Eliminate parking codes; encourage flexible parking design that can be converted to other uses
- Look to add AV technology to transit
- Modernize ride service/taxi regulations
- Universal apps for transportation services
- Prepare for loss of revenue from parking and auto sales
- Consider future data and traffic coordination center
- Add AV charging stations in public areas
- Test AV services



# Opportunities for Health Agencies

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- Participate in AV conferences
- Publish papers on health related issues
- Work with local, state and MPO governing bodies to institute good AV policies
- Host AV discussion panels focusing on health and health equity issues
- Conduct relevant research
- Coordinate with universities on research and policy



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