Dayton, May 8, 2018

Partner Workshop

Alternative Future #2: Innovation

This alternative future explores how changes in technology and innovation could influence transportation needs in Ohio. Ohio is positioned to play a key role in shaping how emerging technologies will impact transportation systems in 2045.

Assumptions: Where could we go?

- At least 25% of all miles driven could be by autonomous vehicles in 2030.
- Up to 85% of jobs in 2030 could be in occupations that do not exist today.
- 30-75 billion devices could link to the Internet of Things by 2030.
- At least 10% of products could be produced by 3D manufacturing in 2030.

Population
- Millennial and GenZ talent moves to or stays in Ohio; increasing longevity and mobility for seniors, disabled residents.

Economy
- Job growth shifts toward advanced manufacturing, technology, new business models for health care, retail, logistics and other services.

Development
- More dispersed and specialized economic activity; people living closer to amenities and services.

Technology
- Technology use accelerates quickly; automated/cor vehicles, alternative fuels, drones, Hyperloop, bi...
Alternative Future #4: Ohio Renaissance

This alternative future explores how stronger population and economic growth could influence future transportation needs.

Assumptions: Where could we go?

Signs of Change
- 1st — Ohio's national rank for housing affordability today
- 15th — Ohio's rank for new net residents from overseas, 2010-2017 (45th for new net residents from other states)
- 4th — National rank of Columbus for growth in population for 25-34 years from 2005-2016
- 6 cities in Ohio rank among the world's top 500 most innovative cities today (tied for 3rd in the US)

Population
Increasing growth: retention of younger residents, return of former residents, appeal of lower cost of living.

Economy
Resurgence in manufacturing and agriculture and continued growth in distribution and services.

Development
Urban, suburban and rural communities attract residents; greater use of unique assets such as Ohio River, Lake Erie.

Technology
Use of existing and new technologies; adoption varies across demographic groups and industries.

How would you adjust these assumptions, if at all?
If you adjust these assumptions, if at all?

<table>
<thead>
<tr>
<th>Extension of suburbs between Cincinnati, Dayton, and Columbus. Population retention will sustain.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustain ag business, but type of farming might change. Tech industry and growing distribution logistics</td>
</tr>
<tr>
<td>Development is more urban/suburban vs. rural. Growth in tourism lead to development</td>
</tr>
<tr>
<td>May increase due to the change in population</td>
</tr>
<tr>
<td>Move to much greater lakes due to water supply. Climate change</td>
</tr>
</tbody>
</table>

Discussion questions

1. How might Ohio's transportation infrastructure needs change if...
1. What transportation challenges and opportunities would Ohioans face if this alternative future occurs?
   - In rural areas
     - Access in rural counties is a challenge, esp. bridges.
   - Infrastructure in areas with increased growth is in need of improvement.
   - In suburban areas
     - Need expansion of transit.
     - If jobs are closer, may be less travel.
   - In urban areas
     - Need to expand transit to assist with equity for EJ populations. Adjusting the system for needs & better use of the existing system, including parking.

2. How might Ohio's transportation system evolve over the next 20 years? (Select one)
   - Contraflow
   - Improved
   - More
   - None

3. How should Ohio's transportation system address these challenges?
   - Open
   - Full
   - Other

Pick a:
Discussion questions

1. How would Ohioans use, value, and care for a transportation system that is evolving to meet the needs of the future?

2. How might Ohio’s transportation infrastructure needs change if this alternative future occurs?
   - Continued focus on capacity, maintenance, transit
   - Improvements to rural roads
   - More infill development
   - More focus on technology

3. How should ODOT and other transportation agencies respond to these challenges and opportunities?
   - Operations & Management Technologies
   - Funding
   - Project Streamlining
   - Multimodal Approach

Pick a song or movie title to name this alternative future.

Future’s So Bright, We Gotta Wear Shades
# Alternative Future #4: Ohio Renaissance

This alternative future explores how stronger population and economic growth could influence future transportation needs.

## Assumptions: Where could we go?

### Signs of Change

- **1st** – Ohio’s national rank for housing affordability today
- **15th** – Ohio’s rank for new net residents from overseas, 2010-2017 (45th for new net residents from other states)
- **4th** – National rank of Columbus for growth in population for 25-34 years from 2005-2016
- **6 cities** in Ohio rank among the world’s top 300 most innovative cities today (tied for 3rd in the US)

### Population

- Increasing growth; retention of younger residents, return of former residents, appeal of lower cost of living.

### Economy

- Resurgence in manufacturing and agriculture and continued growth in distribution and services.

### Development

- Urban, suburban and rural communities attract residents; greater use of unique assets such as Ohio River, Lake Erie.

### Technology

- Use of existing and new technologies; adoption varies across demographic groups and industries.

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**How would you adjust these assumptions, if at all?**

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**Driver**

**Population**

- SWOT has high in immigrant population. Extent of suburbs between Cincinnati, Dayton, Columbus. Retention will likely sustain.
How would you adjust these assumptions, if at all?

<table>
<thead>
<tr>
<th>Driver</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>SWOT has high in immigrant population. Extent of suburbs between Cincinnati, Dayton, and Columbus. Retention will likely sustain.</td>
</tr>
<tr>
<td>Economy</td>
<td>Water access in area (oil) is strong. Sustain ag business, but type of farming changing. Manufacturing jobs decrease. Tech industry increasing, growing distribution logistics growth.</td>
</tr>
<tr>
<td>Development</td>
<td>Tourism industry could grow - bikelanes could help. Development going more urban/suburban vs rural.</td>
</tr>
<tr>
<td>Technology</td>
<td>May in focus due to change in population</td>
</tr>
</tbody>
</table>

Discussion questions

1. What transportation challenges and opportunities would Ohioans face if this alternative future occurs?
   - In rural areas
     - Infrastructure in areas becoming more popular to support growth. Bridges a rural county.
     - A challenge: transporting goods to rural areas.

2. How might Ohio’s transportation infrastructure needs change if this alternative future occurs? Improving rural roads key for greater population. No interstate expansion.
1. What transportation challenges and opportunities would Ohioans face if this alternative future occurs?

   - In rural areas
     - Infrastructure in areas becoming more populated is a challenge. Bridges & rural county access is a challenge.
     - Infrastructure in areas becoming more populated isn't able to support growth. Bridges & rural county access is a challenge.
     - In rural areas
     - Infrastructure in areas becoming more populated isn't able to support growth. Bridges & rural county access is a challenge.
     - In rural areas
     - Infrastructure in areas becoming more populated isn't able to support growth. Bridges & rural county access is a challenge.

   - In suburban areas
     - With closer jobs closer, there may be less travel since jobs are closer. Need for expansion of transit.

   - In urban areas
     - Need for expansion of transit-environmental justice populations & equity. Adjusting transportation system for needs & may involve better use of existing system, including parking lots.

2. How might Ohio’s transportation system adapt to this alternative future or may for greater potential of mobility for greater population?

   - No interstate &.

3. How should ODOT and other agencies respond to these challenges and opportunities?

   - Using technologies, especially those that reduce congestion & streamline travel.
   - In pop. could multimodal a
Discussion questions

1. How might Ohio’s transportation infrastructure needs change if this alternative future occurs? Improving rural roads may for greater population. No interstate expansion.

3. How should ODOT and other transportation agencies respond to these challenges and opportunities? Utilizing new operations technologies, esp during peak time, to reduce congestion, flexible work hours; project streamlining. Increase in pop. could lead to more revenue. Multimodal approach, including funding. Pick a song or movie title to name this alternative future.
### Discussion questions

1. **What transportation challenges and opportunities would Ohioans face if this alternative future occurs?**

2. **How might Ohio's transportation infrastructure needs change if this alternative future occurs?**

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### Table: Assumptions & Considerations

<table>
<thead>
<tr>
<th>Driver</th>
<th>Consideration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Population</strong></td>
<td>More diverse, older. Fix it first only leads to continuing current trend. Housing is overall quality of life is important to growth/POP.</td>
</tr>
<tr>
<td><strong>Economy</strong></td>
<td>Good shift. More diverse economy now post-GM. Mega-regions: Airport to Airport. Supply chain.</td>
</tr>
<tr>
<td><strong>Development</strong></td>
<td>More infill &amp; residential. Housing mix. Townships &amp; Big lots vs. Big homes. New development housing supplying not keeping up with demand mix.</td>
</tr>
<tr>
<td><strong>Technology</strong></td>
<td>Development and logistics and other services. Technology use accelerates quickly: automated/connected vehicles, alternative fuels, drones, hyperloop, big data...</td>
</tr>
</tbody>
</table>

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**Notes:**
- Up to 85% of jobs in 2030 could be in occupations that do not exist today.
- Transit network change will not deter people if cost and time savings are significant.
- Lyft/Uber is working great.
- At least 10% of products could be produced by 3D manufacturing in 2030.
- Perhaps new locations could reduce costs.
Discussion questions

1. What transportation challenges and opportunities would Ohioans face if this alternative future occurs?
   - In rural areas: Need transit options/coordination
     Mix: Need more infrastructure
   
   - In suburban areas: Distracted driving
     More transit options for non-ubikers
   
   - In urban areas: Distracted driving
     Bicycles on busy streets
     Trans Loc: First mile/last mile

2. How might Ohio's transportation infrastructure needs change if this alternative future occurs?
   Streamline the permitting process
   Focus on need infrastructure thought the

3. How should ODOT and other transportation agencies respond to these challenges and opportunities?

Pick a song or movie title to name this alternative future.
Alternative Future #2: Innovation

This alternative future explores how changes in technology and innovation could influence transportation needs in Ohio. Ohio is positioned to play a key role in shaping how emerging technologies will impact transportation systems in 2045.

Assumptions: Where could we go?

- **Population**
  - Millennial and GenZ talent moves to or stays in Ohio; increasing longevity and mobility for seniors, disabled residents.

- **Economy**
  - Job growth shifts toward advanced manufacturing, technology; new business models for health care, retail, logistics and other services.

- **Development**
  - More dispersed and specialized economic activity; people living closer to amenities and services.

- **Technology**
  - Technology uses accelerates quickly; automated/connected vehicles, alternative fuels, drones, Hyperloop, big data ...

? How would you adjust these assumptions, if at all?

- Driver
  - "Needs expert 'live within our means'" -> "Self fulfilling prophecy"
  - "Need less talent out of local universities" -> "Complete transformation conversation"

- Sign of Change
  - "Bus, fixed community vs."
  - "Congestion, population + (OR + VMT)"
### Discussion questions

1. **What transportation challenges and opportunities would Ohioans face if this alternative future occurs?**
   - In rural areas, 8-10 hours drive can have New Options

2. **How might Ohio's transportation infrastructure needs change if this alternative future occurs?**
   - Build smaller freight, streamline passenger trains
   - Expand bus routes
1. What transportation challenges and opportunities would Ohioans face if this alternative future occurs?
   - In rural areas
     - Outside reach to drive cars 8-10 yrs
     - Need options
     - Broadband lacking
   - In suburban areas
     - More options for low income/service workers
     - Transact diversified services
   - In urban areas
     - More bike lanes & greenways

2. How might Ohio's transportation infrastructure needs change if this alternative future occurs?
   - Build faster lighter more efficient motor processes
   - Technology in rural areas to make
   - More
   - Light CTA
   - Great network
   - Cincinnati - Dayton as a Regional entity

3. How should ODOT and other transportation agencies respond to these challenges and opportunities?
   - RTA model of New York
   - Light CTA
   - Great network

Pick a song or movie title to name this alternative future.
Alternative Future #3:
Global Markets

This alternative future explores how changes in trade and global markets could influence transportation in Ohio. Ohio is just one day drive from more than 60 percent of the U.S. and Canadian populations. This, along with having the nation’s fourth largest Interstate system, fourth highest number of rail lines, eighth most maritime tonnage and being second in the number of intermodal facilities, makes Ohio a pivotal point in the global marketplace.

<table>
<thead>
<tr>
<th>Signs of Change</th>
<th>Population</th>
<th>Economy</th>
<th>Development</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Up to 2 billion new consumers worldwide by 2030</td>
<td>• Ohio is 3rd ranked in the nation today in terms of manufacturing output</td>
<td>• Ohio’s population becomes more diverse; more 1st and 2nd generation Americans.</td>
<td>• Concentration of distribution activity around ports and terminals; dispersion of specialized production and supply chains.</td>
<td>• New logistics and freight technologies; smaller (on-demand delivery, drones) and larger (truck platooning, larger trains and ships).</td>
</tr>
<tr>
<td>• Up to $18 trillion in global trade in goods and services by 2030</td>
<td>• 68% of Ohio’s global exports are currently produced in metro economies</td>
<td>• Increasing global ties and volatility; growth in Ohio manufacturing, agriculture, energy exports; reshoring of manufacturing.</td>
<td>• -1/2 of U.S. manufacturers are considering bringing production back to the US in the future</td>
<td></td>
</tr>
<tr>
<td>• U.S. economy could be 3rd ranked global economy by GDP in 2050</td>
<td>• -1/2 of U.S. manufacturers are considering bringing production back to the US in the future</td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

How would you adjust these assumptions, if at all?

Assumptions?

Driver
- U.S. economy could be 3rd ranked global economy by GDP in 2050
- 68% of Ohio's global exports are currently produced in metro economies
- 1/2 of U.S. manufacturers are considering bringing production back to the US in the future

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<thead>
<tr>
<th>Driver</th>
<th>Assumptions</th>
<th>Thoughts or impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>attracting employees and skills we don't have now</td>
<td>New job centers w/cheap land and cheap labor - how to serve if transit isn't there</td>
</tr>
<tr>
<td>Economy</td>
<td>employers need access to technology to stay competitive</td>
<td>Saving for technology but not competition</td>
</tr>
<tr>
<td>Development</td>
<td>transportation costs become key factor</td>
<td>Development may be lacking for cheaper land, where labor is, or we will need to move</td>
</tr>
<tr>
<td>Technology</td>
<td>Yes - Amazon drone</td>
<td>No need to leave your house, but deliveries have to come to you, which increases vehicles</td>
</tr>
</tbody>
</table>

Discussion questions

1. What transportation challenges and opportunities would Ohioans face if this alternative future occurs?
2. How might Ohio's transportation infrastructure needs change if this alternative future occurs?
1. What transportation challenges and opportunities would Ohions face if this alternative future occurs?
   - In rural areas
     - Infrastructure not there for increased trucking
     - Poor transit access to where the jobs are
   - In suburban areas
     - Population sprawl
   - In urban areas
     - Potential redevelopment to accommodate new residents

2. How might Ohio's transportation infrastructure needs change if this alternative future occurs?
   - Need to accommodate
     - Dedicated truck lanes
     - More individuals do not drive or don't want to drive
     - More bike/ped needs
     - Decentralization - not centralized
     - More intermodal connections to other strategies

3. How should ODOT and other transportation agencies respond to these challenges and opportunities?
   - More on-demand public transportation
   - Micro-public transit
   - More regional coordination of transit
   - More responsive to charging infrastructure
   - Unified transit services like an app that you pay once and get access to all your options
Public Meeting

Current Trends

Dayton 5/8/18

(1) Transportation challenges/opportunities

Rural
- Lack of funding
- Access to public transit
- Limited connectivity

Suburban
- Few connections
- Traffic congestion

Urban
- More frequent connections
- Limited parking

All
- Congestion
- Poor pedestrian facilities
- Improving transportation technology

(2) Infrastructure needs

- Ensure accessibility
- Emerald is ready for the future
- Accessibility improvement

(3) How should ODOT/other agencies respond?

- Reduce congestion
- Plan for future growth
- Implement new technologies
Alternative Future #2:  
**Innovation**

This alternative future explores how changes in technology and innovation could influence transportation needs in Ohio. Ohio is positioned to play a key role in shaping how emerging technologies will impact transportation systems in 2045.

### Assumptions: Where could we go?

#### Signs of Change

- At least 25% of all miles driven could be by autonomous vehicles in 2030
- 30-75 billion devices could link to the Internet of Things by 2030
- Up to 85% of jobs in 2030 could be in occupations that do not exist today
- At least 10% of products could be produced by 3D manufacturing in 2030

#### Population

Millennial and GenZ talent moves to or stays in Ohio; increasing longevity and mobility for seniors, disabled residents.

#### Economy

Job growth shifts toward advanced manufacturing; technology; new business models for health care, retail; logistics and other services.

#### Development

More dispersed and specialized economic activity; people living closer to amenities and services.

#### Technology

Technology use accelerates quickly; automated/connected vehicles, alternative fuels, drones, Hyperloop, big data

---

How would you adjust these assumptions, if at all?

- Perhaps more automation + fewer people
- Technology or automation + more people
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Population</td>
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<tr>
<td>Development</td>
</tr>
<tr>
<td>Technology</td>
</tr>
</tbody>
</table>

- **Truckly ↑ but (current trend)**
- **Freight & infrastructure needs**
- **Truck locations + steps + consensus**

How does the cap increase with ACCV future? Also more fuel efficient vehicles.
Global Markets

1. Transportation challenges
   - Rural
   - Suburban
   - Urban

2. How might infrastructure needs
   - Need methods for people to get to new sites
   - ADA compliant for wheelchair access
   - Need assistance for elderly
   - More car sharing

3. How should transportation agencies respond to these challenges and opportunities?
   - Educate businesses and employees
   - Encourage employers to substitute transportation for employees
   - Reduce cost of transportation
   - Provide incentives for employees
Global Markets

1. Transportation challenges
   - Rural
   - Suburban
   - Urban

Trucks in the city

2. How might infrastructure needs
   - Need infrastructure for people to access the new sites
   - Employers need assistance to provide reasonable alternatives
   - Transit in close areas combined with car sharing

New Americans and immigrants (students) are more used to
transit-based communities

More deliveries in town, but still need social interaction — sometimes for elderly

DIFFICULTY IN PLANNING FOR LONG-TERM PROVISION OF SERVICES WITH SHORT-TERM FUNDING DECISIONS

Development is going toward contact and walkable transit friendly in urban areas

Better connectivity to access yards initially. Fewer buses is needed

Dayton 5/18/18
Public Meeting

M2L
2. How might infrastructure needs

- Need infrastructure for people to access new jobs
- ADA required for roads to stops from buildings
- Employers need assistance to provide reasonable accommodations to employees who cannot walk
- Transit in dense areas with car sharing for last mile

3. How should transportation agencies respond to these challenges and opportunities?

- Educate businesses and employers on shared mobility
- Encourage employment of car sharing
- More car sharing
- Big US Cities need social infrastructure - esp. for older people
3. How should transportation agencies respond to these challenges and opportunities?

- Encourage employers to subsidize transportation costs for employees or incentives tied to performance for longevity.
- Educate businesses and employers on ADA requirements for workplace accessibility.
- More car-sharing.
- Employers need assistance to provide reasonable accommodations to employees.
- ADA required for routes to steps and bridges.
- Train in close areas combined w/car-sharing for last mile.
- For people to access new jobs.
Ohio Renaissance - 5/8/2018 - Dayton

1. Rural
   - Capacity constraints on transit (rural, suburban, urban)
   - How Tech can improve people's travel options (rural, suburban, urban)
   - If/who continues to rise, users will be "passed" and at transport system (rural)

2. Trip planning relative to moving vulnerable populations
   - Expansion of support services for vulnerable populations
   - Growing disparity between low income pop and others - actively address through transportation
   - Thinking about assist prioritization differently based on tech advancements
   - Walkable communities
   - Enhancing transit headways
   - Consider intra-regional transportation connecting metro areas

3. DOT, team up with other departments (i.e., economics, health, energy, etc.)
   - Online Learning from other countries and apply here
   - DOT, team up with other departments (i.e., economics, health, energy, etc.)
1. Rural

- Capacity constraints on transit (rural, suburban, urban)

2. Suburban

- How tech can improve everyone's transp options (rural, suburban, urban)

- If costs continue to rise, users will be "priced" out of transp system (R,S,U)
2. Trip planning relative to moving vulnerable populations

2. Expansion of support services for vulnerable populations

2. Growing disparity between low income pop and others - actively address through transportation

2. Thinking about asset prioritization differently based on tech advancements

2. Walkable communities for older populations

2. Enhancing transit headways

2. Walkable communities

2. Consider intra-regional transportation connecting metro areas

3. DOT, team up w/ other departments (i.e. economics, transit, freight, etc.)

3. Continue learning from other countries and apply here
**Alternative Future #4:**

**Ohio Renaissance**

This alternative future explores how stronger population and economic growth could influence future transportation needs.

### Assumptions: Where could we go?

#### Signs of Change
- 1st – Ohio's national rank for housing affordability today
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#### Population
- Increasing growth; retention of younger residents, return of former residents, appeal of lower cost of living.

#### Economy
- Resurgence in manufacturing and agriculture and continued growth in distribution and services.

#### Development
- Urban, suburban and rural communities attract residents; greater use of unique assets such as Ohio River, Lake Erie.

#### Technology
- Use of existing and new technologies; adoption of new industries across demographic groups and industries.

---

**How would you adjust these assumptions, if at all?**

**Driver**

<table>
<thead>
<tr>
<th>Population</th>
<th>Economy</th>
<th>Development</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>- What lifestyle changes will actually occur? (e.g. millennials moving less)</td>
<td>- Higher demand for online shopping services and education on services</td>
<td>- Affordable housing cuts will impact development</td>
<td>- Additional human labor to support agriculture</td>
</tr>
<tr>
<td>- Reels are increasing</td>
<td>- Job shortage and losing major retailers</td>
<td>- Online trip planning services and education on services</td>
<td>- What if major population decline? (e.g. other region passed by)</td>
</tr>
</tbody>
</table>

**Discussion questions**

1. What transportation challenges and opportunities would Ohioans face if this alternative future occurs?
   - In rural areas
   - In suburban areas

2. How might Ohio's transportation infrastructure needs change if this alternative future occurs?

3. How should ODOT and other transportation agencies respond to these challenges and opportunities?
**Alternative Future #1:**

**Current Trends**

This alternative future explores how Ohio's transportation needs might be affected if existing trends continue.

**Assumptions: Where could we go?**

**Signs of Change**

- >1 in 5 Ohio residents will be over the age of 65 in 2045.
- ~30% of Ohio residents will be of minority race or ethnicity by 2045.
- 79% of Ohio's GDP and 71% of population today is generated in the top 7 metro areas.
- 1 in 4 of Ohio's counties are projected to lose population over the next 30 years.

**Population**

Ohio's population continues to grow slowly, becoming older and more diverse.

**Economy**

Ohio's economy remains diversified with long-term growth in the manufacturing sector.

**Development**

Population growth continues to be concentrated in suburbs of existing major metro areas.

**Technology**

Use of existing and new technologies; adoption varies across demographic groups and industries.

---

**How would you adjust these assumptions, if at all?**

---

**Discussion questions**

1. What transportation challenges and opportunities would Ohioans face if this alternative future occurs?
   - In rural areas
2. How might Ohio's transportation infrastructure need to change in this alternative future?
How would you adjust these assumptions, if at all?

<table>
<thead>
<tr>
<th>River</th>
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<tbody>
<tr>
<td>Population</td>
<td>what lifestyle</td>
<td>rents are</td>
<td>what if major-</td>
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<tr>
<td></td>
<td>changes will</td>
<td>increasing</td>
<td>population</td>
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<td></td>
<td>actually occur?</td>
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<td>decline? (as older</td>
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<td></td>
<td>(i.e., millennials</td>
<td></td>
<td>population ages)</td>
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<td></td>
<td>driving less)</td>
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<tr>
<td>Economy</td>
<td>affordable</td>
<td>online trip</td>
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<td></td>
<td>housing cuts</td>
<td>planning services</td>
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<td>will impact</td>
<td>and education</td>
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<td></td>
<td>development</td>
<td>on services</td>
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<tr>
<td>Development</td>
<td>additional</td>
<td>gap for disability</td>
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<tr>
<td></td>
<td>human labor</td>
<td>population - those</td>
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<td></td>
<td>to support agriculture</td>
<td>who can’t use/</td>
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<td></td>
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<td>afford automated</td>
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<td></td>
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<td>vehicle</td>
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</tbody>
</table>

Discussion questions

1. What transportation challenges and opportunities would Ohioans face if this alternative future occurs?
   * In rural areas

2. How might Ohio’s transportation infrastructure need to change if this alternative future occurs?
Population

Ohio’s population continues to grow slowly, becoming older and more diverse.

Development

Population growth continues to be concentrated in suburbs of existing major metro areas.

<table>
<thead>
<tr>
<th>Discussion questions</th>
</tr>
</thead>
<tbody>
<tr>
<td>How many Ohioans will be disabled?</td>
</tr>
<tr>
<td>Seasonal patterns? (e.g., Snowbirds moving in summer)</td>
</tr>
<tr>
<td>College students populating colleges seasonally</td>
</tr>
<tr>
<td>Generational change in the use of technology</td>
</tr>
</tbody>
</table>
Innovation

**5/8/18 Discussion Q’s**

1. **Rural**
   - More capacity in RTO’s + DAV’s
   - Status quo due to work from home + shake delivery systems
   - Leverage automation to address senior citizens needs. With small venue vs by bus

   *Across the Board -> Financial and incentives for new cargo only. Must have regional markets*

2. **Suburban**
   - Convenience of personal vehicle will be more attractive than transit
   - More phone apps
   - Convenient door to door
   - More bike lanes + bike recommendations
   - More home medical level of care issues
   - Health care + transportation issues

3. **Urban**
   - More on-demand transit
   - More on-demand transit

4. **How might transportation needs change?**
   - Larger veh off load to smaller veh. Less Maint. budget 1/4 of less
   - Mindful growth in e-veh hybrid ownership + charging stations/infrastructure
   - Mindful growth by larger battery change @ home
   - “Integrated Mobility” Combine travel options in one view
   - More partnership with locals + resource sharing

5. **funding to assist cities/counties to build projects**
   - Hub + spoke system to deliver off load from major highway/rail to local system
   - Better connectivity

6. **Targeted investment in infrastructure**
   - Coordination of state/local/regional funding +��
   - Holistic planning + senior citizens care for toddlers

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*Discussions about transportation and mobility, focusing on rural, suburban, and urban areas, with specific recommendations for improving connectivity and funding strategies.*
<table>
<thead>
<tr>
<th>Rural</th>
<th>Suburban</th>
<th>Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>More capacity for FedEx/DHL trucks</td>
<td>Convenience of personal vehicle will be more attractive than transit</td>
<td>More parking</td>
</tr>
<tr>
<td>Status quo due to Work from home + Stable delivery systems</td>
<td>Leverage automation to address senior citizen needs with small vehicle vs big bus</td>
<td>Connectivity</td>
</tr>
<tr>
<td>More across the board</td>
<td>More budget + grant funding for new operations</td>
<td>More bikes</td>
</tr>
<tr>
<td>Across the board</td>
<td>Recruitment tool in Montgomery Co</td>
<td>More walkable</td>
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<tr>
<td>Need for</td>
<td>Maintain Hwy Corridor/Asset maintenance</td>
<td>Low income</td>
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<tr>
<td>more</td>
<td></td>
<td>Medicaid issues</td>
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<td></td>
<td></td>
<td>Assist w/ appointments</td>
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<td>Suburban</td>
<td>Urban</td>
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<tr>
<td>* Convenience of personal vehicle will be more attractive than transit</td>
<td>* More phone Apps</td>
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<td></td>
<td>* Convenient door to door Connectivity</td>
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<td>* More bike lanes + bike accommodations</td>
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</tr>
<tr>
<td>* Need incentives for new operations/itinerary change to maintain high demand/assistance</td>
<td>* More medical issues</td>
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<td>* Health care</td>
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<td></td>
<td>* Connectivity</td>
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<tr>
<td></td>
<td>* More need for funding for enhanced transit</td>
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<tr>
<td></td>
<td>+ Plans for funding for transit</td>
<td></td>
</tr>
<tr>
<td></td>
<td>* Down sizing of medical services less hospitals more clinics</td>
<td></td>
</tr>
</tbody>
</table>
2. How might Ohio’s transportation needs change?

- Larger vehicles off load to smaller vehicles \( \rightarrow \) less maintenance
- Mindful growth in EV/HEV ownership + charging stations/infrastructure
- "Integrated Mobility" \( \rightarrow \) combine travel options in one view \( \rightarrow \) more customer focused
- More partnering with locals + resource sharing
- Funding to assist cities/communities to build projects
  - Hub & Spoke system to deliver/off load from major highway/rail to local system
- Targeted investment in infrastructure
- Coordination of state/local/regional funding + Regrants
- "Holistic Planning" \( \rightarrow \) senior citizens care for toddlers
**Alternative Future #2:**

**Innovation**

This alternative future explores how changes in technology and innovation could influence transportation needs in Ohio. Ohio is positioned to play a key role in shaping how emerging technologies will impact transportation systems in 2045.

### Assumptions: Where could we go?

#### Signs of Change
- At least 25% of all miles driven could be by autonomous vehicles in 2030.
- Up to 85% of jobs in 2030 could be in occupations that do not exist today.
- 30-75 million devices could link to the Internet of Things by 2030.
- At least 10% of products could be produced by 3D manufacturing in 2030.

#### Economy
- Millennial and GenZ talent moves to or stays in Ohio; increasing longevity and mobility for seniors, disabled residents.
- Job growth shifts toward advanced manufacturing, technology, new business models for health care, retail, logistics and other services.

#### Population
- More dispersed and specialized economic activity; people living closer to amenities and services.

#### Development
- Technology accelerates quickly: advanced/connected vehicles, alternative fuels, drones, Hyperloop, big data...

#### Discussion questions

1. What transportation challenges and opportunities would Ohioans face if this alternative future occurs?
   - In rural areas
   - In suburban areas
   - In urban areas

2. How might Ohio's transportation infrastructure needs change if this alternative future occurs?

3. How should ODOT and other transportation agencies respond to these challenges and opportunities?
**Alternative Future #2: Innovation**

This alternative future explores how changes in technology and innovation could influence transportation needs in Ohio. Ohio is positioned to play a key role in shaping how emerging technologies will impact transportation systems in 2045.

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**Development**

- More dispersed and specialized economic activity; people living closer to amenities and services.

**Technology**

- Technology use accelerates quickly; automated/connected vehicles, alternative fuels, drones, Hyperloop, big data...

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**How would you adjust these assumptions, if at all?**

- Perhaps too aggressive % change
- Perhaps more machines + automation + few people