Transportation Engineers at Your Service

white + burke

VERMONT DEVELOPMENT CONFERENCE

Myths, Challenges, Top Topics

- What topics are on your mind today?

Myths, Challenges, Top Topics

- Can the real estate industry get away from assigned parking for residential uses and fully benefit from shared parking?
- Is the traffic level of service (LOS) a good metric for traffic impact studies?
- Two population bubbles – Millennials and Baby Boomers - How will they affect transportation and parking?
- Should we plan for self-driving cars?
- Why am I paying all these Impact Fees? – what are they, how are they setup in VT
- How does the mixed use, transit and bike friendly practices affect my development? Vermont TDM Updates and recent guidelines

Shared Parking

Uses	Size	Units	Peak Parking Individl Peaks		Weekday AM (10-11 am)		Weekday Lunch (12-2 pm)		Weekday PM (3-4 pm)		Weekday Evening (7-8 pm)		Weekday Night (12 am-6am)		Saturday Midday (12-2 PM)	
			Ratio	Spaces	% Present	Cars	% Present	Cars	% Present	Cars	% Present	Cars	% Present	Cars	% Present	Cars
Apartments	700	Dus	1.20	840	45%	378	40%	336	40%	336	66%	554	100%	840	60%	504
Retail	52.5	1000 GLA	3.00	158	60%	95	80%	126	80%	126	80%	126	0%	0	100%	158
Fitness Club	38.0	1000 GA	4.00	152	51%	78	45%	68	45%	68	100%	152	0%	0	90%	137
Hi turn over restaur	5.5	1000 GA	6.25	34	65%	22	80%	28	40%	14	100%	34	0%	0	100%	34
Quality Restaurant	15.0	1000 GA	9.50	143	20%	29	56%	80	30%	43	100%	143	0%	0	100%	143
Total	111	1000 SF		1326		601		638		587		1009		840		975

Shared Parking Savings: 24%

spaces saved 317 (+/- $15 Million)

Notes:

1. The peak parking column represents the amount of parking that would have to be supplied if each use was built independently on its own lot. These ratios ratios are the ratios given for each use by the ITE publication "Parking Generation" 4th Edition, 2010 and adjusted by BFJ for the modal split and the mixed-use condition.
2. The percentages for the presence of each peak parking demand by time period are based on "Parking Generation" 4th Edition, Institute of Transportation Engineers, 2010, and on BFJ experience.
3. Under the shared scenario it is assumed that the residential spaces are all shared, not reserved

LOS

WHY THE FOCUS ON TRAFFIC LEVELS OF SERVICE (LOS)?

Intersection LOS reflects only the delays incurred by the driver and vehicle occupants.

There is no relationship between LOS and

- Quality of life
- Economic well being
- Safety

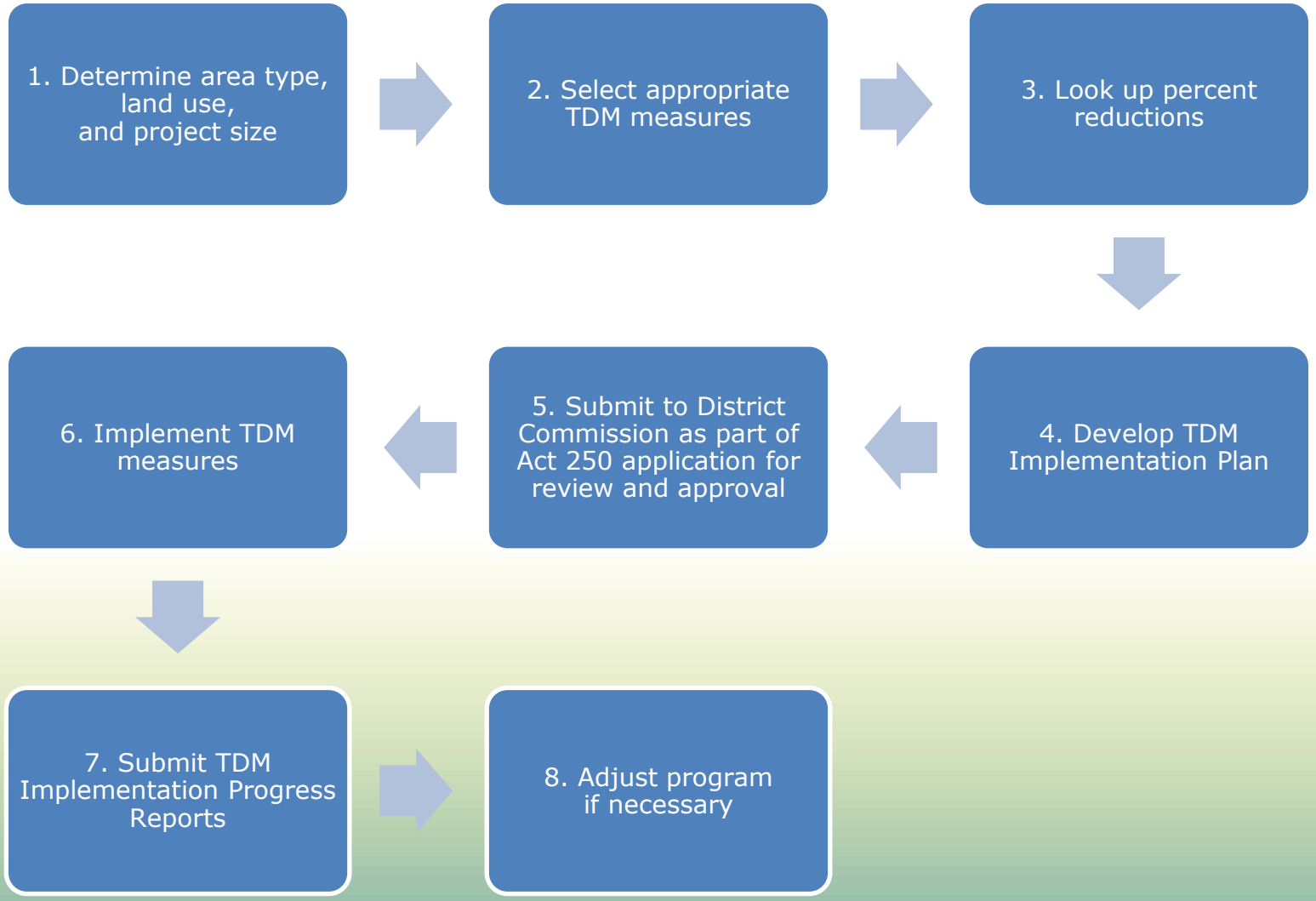
Pedestrian friendliness is often inversely related to traffic LOS. The focus on traffic LOS tends to discourage developing in urban areas and leads to more greenfield development.

What are Alternative Metrics?

- Vehicle miles of automobile travel (VMT) generated by a project (what would be the standard?)
- Traffic budget based on location and size of parcel
- Multi-modal LOS
- Should certain areas be exempt of LOS limitations?

Transportation Demand Management (TDM) – Vermont

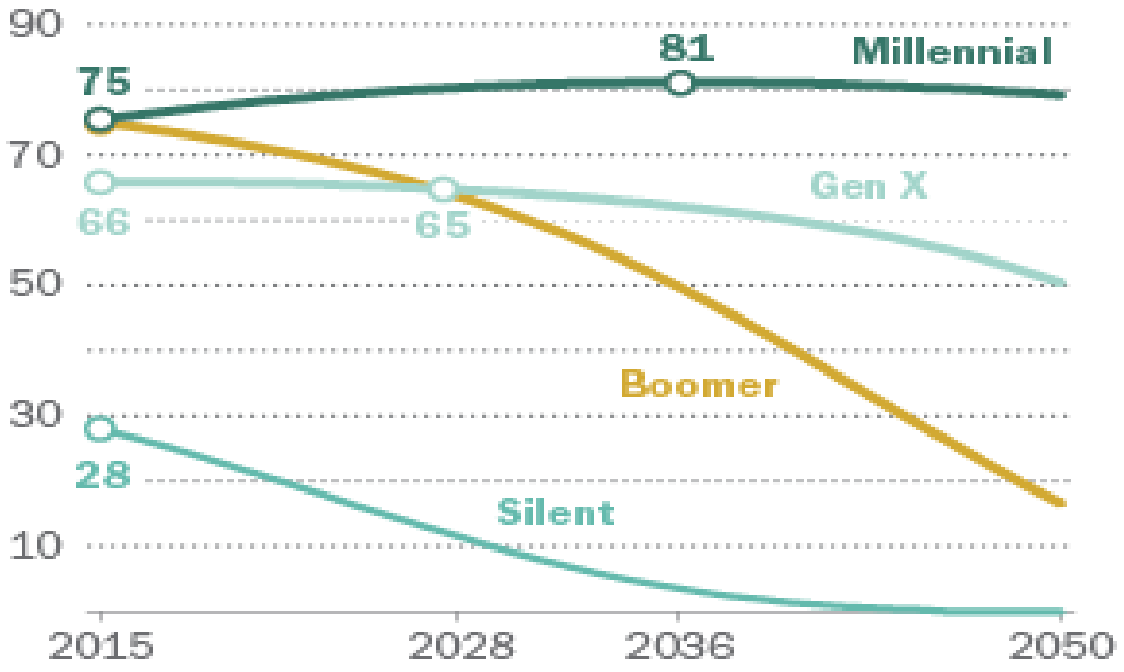
- Guidelines as of March 2016 from VTrans
- These estimates are intended to support adjustments to any impact or mitigation fee paid under Act 250 and/or Act 145 proportional to traffic generated by the site.
- TDM may include the following types of strategies:
  - **Physical –** The infrastructure required to support mode shift or trip reduction, e.g., parking reductions, pedestrian and bicycle infrastructure, transit facilities, on-site amenities;
  - **Operational –** Actions to facilitate mode shift or trip reduction, e.g., ridematching software, transit services, real-time travel information;
  - **Financial –** Using economics to affect trip choice, e.g., parking pricing, cash-out, pretax or discounted transit passes; and
  - **Organizational –** Efforts that bring activities and institutions together to implement TDM, e.g., education and information distribution, employer promotion of telework or alternative work schedules, land use planning, and transportation management associations (TMA).


1. Determine area type, land use, and project size
2. Select appropriate TDM measures
3. Look up percent reductions
4. Develop TDM Implementation Plan
5. Submit to District Commission as part of Act 250 application for review and approval
6. Implement TDM measures
7. Submit TDM Implementation Progress Reports
8. Adjust program if necessary

Maximum Combined Reductions			
	Mixed-Use / Moderate Transit	Mixed-Use / Low Transit	Other
Physical measures only	6%	4%	3%
Physical and operational and organizational	15%	12%	9%
Including financial incentives	20%	15%	12%

Projected population by generation

In millions



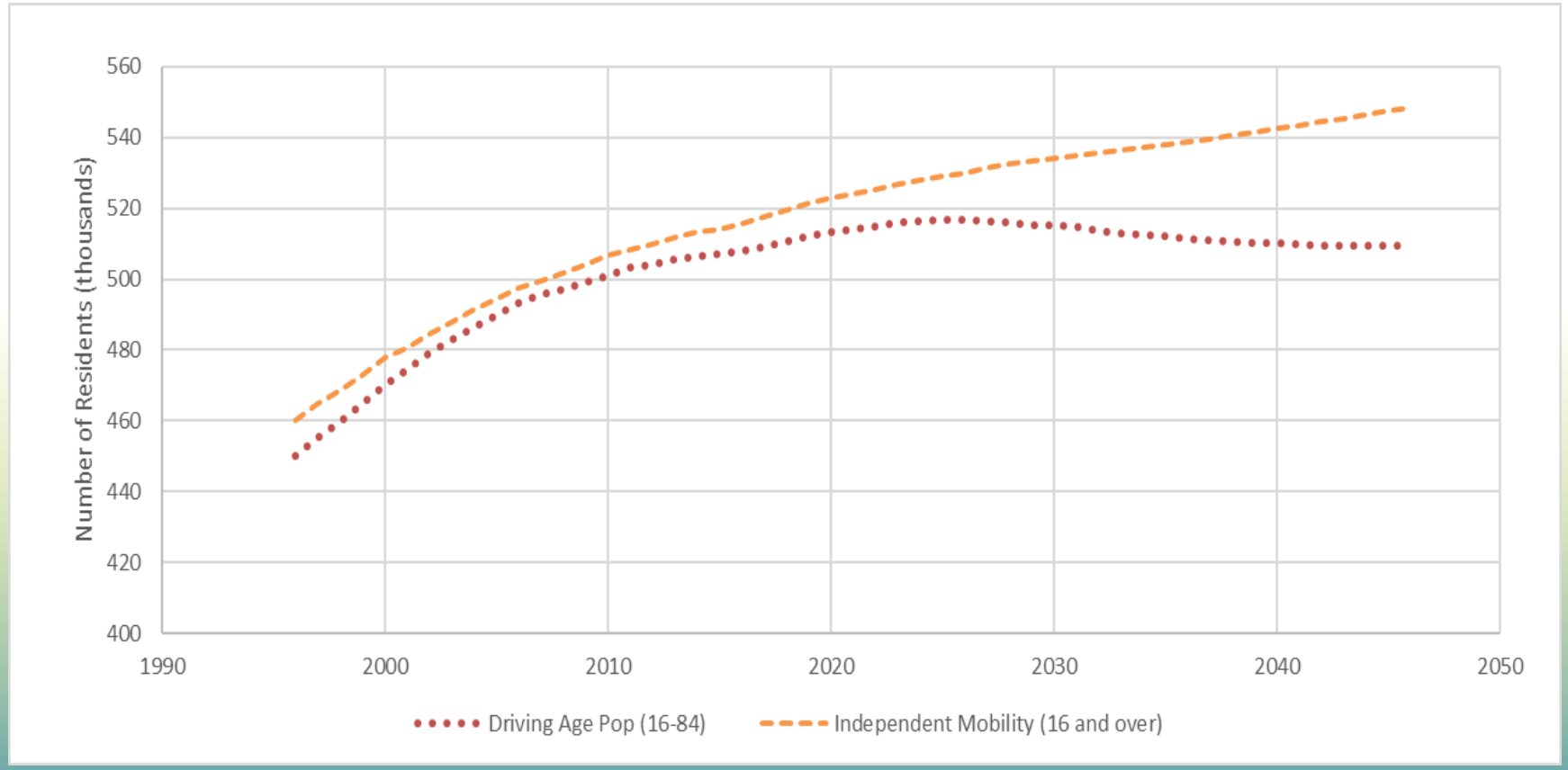
Note: Millennials refers to the population ages 18 to 34 as of 2015.
Source: Pew Research Center tabulations of U.S. Census Bureau population projections released December 2014 and 2015 population estimates

PEW RESEARCH CENTER

Vermont Demographics Future

VT - Diverging Demand for Mobility and Driving Age

POPULATION REQUIRING INDEPENDENT MOBILITY VS. DRIVING AGE POPULATION, 1996-2046



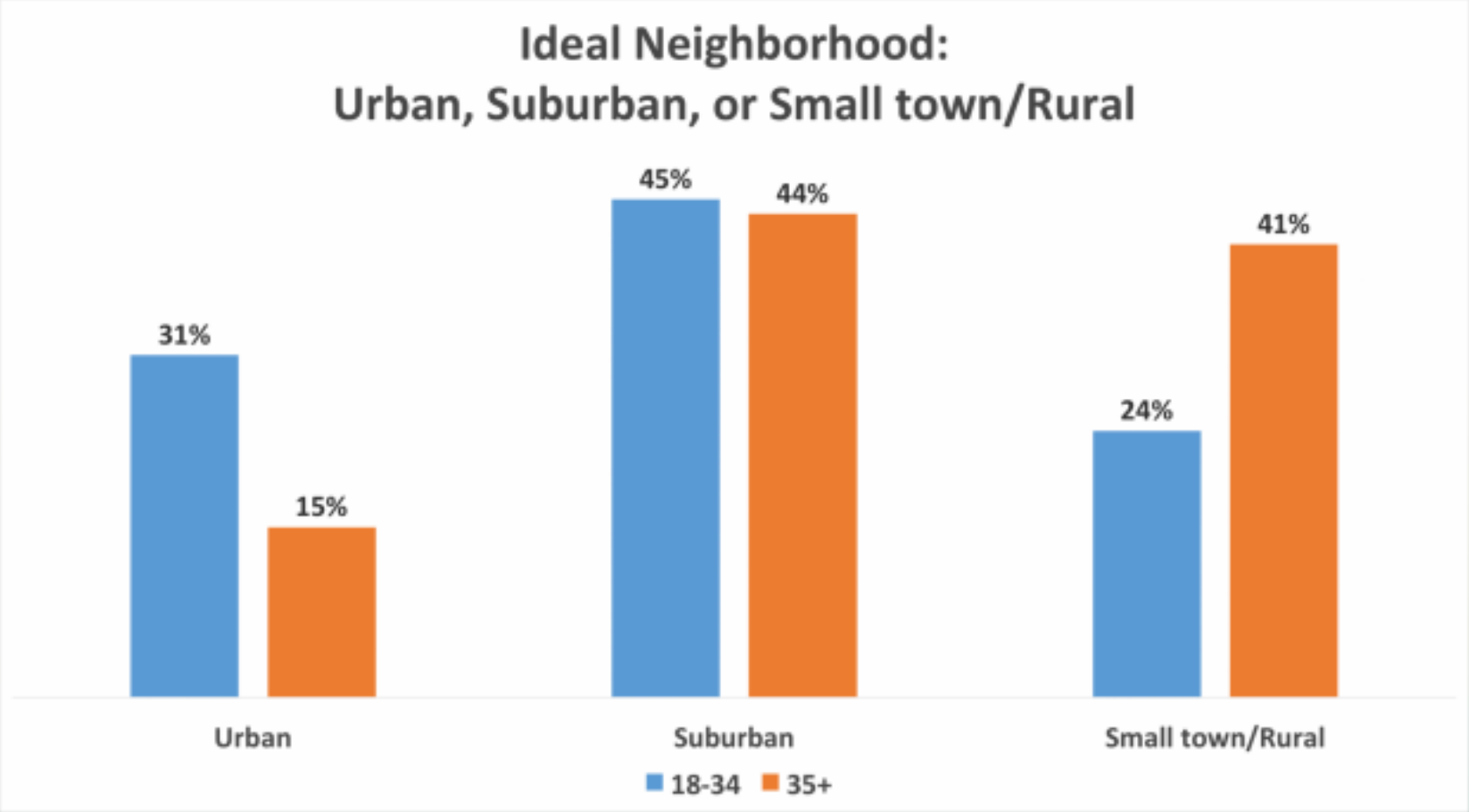
Millennials and Housing

- Millennials also make up two thirds of first-time home buyers, according to the NAR.
- And they are following in much of the same patterns of previous generations. "They are becoming homebuyers. They are saving. They are getting married. They are having kids. Much like all of us have done in past generations.“
- "don't want to move to just any suburban neighborhood,“ - Walkable neighborhoods and public transit are major attractions for many in this generation.
- "People really kind of want the anti-suburb suburb,"
- “…clients often want to preserve at least some elements of their urban lifestyle in their new suburban neighborhoods."

http://play.publicradio.org/api-2.0.1/o/marketplace/segments/2016/02/25/mp_20160225_seg_05_64.mp3

http://www.planetizen.com/node/86755/what-millennials-want-and-why-it-doesnt-matter

Mobility Survey: Demographics



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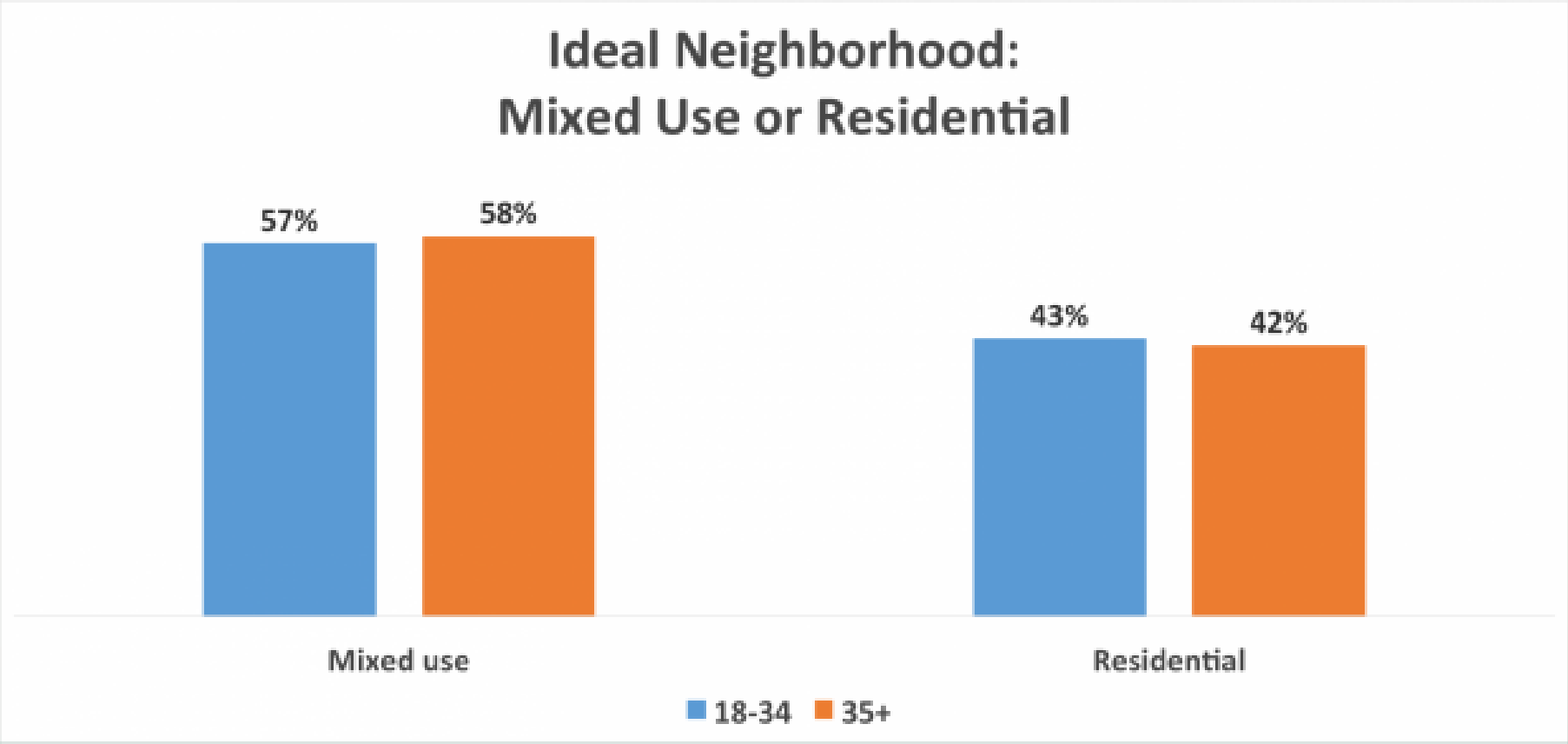

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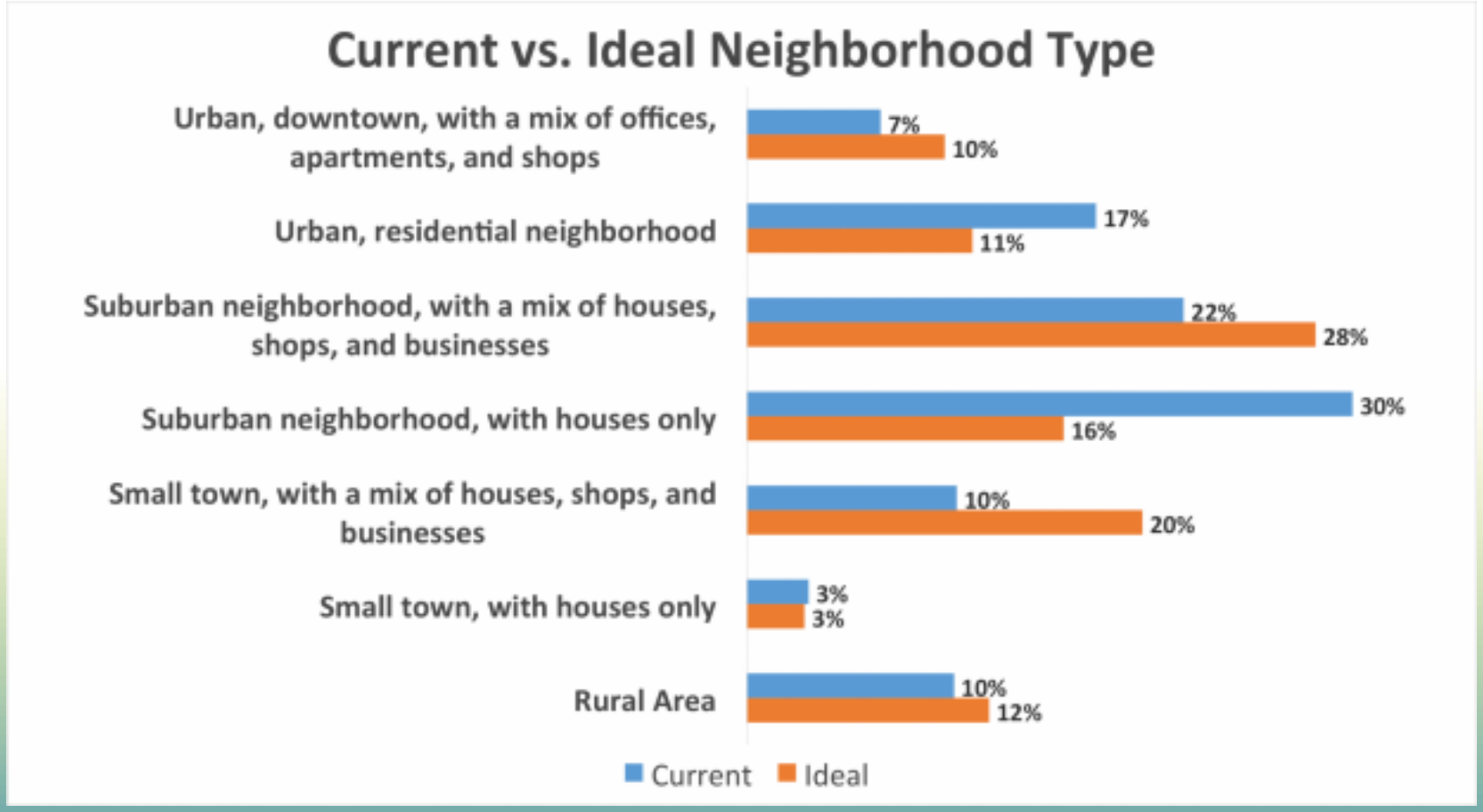

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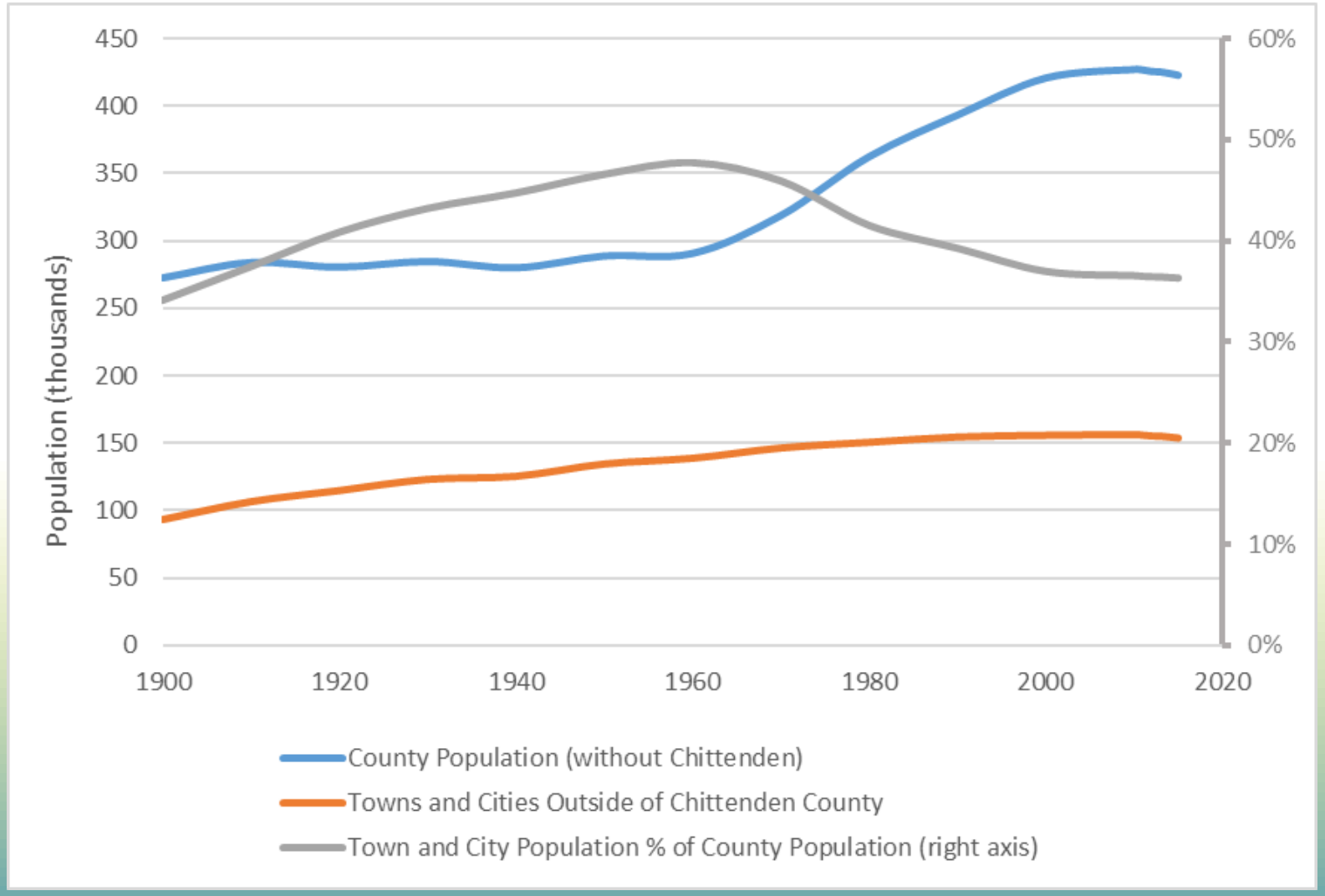
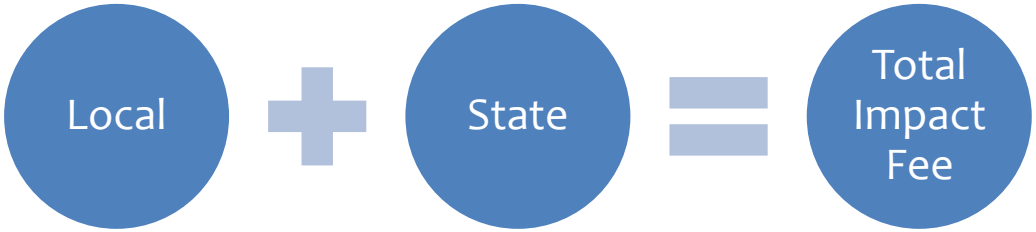
Vermont's Sprawling Trend



Source: U.S. Census

Impact Fees



Municipal Impact Fees
VT Statutes: Title 24, Chapter 131, t5200

- New development
- Proportionate share of capital projects which benefit them
- May be levied for previously expended capital outlay which benefit the development
- 6 year window
- Credits for taxes and fees which could cover the project

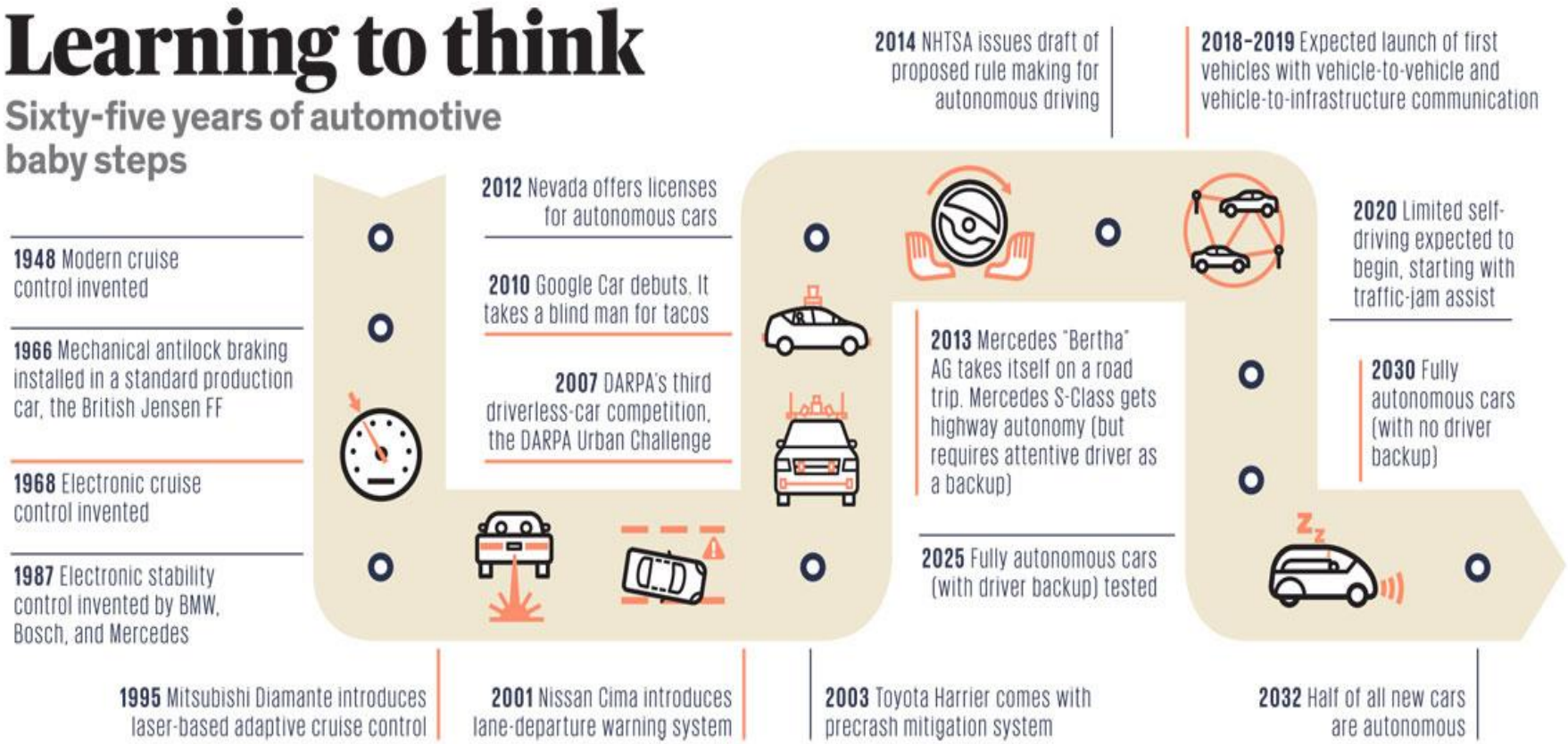
VT State Transportation Impact Fees (Act 145)

- VTrans access permit (111) or Act 250 Permit
- New development
- District Commission levies fee
- TID option (being explored)
- Proportionate share of capital projects which benefit them
- Reductions for TDM, downtown, village center, new town center, growth center, or neighborhood development area.
- May be levied for previously expended capital outlay which benefit the development
- 10 year window
- Credits for taxes and fees which could cover the project (including Municipal Impact fees)

Impact Fees – upcoming changes

- More heavily utilized with reduced state and federal funding
- Better credit and reimbursement clauses
- Progressive: Residential based on bedrooms or square footage
- Multi-Modal: Person Miles Traveled rather than just vehicles. More bike/ped, and explore transit infrastructure

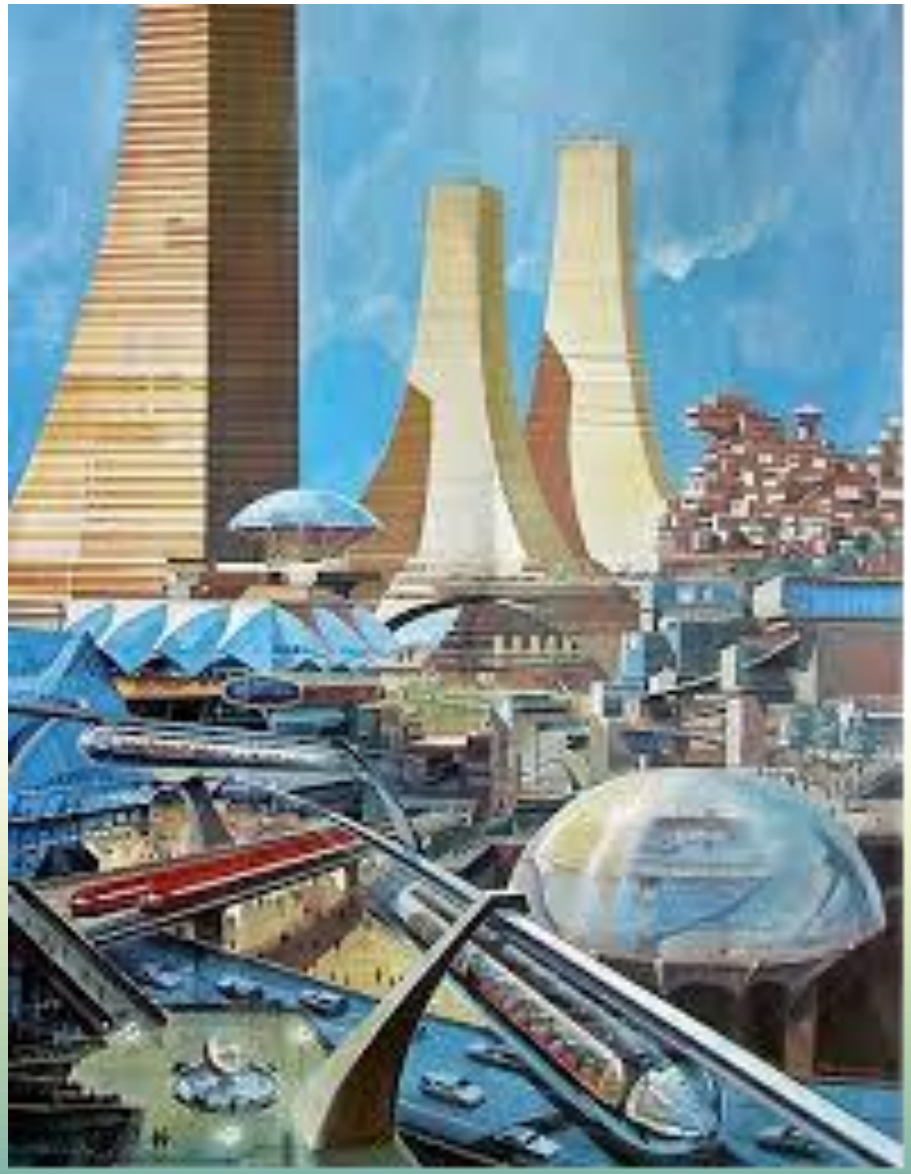
CVs and AVs


Learning to think
Sixty-five years of automotive baby steps
1948 Modern cruise control invented
1966 Mechanical antilock braking installed in a standard production car, the British Jensen FF
1968 Electronic cruise control invented
1987 Electronic stability control invented by BMW, Bosch, and Mercedes
1995 Mitsubishi Diamante introduces laser-based adaptive cruise control
2001 Nissan Cima introduces lane-departure warning system
2003 Toyota Harrier comes with precrash mitigation system
2007 DARPA's third driverless-car competition, the DARPA Urban Challenge
2010 Google Car debuts. It takes a blind man for tacos
2012 Nevada offers licenses for autonomous cars
2013 Mercedes "Bertha" AG takes itself on a road trip. Mercedes S-Class gets highway autonomy (but requires attentive driver as a backup)
2014 NHTSA issues draft of proposed rule making for autonomous driving
2018–2019 Expected launch of first vehicles with vehicle-to-vehicle and vehicle-to-infrastructure communication
2020 Limited self-driving expected to begin, starting with traffic-jam assist
2025 Fully autonomous cars (with driver backup) tested
2030 Fully autonomous cars (with no driver backup)
2032 Half of all new cars are autonomous

AVs

What does it mean for you:

- Within any investment timeframe < 20 years
- Does ownership culture continue or do we agree to share the car like a more flexible transit platform (Mobility as a Service – MaaS)
- Implications for parking demand, especially for downtowns, close to house, store, etc.
- Careful investment in parking supply and allow flexibility and re-use
- Unbundling the parking supply through financial mechanisms will continue to be a strong driver of parking demand (Pay for your parking space) when there are other options for travel



QUESTIONS?

SPEAKERS

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