

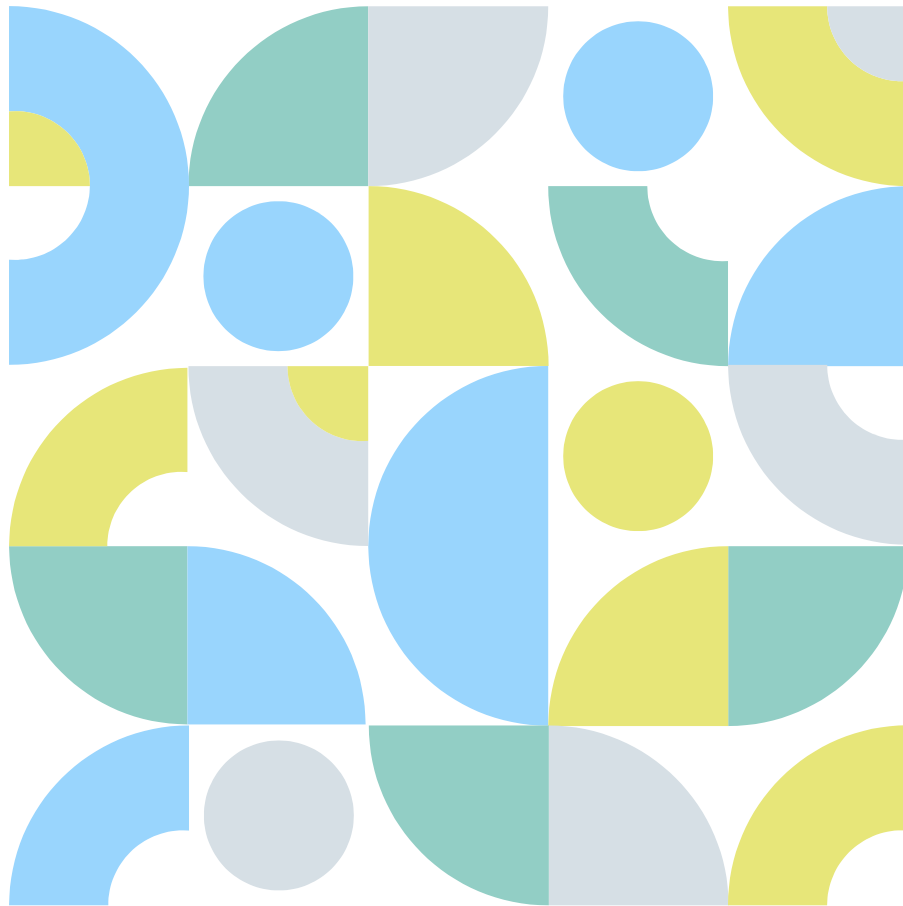


The future of Pupil Transportation

Michigan School Business Officials
Annual Conference & Exhibit Show

Tim Ammon, CESO

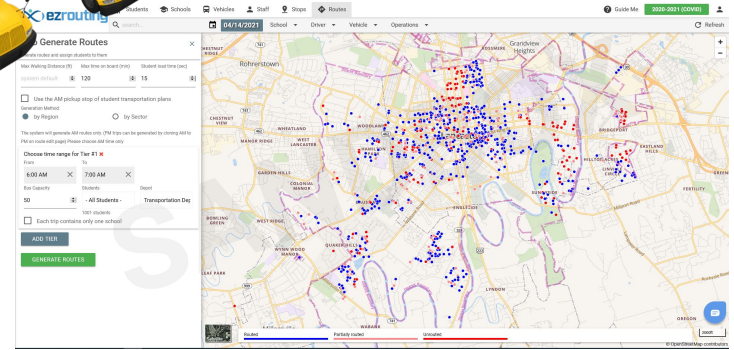
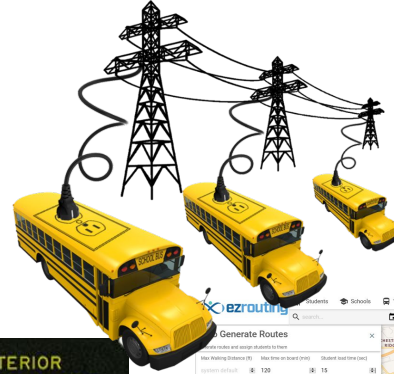
April 2022



Where is my
flying bus!?!?



What has been the biggest innovation in the last generation?

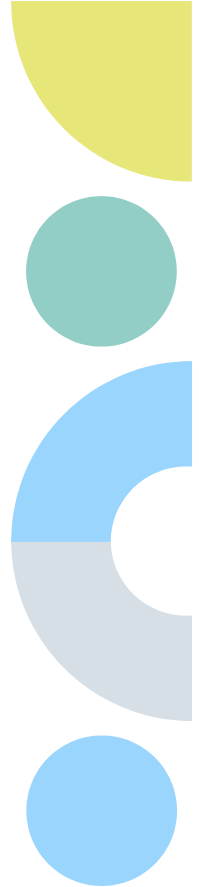


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What defines the future?

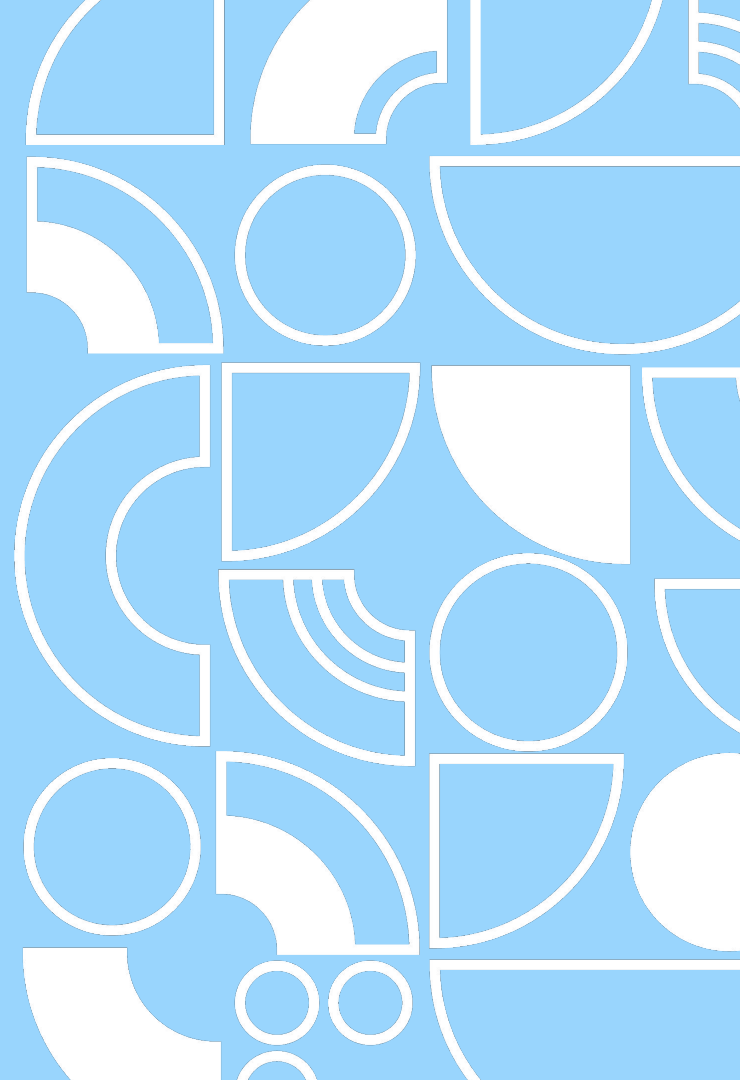
Five key characteristics of the future:

1. The present
2. The past
3. Demographics
4. Technological innovation
5. The unknown



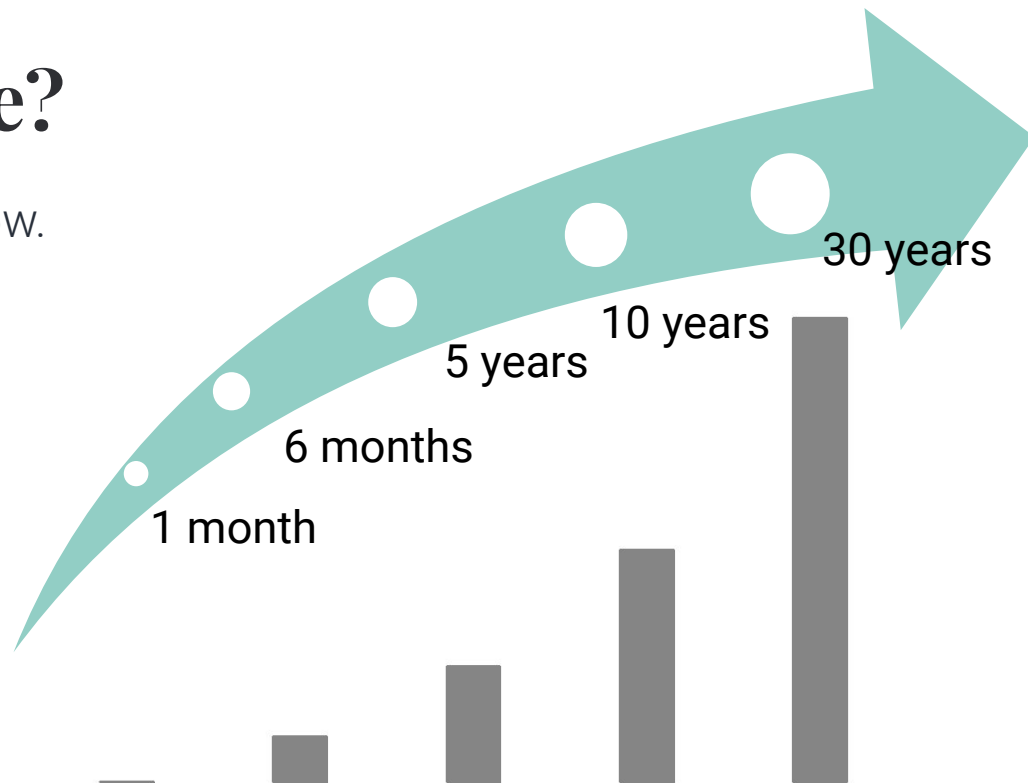
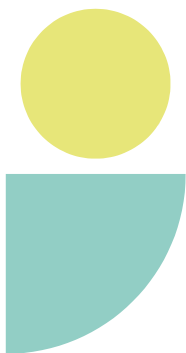
The Influence of the Present

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What is the future?

The future starts from right now.
So, how much future are we
talking about?



How much change can you expect?

The Influence of the Past

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What has the past determined?

How are systems are designed and what we come to expect from them have a substantial set of dependencies. So, what won't change or change much?

1. School locations
2. Roads
3. Housing stock and locations
4. Policies and procedures
5. Vehicle structure and capabilities
6. Technology support and availability
7. Funding structures
8. ...Everything



What has been the biggest innovation in the last generation?



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Route tiering is the biggest innovation in the last generation

Property tax revolts in the 70's

Reductions in school funding

Need to reuse buses

Increased complexity with increased use

Increased need to know where vehicles are actually located



Increased expectations for real-time communications

The Influence of Demographics

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Thinking about Demographics



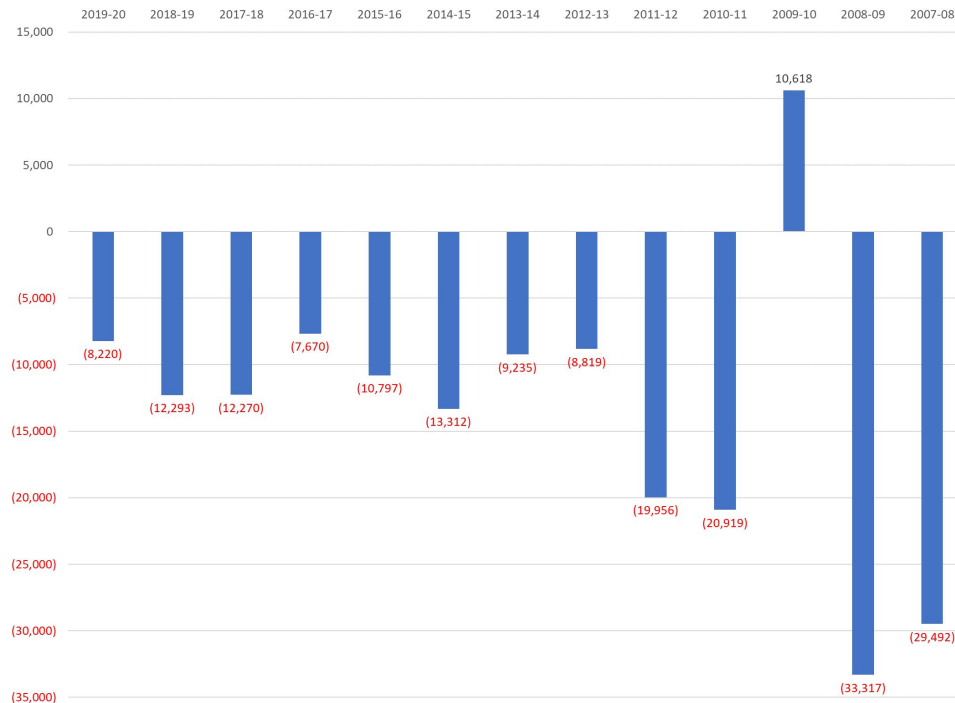
“Demographics is destiny.”
– August Comte, 1798-1857

The demographics of a district has a major impact on how transportation will be provided. So, what might change?

1. Enrollments
2. School openings/closings
3. Age distribution
4. Housing prices
5. Income distributions

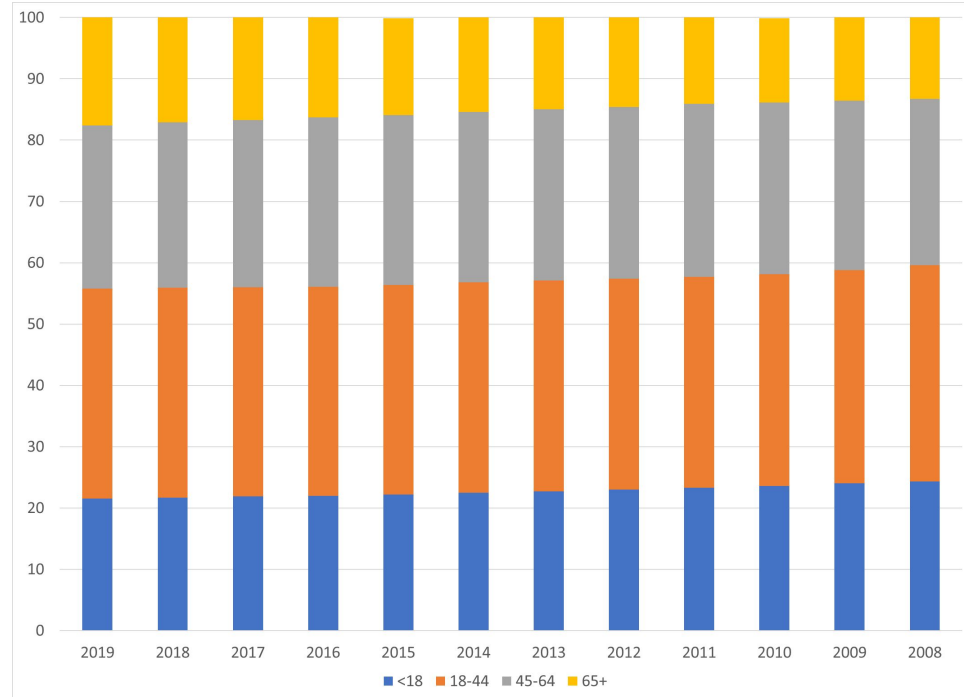
Thinking about Demographics

Annual Change in Enrollment



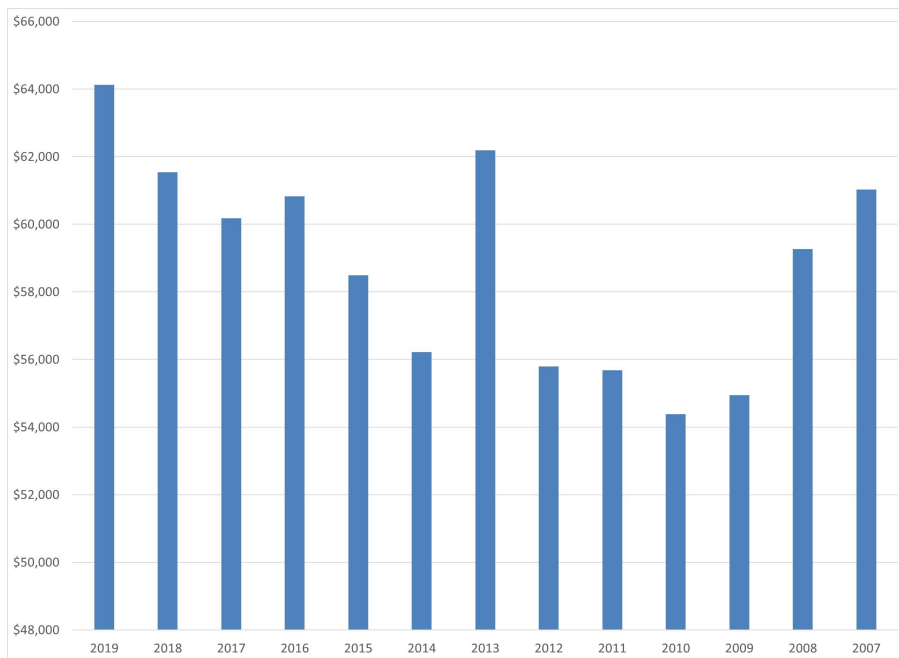
Thinking about Demographics

Percent of Population in Age Brackets



Thinking about Demographics

Median Household Income (2019 dollars)



Source: U.S. Census Bureau, Current Population Survey, Annual Social and Economic Supplements (CPS ASEC).

The Influence of Technology

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It's Electric!



**What we say we
want to know**

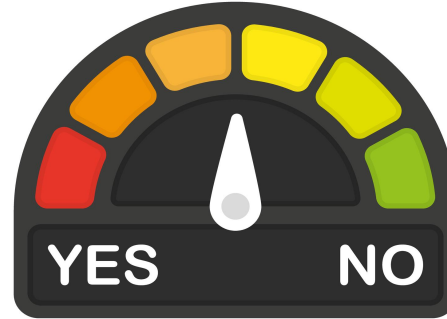
Vs.

**What we actually
want to know**

Are we performing well?

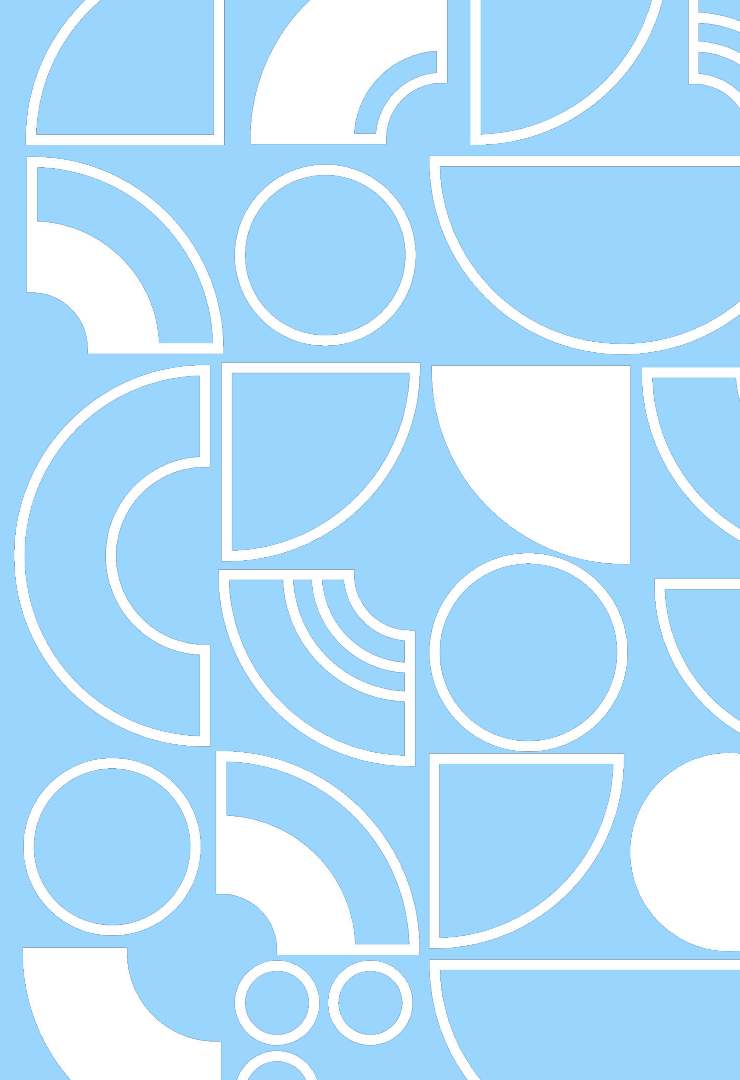


Are we performing well?

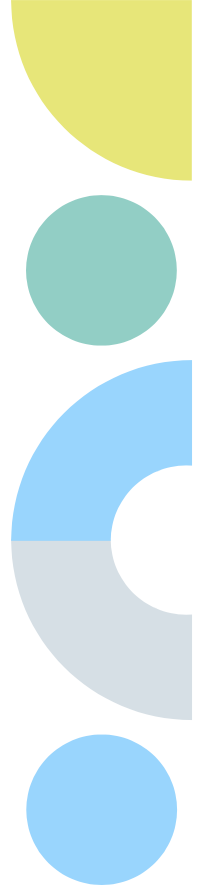
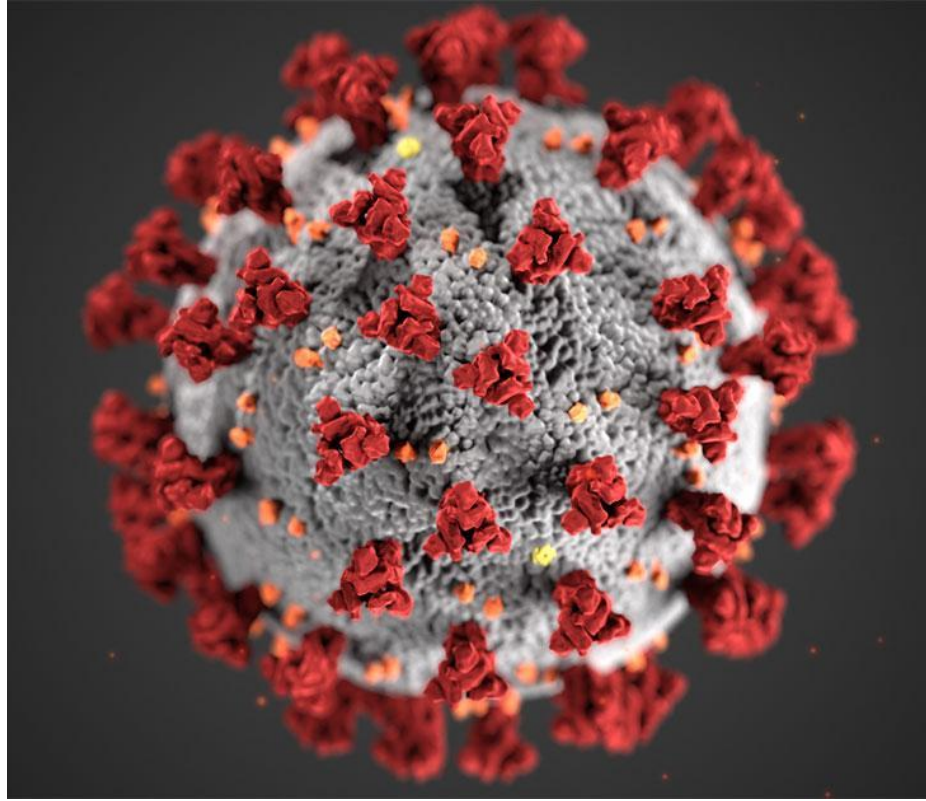


The Influence of Unknown

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**Oh, right.
There was
this...**





**So what does the
future hold?**



The near term (next year) will be...

Pretend Normal

- Pandemic fatigue
- Enrollment bubbles and pops
- Federal funding will continue to distort expenditures
- Increasing costs and increasing expectations

Electric

- The continued subsidization and new market entrants will cause the number of electric vehicles to increase dramatically as a percentage
 - Remember the denominator is low
- Infrastructure will struggle to keep up with the desired pace of growth



The medium term (next 5 years) will be...



Complex

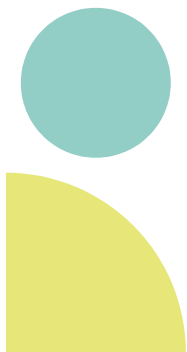
- Increased prevalence of mixed educational models
- Increased expectations for distributed transportation
- Increased prevalence of special needs and specialized services

On-demand

- Much greater need for routing and dispatch systems to support dynamic routing
- Greater prevalence of mixed operations models to support distributed transportation
- Wi-fi enabled buses and IOT will cause some micro-revolutions

Still a lot like today

- Buses will be yellow
- Drivers will be in shortage
- Funding will not be enough



The long term (6+ years) will be...

Uncertain

- Impact of pandemic on educational practices
- Impact of pandemic on enrollment
- Impact of subsidies on electrification
- Impact of the driver shortage on expectations and availability
- Impact of the unknown





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