My Car Does What?

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ADTSEA 2020 Virtual Conference
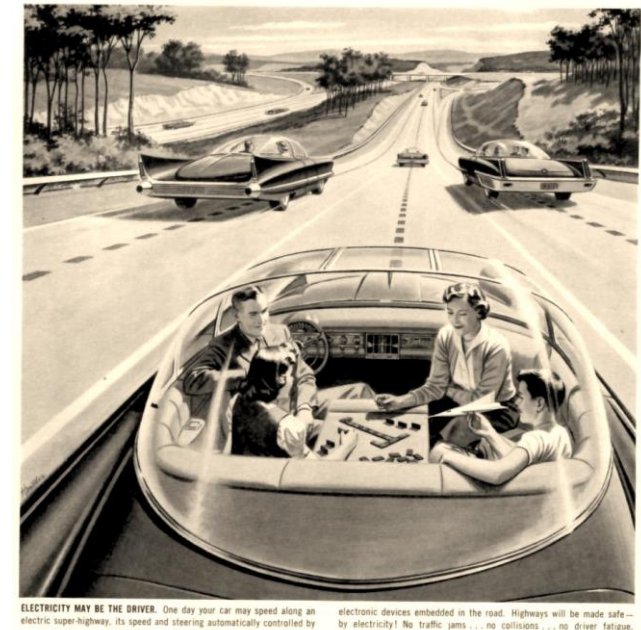
- Access ADAS Resources
  - MyCarDoesWhat
  - Be the Hero for your students
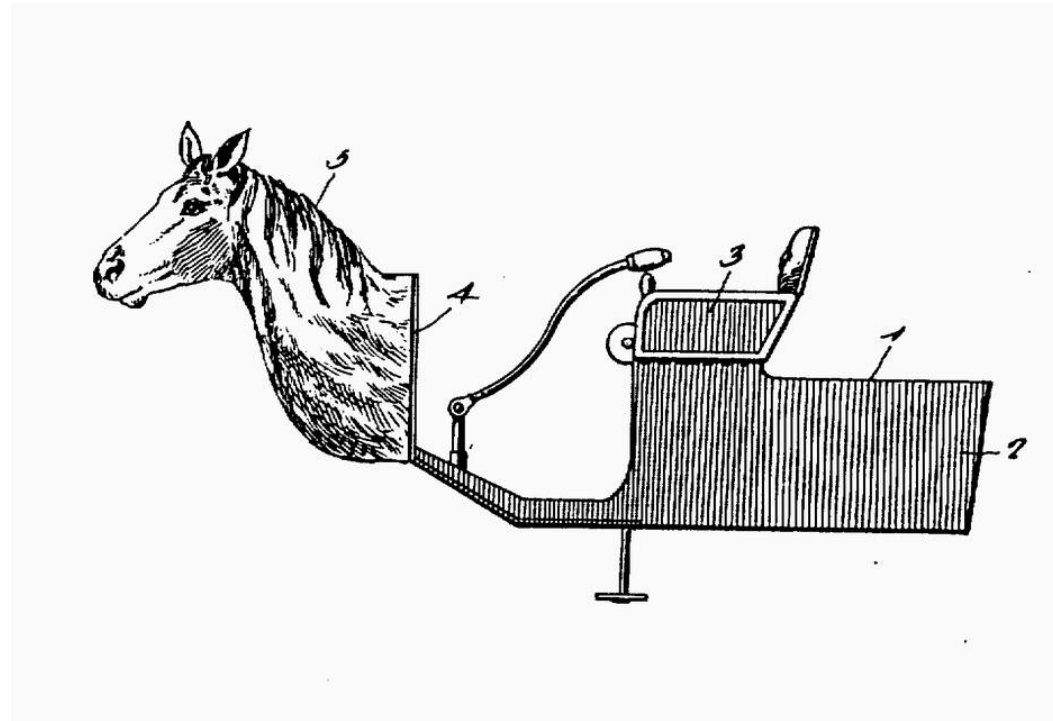
Saving Lives Now With Automation

When Will You Own A Fully Self-Driving Car?

- Highway Data Loss Institute (HDLI) reveals how slowly ADAS Technologies are achieving penetration in the US fleet.

- Normal turnover of inventory
  - average age of cars in the US fleet = 11.6 years old.
- Electronic stability control has been available for <u>decades</u> and was mandated on all new passenger cars by the 2012 model year
  - in 2015 only 40% of registered vehicles were equipped with ESC.
  - full fleet penetration is not predicted until the 2040s.

ELECTRICITY MAY BE THE DRIVER. One day your car may speed along an electric super-highway, its speed and steering automatically controlled by electronic devices embedded in the road. Highways will be made safe—by electricity! No traffic jams . . . no collisions . . . no driver fatigue.

How Can We Speed Adoption?

It is going to be difficult

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ADAS Deployments Work

ADAS systems appear to be working

- Backup Cameras cut backing crashes 17%
- Lane departure warning lowers all typical crashes (single-vehicle, sideswipe and head on crashes) by 11 percent and injury crashes by 21 percent
- Electronic Stability Control lowers the risk of fatal single-vehicle crashes by half and roll overs as much as 80 percent

Education is the key to adoption and proper use

What Does This Icon Represent?

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Drowsiness Alert

What Does This Icon Represent?

Automatic Emergency Braking

Intersection Collision Avoidance · Forward Collision Warning · Automatic Braking · Obstacle Detection · Intelligent Speed Adaptation · High Speed Alert · Curve Speed Warning · Cruise Control · Adaptive Cruise Control · Adaptive Headlights

Night Vision · Parking Sensors · Automatic Parallel Parking · Rear Cross Traffic Alert · Back-up Camera · Back-up Warning · Pedestrian Detection · Active Steering · Adaptive and Active Suspension · Anti-Lock Braking System

Cornering Braking Control · Electronic Braking Assistance · Electronic Stability Control · Caravan Electronic Stability Control · Traction Control · Hill Start Assist · Hill Descent Assist · Terrain Management · Road Surface Warning · Tire Pressure Monitoring System

Rollover Detection and Prevention · Lane Departure Warning · Lane Keeping Assist · Blind Spot Monitor · Sideview Camera · Drowsiness Alert · Health and Workload Monitoring · Audible Route Guidance · Automatic Collision Notification · Push Button Start

Adoption Challenges

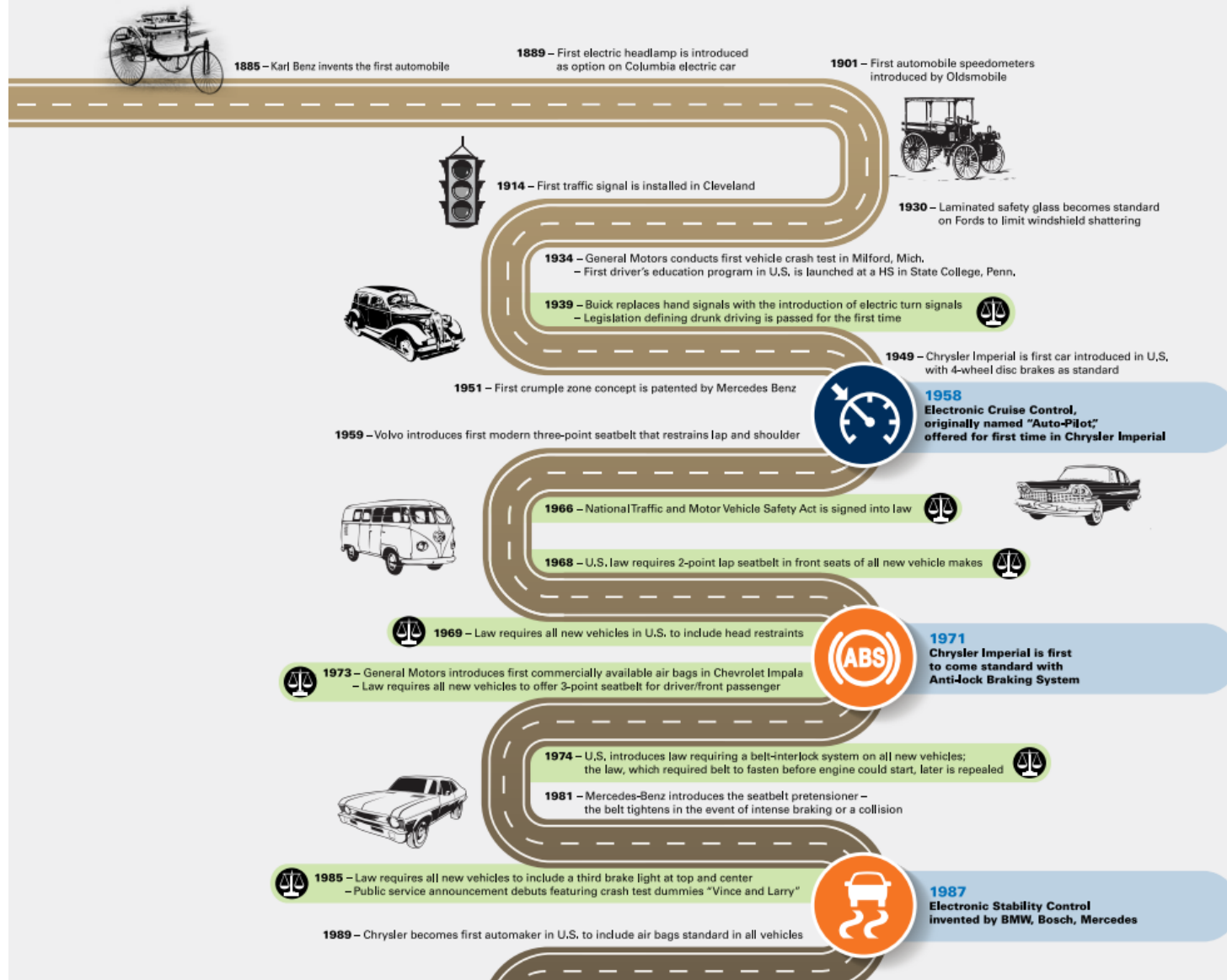Safety Features Have Different Brand Names

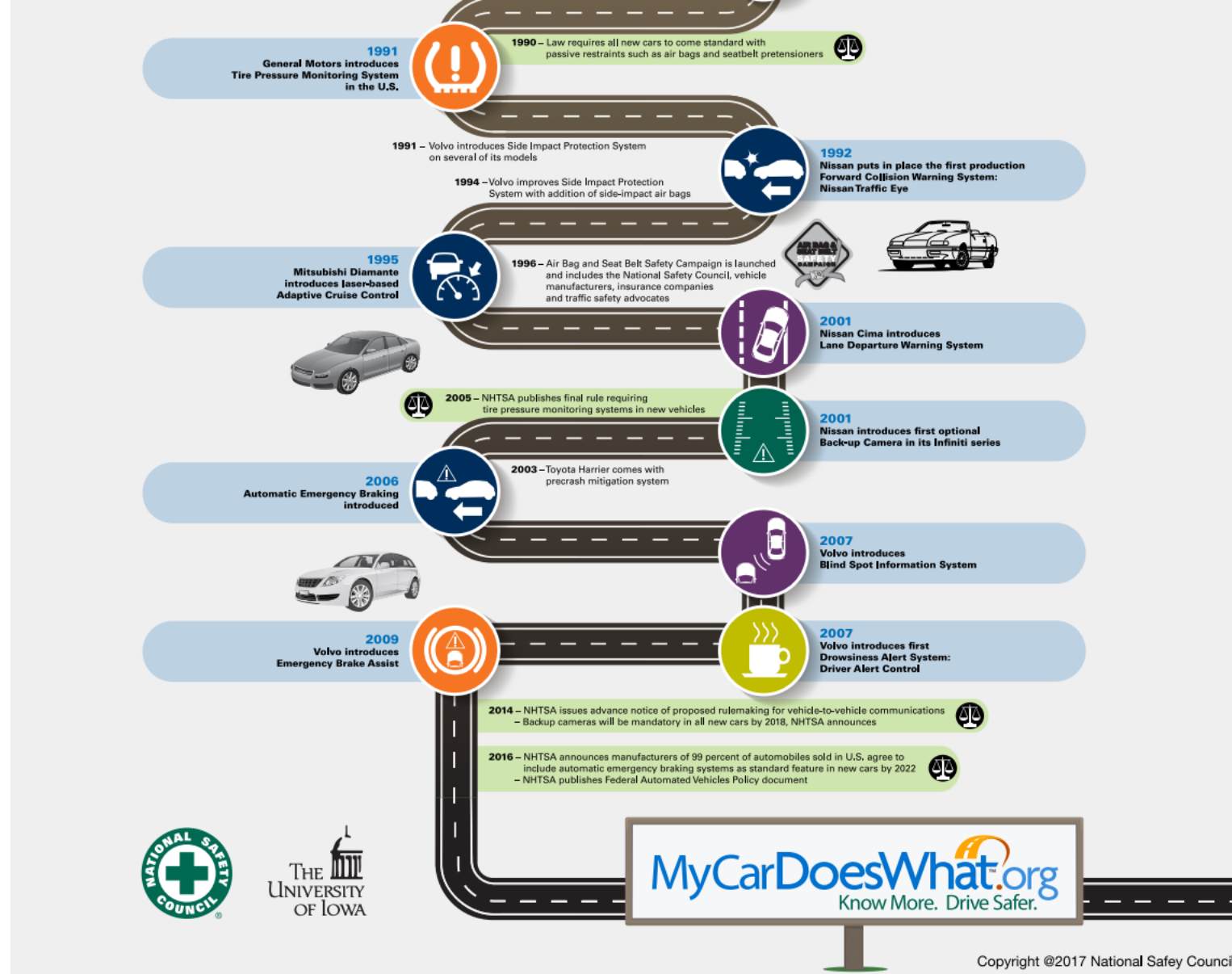Safety Features Have Different Capabilities across Manufacturers, Trim Levels and Time

Safety Feature Limitations May Not Be Intuitive or Obvious

Warning or Icon standardization issues

Automobile SAFETY FEATURES Timeline

1885 – Karl Benz invents the first automobile

1889 – First electric headlamp is introduced as option on Columbia electric car

1901 – First automobile speedometers introduced by Oldsmobile

1914 – First traffic signal is installed in Cleveland

1930 – Laminated safety glass becomes standard on Fords to limit windshield shattering

1934 – General Motors conducts first vehicle crash test in Milford, Mich.
– First driver's education program in U.S. is launched at a HS in State College, Penn.

1939 – Buick replaces hand signals with the introduction of electric turn signals
– Legislation defining drunk driving is passed for the first time

1949 – Chrysler Imperial is first car introduced in U.S. with 4-wheel disc brakes as standard

1951 – First crumple zone concept is patented by Mercedes Benz

1958 Electronic Cruise Control, originally named "Auto-Pilot," offered for first time in Chrysler Imperial

1959 – Volvo introduces first modern three-point seatbelt that restrains lap and shoulder

1966 – National Traffic and Motor Vehicle Safety Act is signed into law

1968 – U.S. law requires 2-point lap seatbelt in front seats of all new vehicle makes

1969 – Law requires all new vehicles in U.S. to include head restraints

1971 Chrysler Imperial is first to come standard with Anti-lock Braking System

1973 – General Motors introduces first commercially available air bags in Chevrolet Impala
– Law requires all new vehicles to offer 3-point seatbelt for driver/front passenger

1974 – U.S. introduces law requiring a belt-interlock system on all new vehicles; the law, which required belt to fasten before engine could start, later is repealed

1981 – Mercedes-Benz introduces the seatbelt pretensioner – the belt tightens in the event of intense braking or a collision

1985 – Law requires all new vehicles to include a third brake light at top and center
– Public service announcement debuts featuring crash test dummies "Vince and Larry"

1987 Electronic Stability Control invented by BMW, Bosch, Mercedes

1989 – Chrysler becomes first automaker in U.S. to include air bags standard in all vehicles