



Covid-19 and Fuel Economy Regulation: Oil and Vehicle Market Implications

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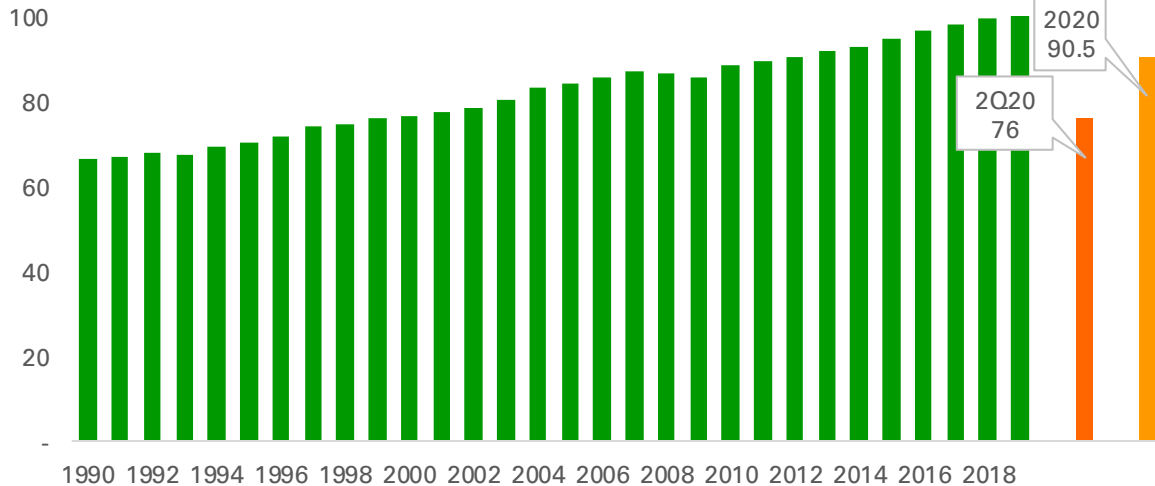


Unprecedented 20-30% shock to oil demand

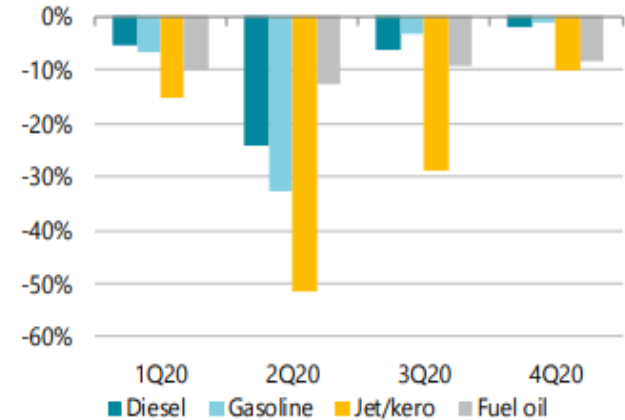
With over 4 billion people under lockdown measures, April, 2Q experienced worst demand destruction

Including large contraction in aviation and gasoline

Oil Demand (1990-Present), Mb/d



Transport Fuel Demand y-o-y change



Now, transportation fuel demand is gradually rebounding

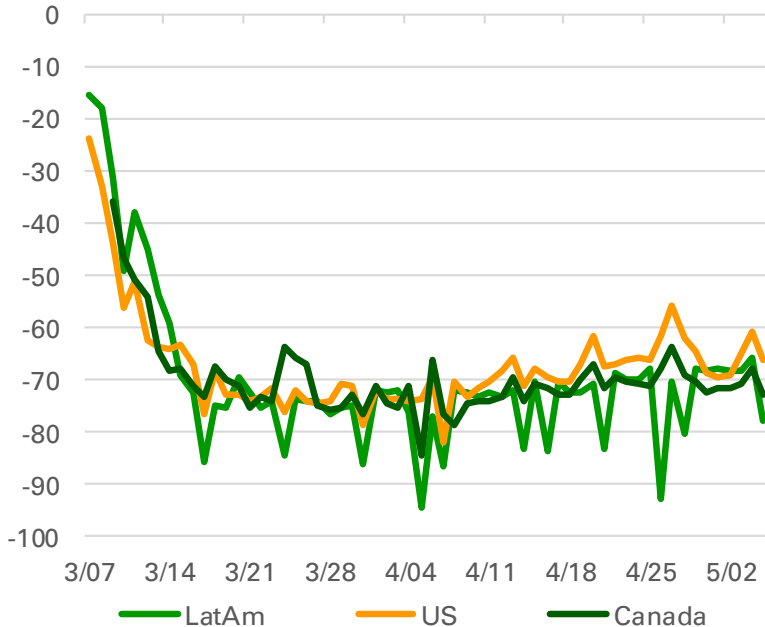


High frequency indicators showing only moderate improvement...

...and refineries are managing the shift in products needed

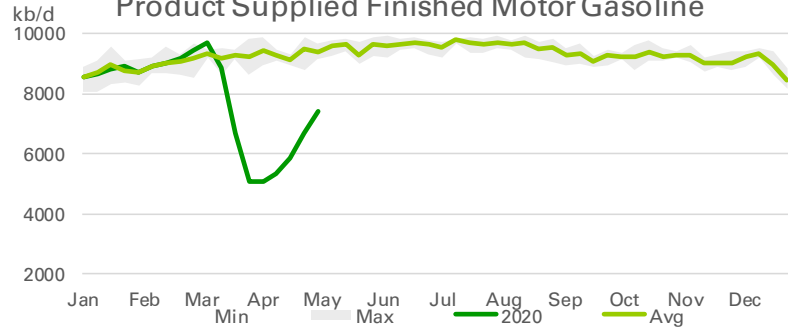
Road Congestion - Americas

(% deviation from year ago)

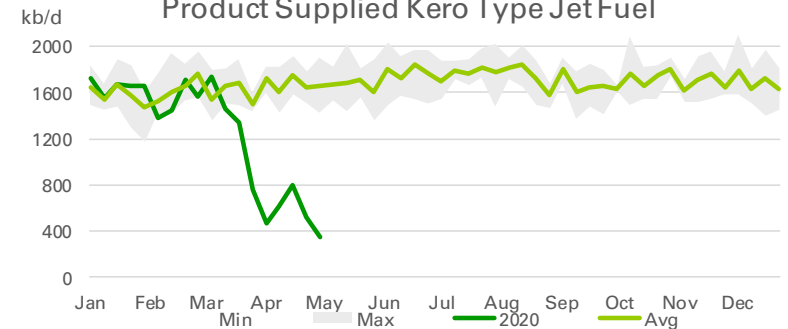


Source: TomTom

Product Supplied Finished Motor Gasoline



Product Supplied Kero Type Jet Fuel



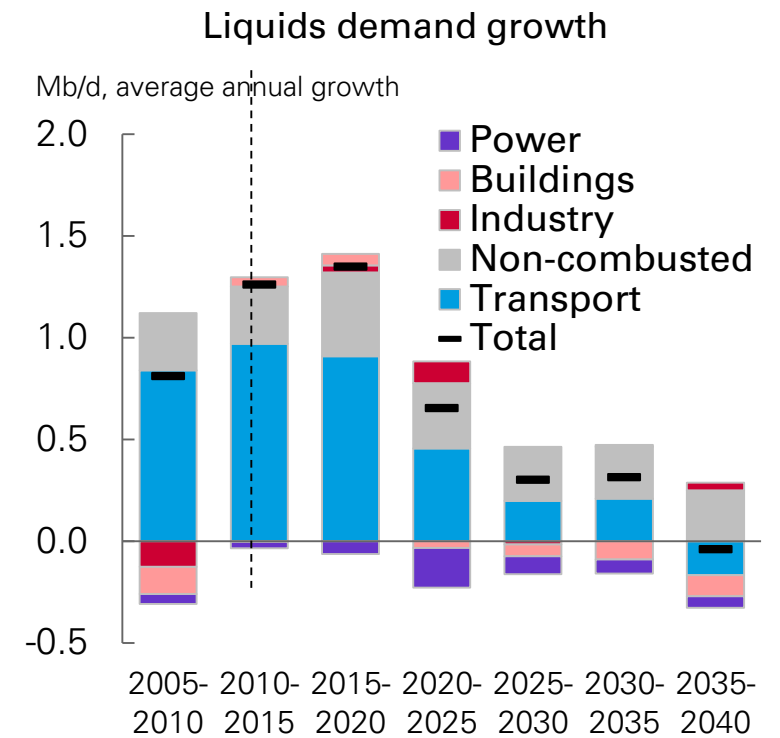
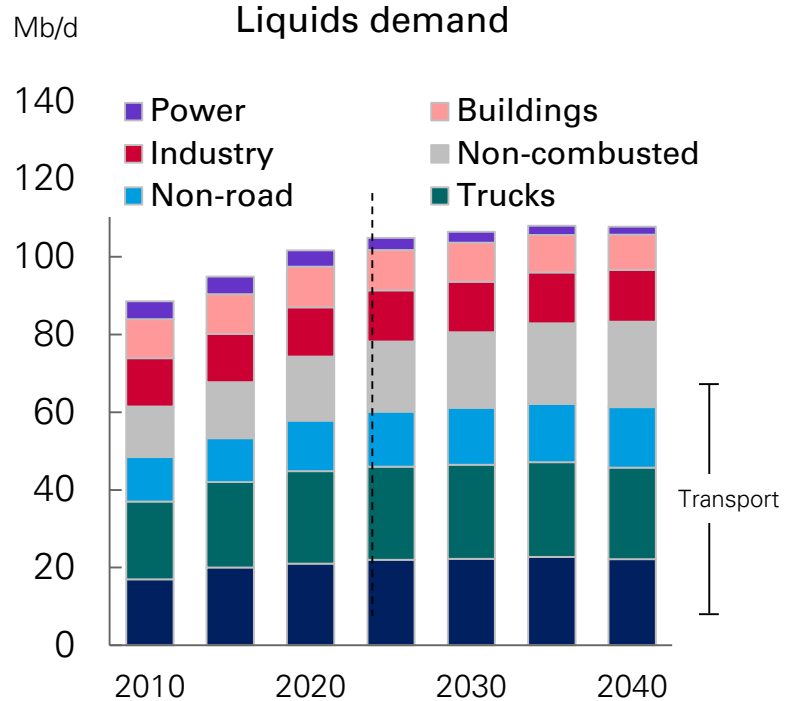
Source: EIA

Transportation plays a prominent yet diminishing role



60% of liquids consumption from transportation fuels

But the growth comes from non-combusted fuels



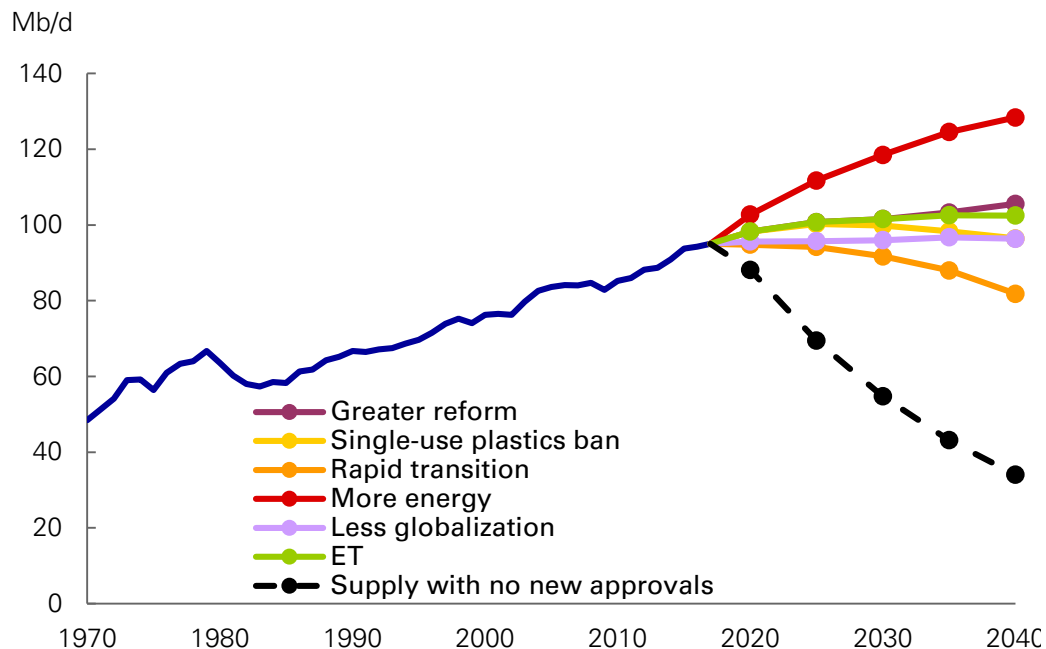
Cars include 2- and 3-wheelers. Trucks includes most SUVs in North America. Non-road includes aviation, marine and rail

Wide variability in oil demand scenarios

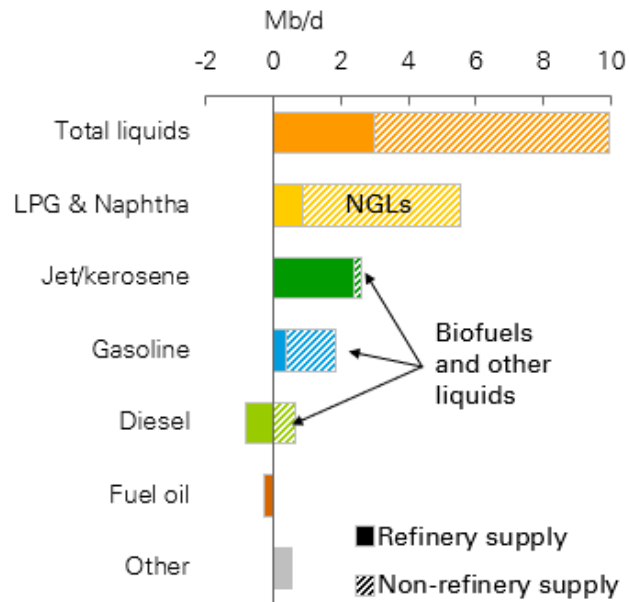


Covid-19 will require review of transportation efficiency, technology and policy assumptions which already led to a wide range of oil demand pathways

Jet/kero demand forecast to account for majority of refinery product supplied



Demand and supply growth by product, 2017-2040

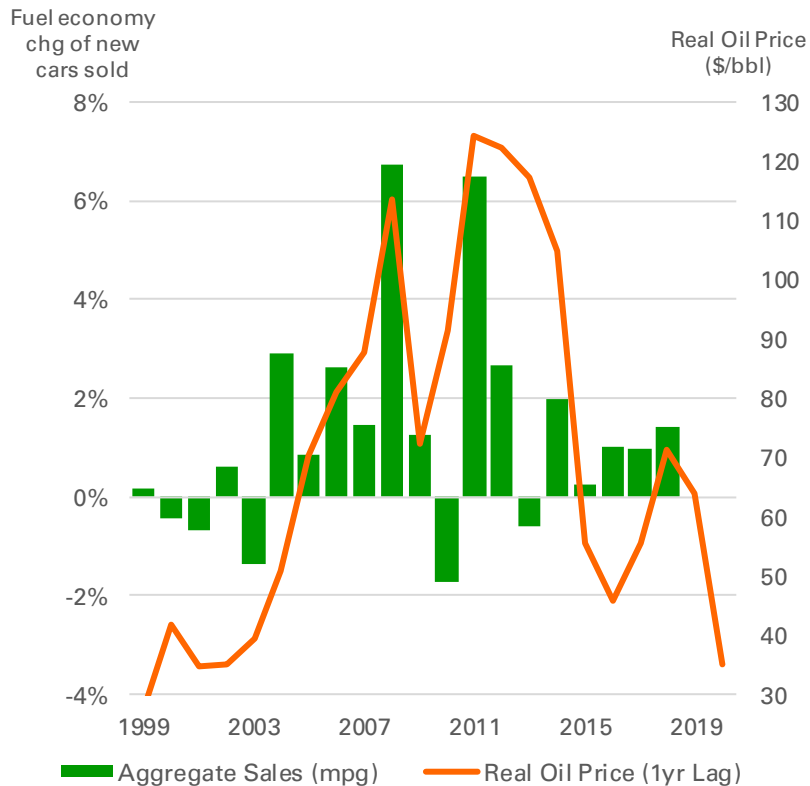


Short/Medium/Long term effects on transportation

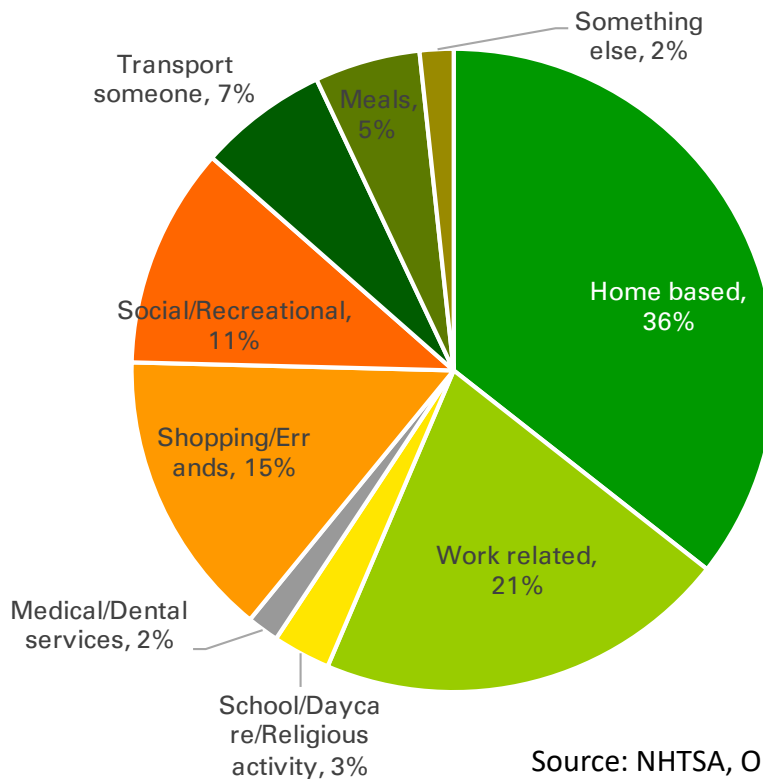


Low fuel price, wealth shock to act as headwind to fuel economy improvement

Breakout of US VMT shows significant risk of lower fuel demand



2017 NHTSA: Share of VMT



Source: TSE, EPA, MarketView

Source: NHTSA, ORNL