

Barclays Research Insights on

Disruptive Mobility

A SCENARIO FOR 2040...

BY 2040

Half of all cars could be autonomous.

A society of driverless cars is on its way.

In this new paradigm, vehicle ownership could decline by 50% and each shared driverless car could replace as many as 7 traditional vehicles. Shared autonomous driving could significantly disrupt annual car sales.



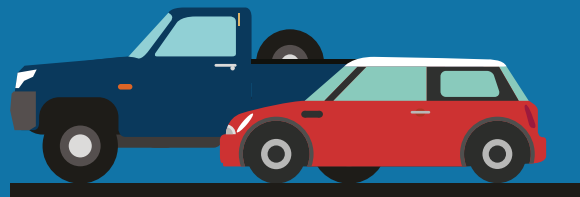
Driverless car:

A robotic vehicle designed to travel between destinations without a human operator.

4 types of vehicles will rule the road

Traditional Automobiles:

Performance and utility vehicles intended for personal or work use.



Family Autonomous Vehicles (FAVs):

Driverless vehicles owned and shared by a family.

Shared Autonomous Vehicles (SAVs):

On-demand chauffeur, minus the driver.



Pooled Shared Autonomous Vehicles (PSAVs):

SAVs that service multiple riders simultaneously.

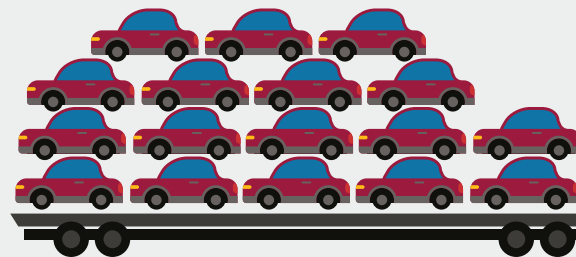
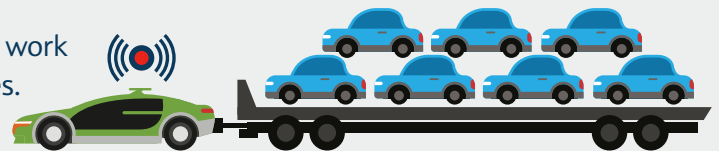
Speeding ahead

The vehicle market is set to be disrupted.



Fewer vehicles on the road.

One SAV could do the work of 7 traditional vehicles.



One PSAV could do the work of 17 traditional vehicles.

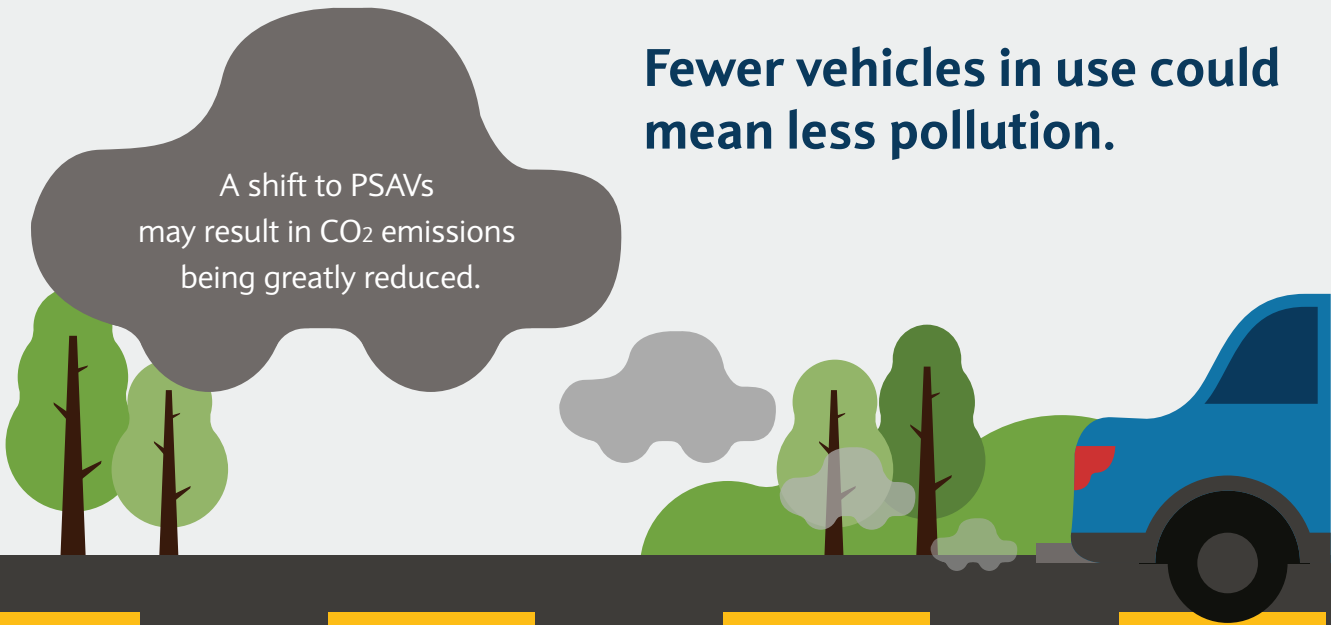
Decline in auto sales.

As many as half of the cars on the road could be autonomous, leading to a 40% decline in auto sales.

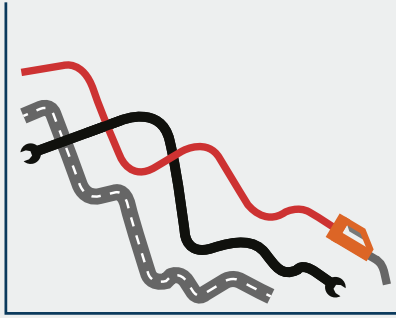
Source: UMTRI, Fagnant et al, Urban Mobility Institute, Barclays Research estimates

Fewer vehicles in use could mean less pollution.

A shift to PSAVs may result in CO₂ emissions being greatly reduced.



Decrease in total operating costs per mile.



TODAY **66¢** traditional vehicle operating cost per mile

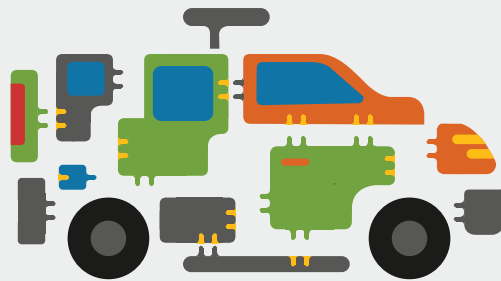
BY 2040 **29¢** SAV operating cost per mile

12¢ PSAV operating cost per mile

Source: AAA, UMTRI, Fagnant et al, Columbia Earth Institute, Barclays Research estimates

Modular car designs.

Greater intensity of driving may provide a motivation for next-gen modular designs that would allow easy upgrading of worn parts like interiors and batteries.



Shorter car lifespans.

SAVs will need to be scrapped sooner as each car is driven more miles per year than a traditional car.

Upgrade for the masses.

As families move from owning multiple cars to one, they can spend more on a single FAV.



Stay on top of this and other topics at [barclays.com/IB](https://www.barclays.com/IB)

Source: "Disruptive Mobility," prepared by Brian A. Johnson, Barclays Research Department

Disclosures

PERSONAL USE ONLY

All information contained herein shall only be used by the recipient for his/her own personal reference. Any other use, including any disclosure or distribution to of any information to any third party, requires the express written permission of Barclays.

FOR INFORMATION PURPOSES ONLY

This information has been prepared by the Research Department within the Investment Bank of Barclays Bank PLC and is distributed by Barclays Bank PLC and/or one or more of its affiliates (collectively and each individually, "Barclays"). The views expressed in this publication are those of the author(s) alone and are subject to change without notice. Barclays has no obligation to update this publication. This information is intended for informational purposes only and should not be regarded as an offer to sell or a solicitation of an offer to buy the products or securities to which it applies. No representation is made that any returns will be achieved through its use.

INFORMATION PROVIDED MAY NOT BE ACCURATE OR COMPLETE AND MAY BE SOURCED FROM THIRD PARTIES

All information, whether proprietary to Barclays or a third party, is provided "as is" and Barclays makes no express or implied warranties, and expressly disclaims all warranties of merchantability or fitness for a particular purpose or use with respect to any data included herein. Other than disclosures relating to Barclays, the information contained in this publication has been obtained from sources that Barclays Research believes to be reliable, but Barclays makes no representations that the information contained herein is accurate, reliable, complete, or appropriate for use by all investors in all locations. Further, Barclays does not guarantee the accuracy or completeness of information which is obtained from, or is based upon, trade and statistical services or other third-party sources. Because of the possibility of human and mechanical errors as well as other factors, Barclays is not responsible for any errors or omissions in the information contained herein. Barclays is not responsible for, and makes no warranties whatsoever as to, the content of any third-party website accessed via a hyperlink contained herein and such information is not incorporated by reference.

INFORMATION PROVIDED IS NOT INDICATIVE OF FUTURE RESULTS

Any data on past performance, modelling or back-testing contained herein is not necessarily indicative of future results. All levels, prices and spreads are historical and do not represent current market levels, prices or spreads, some or all of which may have changed. The information referenced herein or any of the results derived from any analytic tools or reports referenced herein are not intended to predict actual results and no assurances are given with respect thereto. The value of and income from any investment may fluctuate from day to day as a result of changes in relevant economic markets (including changes in market liquidity).

NO LIABILITY

To the extent permitted by law, in no event shall Barclays, nor any affiliate, nor any of their respective officers, directors, partners, employees or third party licensors have any liability for (a) any special, punitive, indirect, or consequential damages; or (b) any lost profits, lost revenue, loss of anticipated savings or loss of opportunity or other financial loss, even if notified or advised of the possibility of such damages or potential loss, arising from any use of the information provided herein.

NO ADVICE

The information provided does not constitute investment advice or take into account the individual financial circumstances or objectives of the clients who receive it. You should consult with your own accounting, legal or other advisors as to the adequacy of this information for your purposes.

NO USE FOR VALUATION PURPOSES

No data or price information should be used for any valuation, trading, settlement, accounting purposes or other related functions.

NOT AVAILABLE IN ALL JURISDICTIONS

Not all products or services mentioned are available in all jurisdictions. No offers, sales, resales, or delivery of any products or services described herein or any offering materials relating to any such products or services may be made in or from any jurisdiction except in circumstances which will result with compliance with any applicable laws and regulations and which will not impose any obligations on Barclays.

TAX DISCLAIMER

Barclays does not provide tax advice and nothing contained herein should be construed to be tax advice. Accordingly, you should seek advice based on your particular circumstances from an independent tax advisor.

INTELLECTUAL PROPERTY

© Copyright Barclays Bank PLC (2015). All rights reserved. No part of this document may be reproduced or redistributed in any manner without the prior written permission of Barclays.

Barclays Bank PLC is registered in England No. 1026167. Registered office 1 Churchill Place, London, E14 5HP.