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In Charts: The Volkswagen Emission Scandal

VW installed 'defeat devices' to lower car emissions in EPA tests in the face of stiff competition, and now faces the biggest crisis in its recent history.

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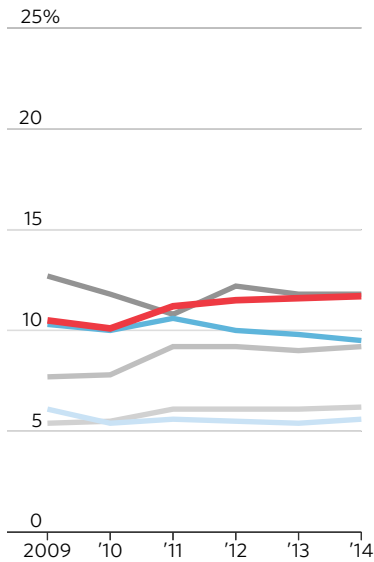
Volkswagen has aims to become the world's largest auto maker and is close to overtaking Toyota, but it has had trouble cracking the U.S. market.

Market share in each region of top auto makers, ranked by global light-vehicle sales in 2014

Toyota Volkswagen Hyundai Nissan GM Ford Motor Co Fiat Chrysler

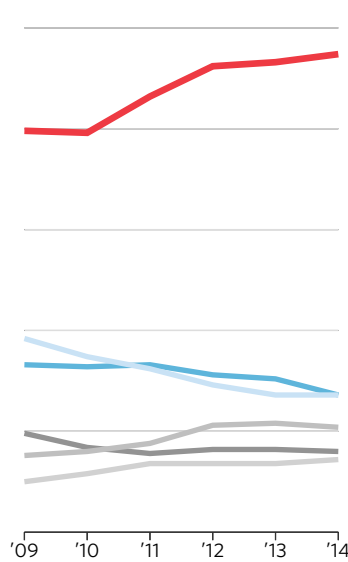
World

2014 sales: 85.2 million



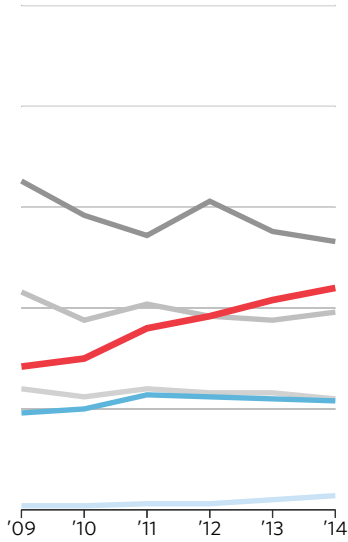
Western Europe

14.4 million



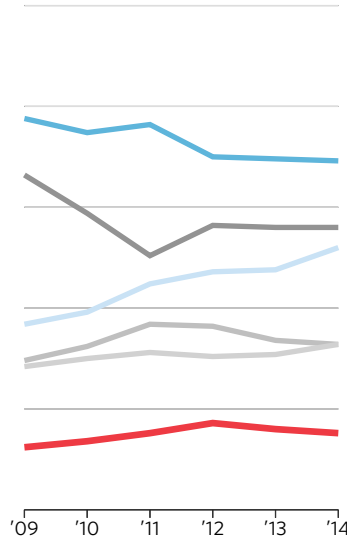
Asia Pacific

36.3 million



North America

18.4 million



Source: Euromonitor

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Now it is facing a scandal over breaking EPA emission limits, which are lower than European standards.

Results of research at West Virginia University into average levels of NO_x (nitric oxide and nitrogen dioxide) emitted by two VW cars.

U.S. EPA standard: **0.04 g/km**

Current European standard*: **0.08**

Old European standard: **0.18**

Highway driving in Los Angeles

VW Jetta: **0.6**

VW Passat: **0.3**

Urban driving in downtown Los Angeles

0.8 **1.0**

Rural and uphill/downhill driving in Los Angeles foothills

0.7 **1.5**

Urban driving in downtown San Diego

0.7 **1.5**

*Effective this month. Note: One test was excluded due to incomplete data.

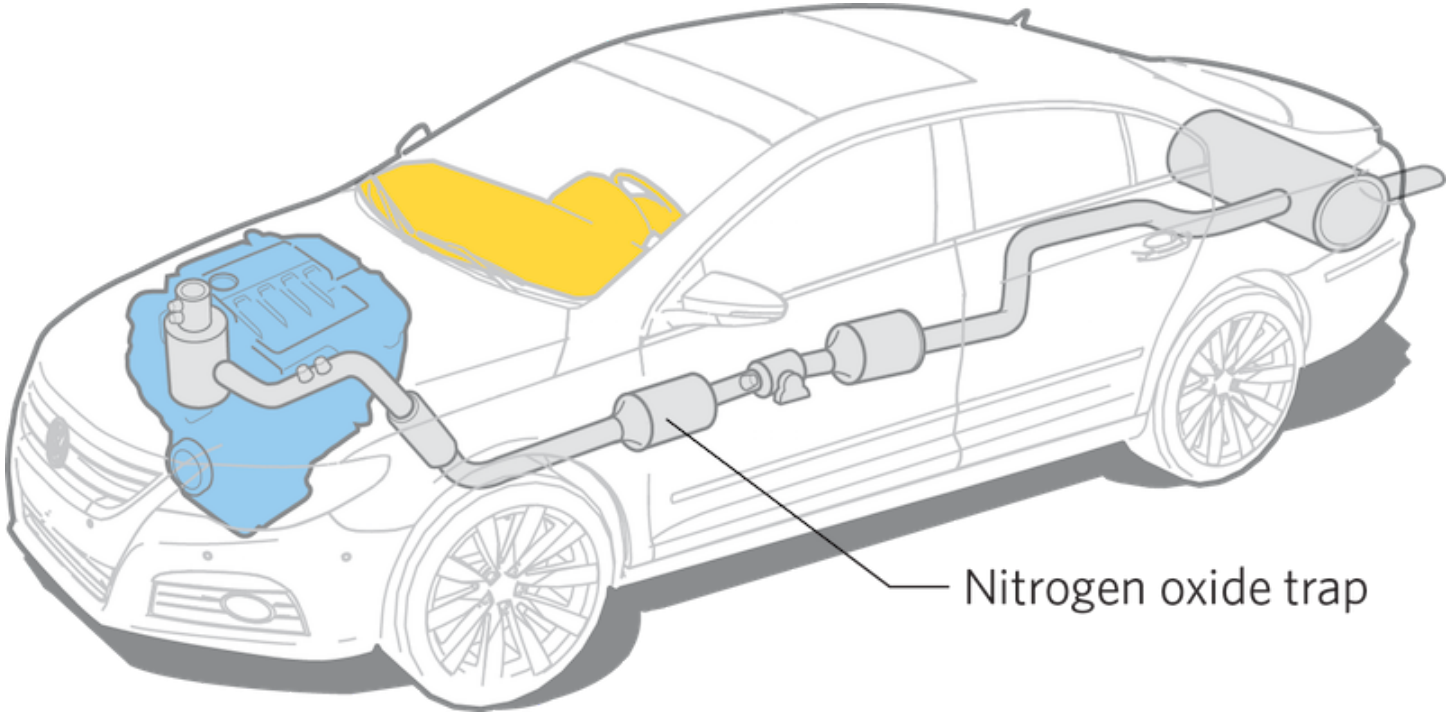
Sources: West Virginia University (emission levels); Evercore ISI Research (emission standards).

Related: EPA Accuses Volkswagen of Dodging Emissions Rules » (<http://www.wsj.com/articles/epa-accuses-volkswagen-of-dodging-emissions-rules-1442595129>)

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VW has admitted to installing a 'defeat device' to lower emissions in tests.



Engine Volkswagen said the software discrepancy has occurred on Type EA 189 engines used in around 11 million vehicles. Diesel engines use a complex mix of sensors and filtration methods to track and limit emission levels.

Controls Information gathered by sensors measuring steering and accelerator pedal inputs are suspected to have been used to determine when the cars are being tested for emissions, triggering more thorough treatment of exhaust.

Under the car Modern diesel cars use a mix of devices to meet pollution limits, but they can hamper fuel consumption and other performance, automotive engineers say. Nitrogen oxides in some circumstances could be filtered more heavily based on car configuration.

Exhaust Regulators and the Center for Alternative Fuels, Engines and Emissions at West Virginia University detected variations in emissions on Volkswagen cars when they were being operated on the road to those emitted when being tested.

Note: Diagram not to scale
Sources: the company; U.S. Regulators; Center for Automotive Research

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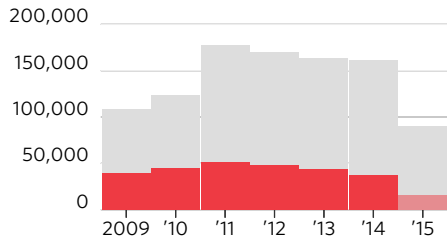
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The scandal could threaten the diesel models of its key brands.

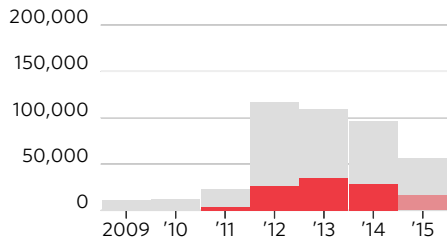
Diesel sales as a proportion of **total series sales** in the U.S.



Jetta

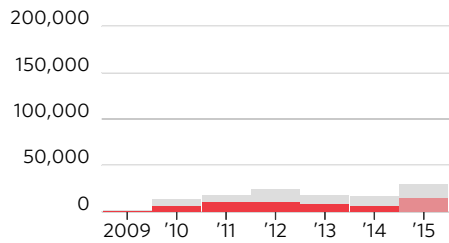


Passat

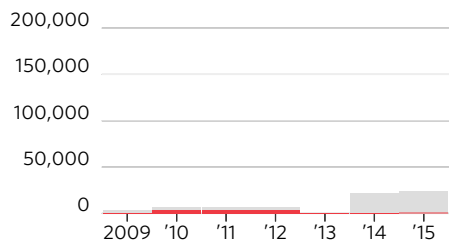




Golf

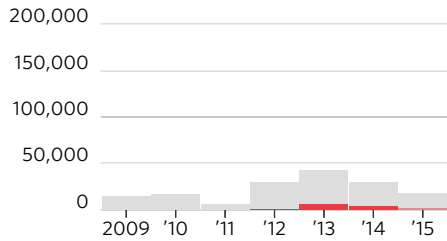


Audi A3





Beetle



Note: 2015 is to August

Sources: WardsAuto InfoBank (sales); the company (photos)

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Volkswagen and the car industry as a whole are central to the Germany economy.

274,000

Volkswagen employees in Germany

600,000

Volkswagen employees globally

1 in 7

Number of German jobs dependent on the car industry

20%

Amount the state of Lower Saxony owns of Volkswagen

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