



Some Changes in Motoring Characteristics: A comparison of the late 1950s and today



Royal Automobile Club Foundation

**Motoring Towards 2050 – Roads and Reality
Background Paper No.2**

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In December 2007 the RAC Foundation published its report on 'Roads and Reality' along with a supporting Technical Report. As part of this exercise a series of background papers were produced and these are to be published during the course of 2008. This is the second of the series.

The Royal Automobile Club Foundation for Motoring Limited is a charity established to promote the environment, economic, mobility and safety issues relating to the use of motor vehicles.

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Introduction

It is almost fifty years since the first section of motorway was opened in Britain. The development of the motorway, along with improvements to other aspects of our road system, has markedly changed the motoring experience over the last half century. However the road network, although crucial, is not the only factor that shapes the quality and quantity of motoring. This paper looks at some other important aspects of the motoring experience that have changed over the last five decades and in particular cars themselves. As well as changes in the technology and performance of cars, the paper looks at their availability, the costs of cars and motoring, how motoring safety has changed. It does not consider traffic conditions.

This is a discussion paper on the wide subject of motoring developments. If any readers would like to suggest corrections or additions please send them to david.bayliss5@btinternet.com.

The availability of cars

The number of cars has increased from 3.44m in 1956 to 26.51m in 2006: a 7.7 fold increase whilst the population grew from 50.1m to 58.9m. Consequently the numbers of cars per thousand people has increased from 69 to 450. Today three out of every four households have a car and a third of households have two or more. In 1956 only 22% of households had cars and only 2% were multi car owners. As there were fewer cars, a six-digit index numbering system sufficed unlike today's (second) seven digit system.

Eight billion passenger kilometers were covered by motorcycle in 1956 (in comparison to 91 billion passenger kilometers by car), which accounted for 3% of total travel. Since this time motorcycle usage peaked in the early 1980s, but mode share has decreased with time. Motorcycles currently account for 6 billion passenger kilometers and 1% of total travel.

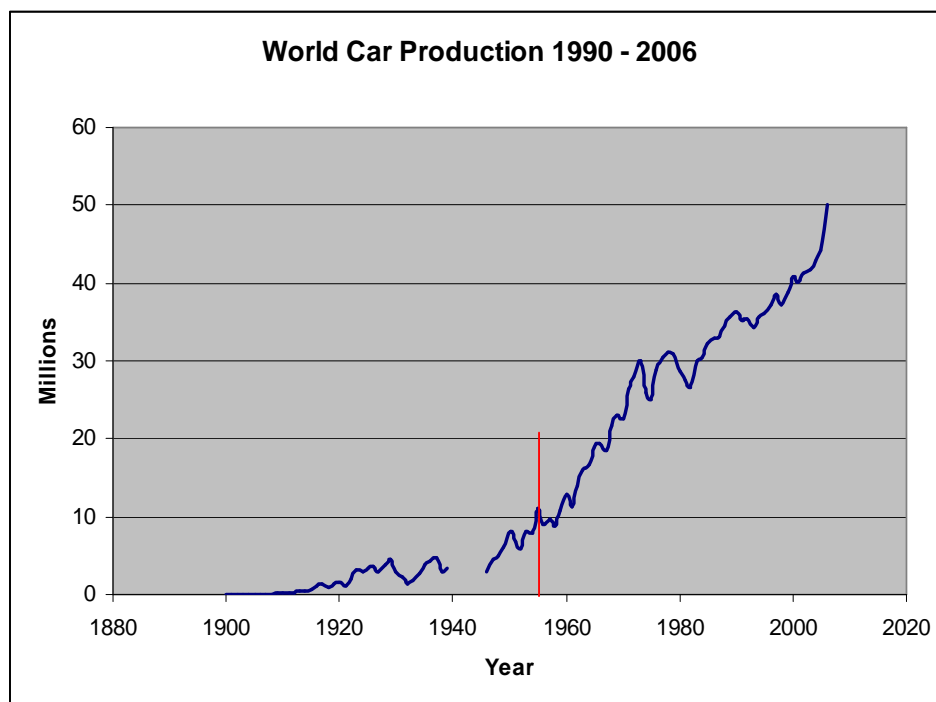
Car availability depends on having access to a vehicle and being able to drive it. Today four out of five men and almost two out of three women have driving licenses. Thirty years ago the figures were 70% and 30% and fifty years ago the figures were 35% and less than 10%. Looking back to 1956 there were 8.044m full driving licences held compared with 33.7m in 2006 indicating that the stock of drivers has grown more than fourfold. This has also meant that most of today's population grew up in families with cars and drivers. Today's elderly are more likely to drive with three quarters of men over 70 with licences compared with a third in the mid 1970s and about 19% in the late 1950s. For women the current figure is that nearly one third of over 70s are driving, the figure was about one in twenty in the mid 1970s and in the late 1950s it was very rare for an elderly woman to drive.

As a consequence we use cars more: up from 925kms/head/year in 1956 to 6,830 in 2006. This has increased the proportion of cars in traffic from 57% to 80% and resulted in a small increase in the amount of solo driving (average car occupancy falling from 1.66 to 1.58 between 1985/6 and 2006).

Changes in car technology

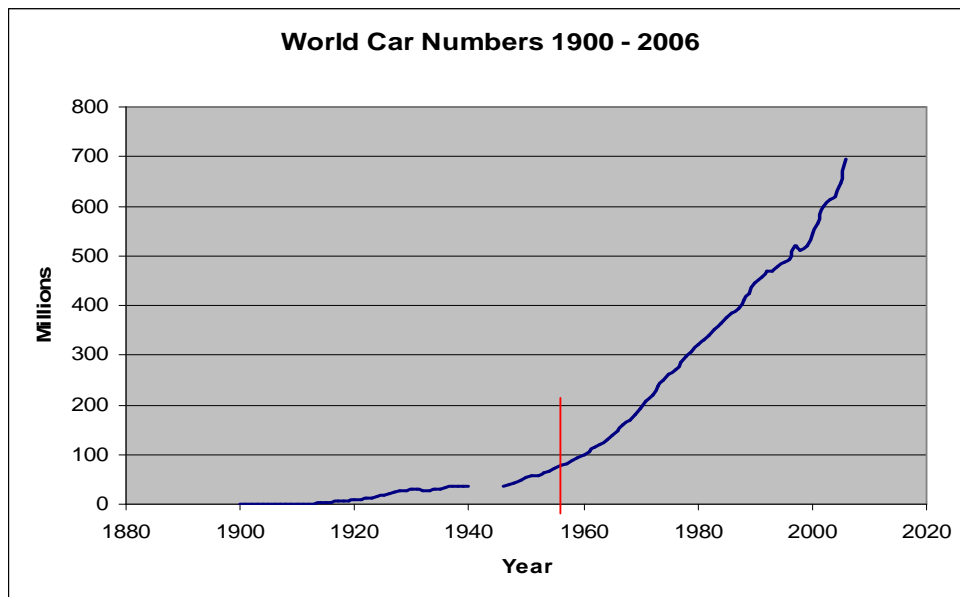
Today's car is the product of over a century of development and innovation in both vehicle technology and production methods. Since its invention about 1.6bn cars have been made (See: Figure 1) – 95% of them in the last fifty years - in a usually competitive and technologically innovative environment. There are currently over 700 million cars on the world's roads; more than eight times the number in the late 1950s (See: Figure 2). This has resulted in a range and quality of product that provides a unique and effective means of transportation. The last fifty years have seen major developments in car technology: building on the previous half century. Elsewhere in the field of transportation, it is probably only aviation where such a wide range of innovations have occurred.

Figure 1: World Motor Car Production 1900 – 2006



Source: MVMA 1991 & 1998 and BTS (2006)

Figure 2: Growth in the World Car Parc 1928 - 2006



Source: MVMA 1991 & 1998, SMMT (2008) and author's estimates

Table 1 shows some of the improvements that have occurred to cars in the last half-century. This is purely illustrative, as the range of vehicle types was large in 1956 and today. However it serves to highlight most of the key changes that have taken place over the intervening fifty years and gives a feel for just how different modern cars are from those at the beginning of the motorway age. The appendix provides a fuller list of features that can be found on contemporary cars that were rare or unknown in the late 1950s.

It is clear that there have been major improvements in car technology over the last fifty years. A stark example of how much cars have changed in the intervening period is that in the late 1950s many cars were still equipped with a manual starting handle for cold mornings when the battery was unable to turn the engine fast enough for it to fire. Also in the mid 1950s external mirrors were rarities, some cars still had turn indicators formed of small illuminated arms that swung out from the doorpost to indicate the direction of turn and many maneuvers were indicated by drivers' hand signals. There was comprehensive road signage but it was not until the mid 1960s that clear national standards were implemented.

Car manufacturing has altered dramatically with consolidation and globalization changing the face of the industry. As well as the uses of new materials there have been remarkable developments in production methods with the widespread use of robots and other computerized production methods yielding improvements in quality and reliability that would be difficult for a motorist of the late 1950s to credit.

Table 1: Some Key Changes to Motor Cars between 1958 and 2008

FEATURE	1958	2008
Source country	Vast majority produced in Britain.	Broad mix from UK, Europe and rest of the world.
Steering	Usually manual: front wheel only so heavy at low speeds.	Usually power assisted and speed sensitive on some models.
Brakes	Usually manual with hydraulic operation of drums - prone to fading with heavy use.	Usually power assisted with dual circuit hydraulic operation of discs/drums and ABS and sometimes more – fade resistant.
Suspension	Independent front wheel - but usually rigid back axles.	Sophisticated all wheel independent suspension with self-leveling and adaptive/variable systems on some vehicles.
Rims	Pressed steel typically between 13 – 16 inches in diameter; width typically 12 – 14 cms.	Pressed steel but with proportion of aluminium: 15 – 18 inches in diameter with widths in the range 16 – 24 cms.
Tyres	Canvas cross ply body, with inner tubes; usually with low hysteresis rubber.	Wider tread, tubeless, steel radial body with higher hysteresis rubber and butyl linings. Automatic pressure gauges and run flat facilities also available. Lower depth to width ratios.
Body Configuration	Saloon, estate, convertible and sports.	Saloon estate, convertible, sports, hatchback, multi-purpose vehicles (MPVs) and sports utility vehicles (SUVs).
Lights	6v/12v tungsten bulbs lights fitted to front and rear only. Typically two luminaire headlights.	Voltage now all basic 12v. Halogen and high voltage xenon also available on some models. LEDs appearing on some up market models. Typically four or more luminaire headlights. Indicator repeaters.
Engines	4 or 6 cylinder in line; side and overhead valve with long stroke and low compression ratio; single or twin carburetor. Usually one camshaft (push rods still used on some cars) and two valves per cylinder which were noisy. Power typically 30 – 40 bhp/litre capacity.	Squarer bore/stroke, faster revving with higher compression ratios and fuel injection. Twin cams and multi valve cylinders common. Greater use of V layouts. Electronic ignition control, engine management common and much higher performance engine lubrication – quiet. Power typically 60 – 80 bhp/litre of capacity.
Auxiliary drive	Rubberised friction fanbelt – source of unreliability but easy to check and replace.	Toothed durable belt – much more reliable but difficult to check and failure can lead to major engine damage.

Transmissions	Manual clutch. Gear change usually manual with 3 or 4 forward gears. Gear lever mounted between front seats or on the steering column. Drive usually to rear wheels – limited slip differentials uncommon.	Usually 5 or more forward gears; automatic transmission is now common. Gear lever between front seats or on the dash. Paddle controls on steering wheel on some models. Front and 4WD increasingly commonplace. Limited slip differential now basic and sophisticated traction control systems available.
Heating and air conditioning	Often non or recirculatory heater to front seats/screen.	Inducted air heating now standards and air conditioning common. Warm/cool air distributed more widely through salon. Some vehicles have heated seats and screen/mirror heating.
In car entertainment	Radios in some cars.	Radios standard and tape/CD/DVD/MP3 audio players common. In car TV and DVD viewing on prestige models.
Ancillary equipment operation	Typically manual and by direct switching.	Often electric (e.g. windows) or automatic (e.g. lights and windscreen wipers). Many new features have been introduced such as windscreen washers, self-dimming mirrors and under-floor pans.
Driver aids	Warning lights for certain malfunctions.	Warning lights for certain malfunctions and more sophisticated diagnostics. External temperature indicators on many cars along with cruise control, parking sensors and intelligent speed control on some. ABS and ESC provide a measure of automatic protection against traction loss.
Communication and Navigation	Radio in some vehicles, roadside signage and road maps. Route itineraries were available from the RAC and AA through the post.	Roadside signage, traffic broadcasts, RDS, Variable Message Signs on busy roads. Satellite positioning and automated navigation. Some SatNavs have congestion response capabilities. Most drivers have personal or car fitted mobile phones and automatic vehicle tracking is used for fleet management and vehicle security. Faxes and Internet access can be provided for business use. Tele-diagnostics provided on some premium models.

Maintenance and servicing	Frequent with many manual tasks. Large number of local garages capable of servicing a variety of models. Roadside services provided by AA and RAC.	Many systems now sealed for life with automatic diagnostics for others. Mechanical durability much increased. Breakdown services through competitive franchises. Servicing required by specialist centres but less frequently.
Exhausts	Simple mild steel pipes and baffle boxes - prone to rust and needed frequent replacing.	Stainless steel systems (long life) with catalytic converters to reduce noxious emissions.
Specialised occupant protection features	None	Crumple zones, padded interiors, seat belts and air bags in addition to ABS etc.
Bodywork	Limited use of streamlining so high drag factors, lightly curved glass used only on front and rear screens. Bodywork protection primitive mainly using coats of paint – rusting and body deterioration a major problem. Hardly any use of lightweight plastics.	Modern cars are streamlined so can travel at speed with less air resistance. The extensive use of curved glass allows drivers greater visibility. Bodywork protection now sophisticated using a variety of sealants as well as high quality paint and lacquers applications – rusting and body deterioration not a problem. Extensive use of lightweight plastic.
Fuel and lubrication	Petroleum spirit with the addition of tetra - ethyl lead being introduced to allow higher compression ratios. 'Natural' oils with limited life and viscosity range.	Customised lead free petrol and increasingly diesel. Fuels contain additives to prevent pre- ignition ('pinging') prolong engine life; reduce maintenance, fuel consumption and noxious emissions (lead is no longer an additive). Bio fuels and LPG now growing in popularity. Both natural and synthetic oils with additives to give greater engine protection, viscosity range and reduce carbon deposits.
Cooling	Open systems with integral header tank – boiling over could be a problem.	Semi sealed system with coolant reservoir to prevent boiling over - additives inhibit corrosion.
Dimensions	Typically 4400mm to 5400m long and 1750mm to 2050mm wide.	Typically 3920mm – 5000mm long and 1900mm to 2100mm wide.
Weight	Typically 750kgs - 1650kgs.	Typically 1000kg – 1700kgs.

Source: Authors own

Cars are now more comfortable and easier to drive. In the mid 1950s opening a car bonnet provided a view of much of the engine and a view through to the road beneath. Today the engine is sheathed leaving open only those parts that need to be accessed for routine maintenance such as the oil dipstick, filler cap and coolant header tank (in the mid fifties radiators were accessed directly through a cap at the top) and today some models (e.g. the Audi A2) have their engine compartments completely sealed. Figures 3 and 4 visually illustrate some of the differences mentioned.

Figure 3: A 6 cylinder 1958 Vauxhall Cresta



Figure 4: A 6 cylinder 2008 Vauxhall Vectra



The appendix to this discussion paper contains a list of innovations over the last fifty years of which a typical car can expect to have benefited from about fifty. Improved suspension, noise and draft insulation, fresh air heating, air conditioning and better seating have made cars more comfortable. Enhanced driver vision, braking, steering, larger wheels and power assistance has made the car easier to drive. More powerful and tractable engines, improved and automatic gearboxes, servo assisted powerful brakes and much improved tyres provide a better, and more controllable, performance.

Better vision, braking and traction make for lower crash rates and crumple zones, seats belts and airbags give greater protection in the event of a crash and a wider range of body types has increased vehicle utility.

The most dramatic changes in vehicle technology has been in the extended use of electronics to monitor and control vehicle operation and for occupant communication both generally and with specific motoring services. High quality radio and CD players provide in vehicle information and entertainment but more significantly mobile phones, internet access and satellite links have meant that being in transit no longer means that car users are out of touch with their homes or offices, which greatly reduces the disutility of being in a car. These range of 'in vehicle' communication media can however distract from the prime task of driving and care must be taken to avoid using these technologies in a way that is illegal and increases the possibility of collision.

Satellite location and navigation systems take the uncertainty out of route finding and, if used properly, can aid safety in reducing the need to seek roadside prompts when manoeuvring at junctions. The most recent systems are able to make use of real time information on traffic conditions and respond by re-routing vehicles to avoid severe congestion so providing benefits to both the vehicle in question and traffic more widely.

Changes in car performance

Tables 2 and 3 compare a few key characteristics of new cars on the British market in 1958 and 2008.

Table 2: Some performance characteristics of ccrs for sale in Britain in the late 1950s

MODEL	Morris Minor	Ford Consul	Jaguar Mk VIII	Morgan +4 TR2	Rolls Royce Silver Cloud
Type	Small 4 dr	Family Saloon	Executive Saloon	Sports	Luxury Saloon
Price	£603	£781	£1,830	£961	£5,079
2008 Price ¹	£10,443	£13,526	£31,693	£16,642	£87,963
Engine ccs	918	1,703	3,442	2,138	4,887
BHP	37	59	210	100	-
Max speed	73 mph	80 mph	107 mph	100 mph	103 mph
0 – 60 mph	25 secs	23 secs	11½ secs	10½	-
Mpg	40	22	18	28	14½

¹ Using RPI index change Feb 1958 to Feb 2008 of 1,731.9

Table 3: Some performance characteristics and prices of cars for sale in Britain in 2006

MODEL	Vauxhall Astra	Ford Mondeo	Jaguar XJ	Morgan Roadster	Rolls Royce Phantom
Type	Small 4 dr	Family Saloon	Executive Saloon	Sports	Luxury Saloon
Price	£15,065	£16,395	£58,142	£36,190	£265,600
Engine ccs	1,598	1,999	4,196	2,967	6,749
BHP	113	145	300	204	453
Max speed	116 mph	130mph	155 mph (l)	134 mph	149 mph (l)
0 – 60 mph	11.4 secs	9.9 secs	6.3 secs	4.9 secs	6 secs
Average	41½	36	25	28	18

The indication (l) means that the top speed is limited to this level.

Typically cars have a top speed of 30% to 50% or so more than in the late 1950s and the increase has been greatest amongst the more popular types of vehicle. Practically any car (and van) can now cruise comfortably at the 70 mph maximum speed limit so high top speeds are less important to traffic capacity than better accelerating and braking. When the first motorway was opened most cars on the road would have struggled to cruise at 70 mph. It was for this reason that speed related breakdowns were much more common in the early days of the motorway and, despite the lower traffic densities, the need for hard shoulders was much greater.

The ease with which cars can now cruise at high speeds makes exceeding speed limits a much greater possibility and the use of cameras means the chances of detection are much greater. In the late 1950s the chances of being prosecuted for speeding were 1 in 750k kms in 2005 the chances were 1 in 215k kms.

Acceleration (and braking) was much inferior in the cars of the late 1950s to those of today. Indeed the motoring magazines of the day commonly used the time taken to get from rest to 30 mph as the standard measurement because some cars struggled to make 60 mph. Using the 0 – 60 mph test a modern car typically gets up to speed in about half the time of its late 1950s predecessor.

Better acceleration and braking mean that cars can negotiate traffic lights, roundabouts and junctions more nimbly; can overtake slower moving vehicles more readily and are impaired less by hills and sharp curves. Steep hills presented problems for fully laden low powered cars in the 1950s. Today few car drivers would regard steep gradients as a significant factor in making driving decisions.

Methods of measuring fuel consumption have changed since the 1950s but the figures in tables 2 and 3 give an idea of relative rates. Despite being heavier, modern cars have a lower fuel consumption as well as much better performance. Improving fuel consumption and reducing carbon emissions has become a major aim for automotive development and over the last ten years, partly as a result of the increased popularity of diesel engines, new car fuel consumption has fallen by 15% from 34.4 mpg to 40.4 mpg.

Car costs

Car prices have increased by between 20 and 50 times their nominal prices in 1958; the more expensive the model the greater the price increases. Over this period average gross earnings have grown from £12.80 per week to £570 – almost 45 times. Petrol prices have increased twenty fold from 5.2p/litre to 105p/litre. Other prices have increased also – by about 17½ times over the last fifty years. Car prices have therefore risen faster than prices generally but not as quickly as earnings. In 1958 it would have taken the average earner about 55 weeks' wages to buy a family saloon compared with about 29 weeks currently.

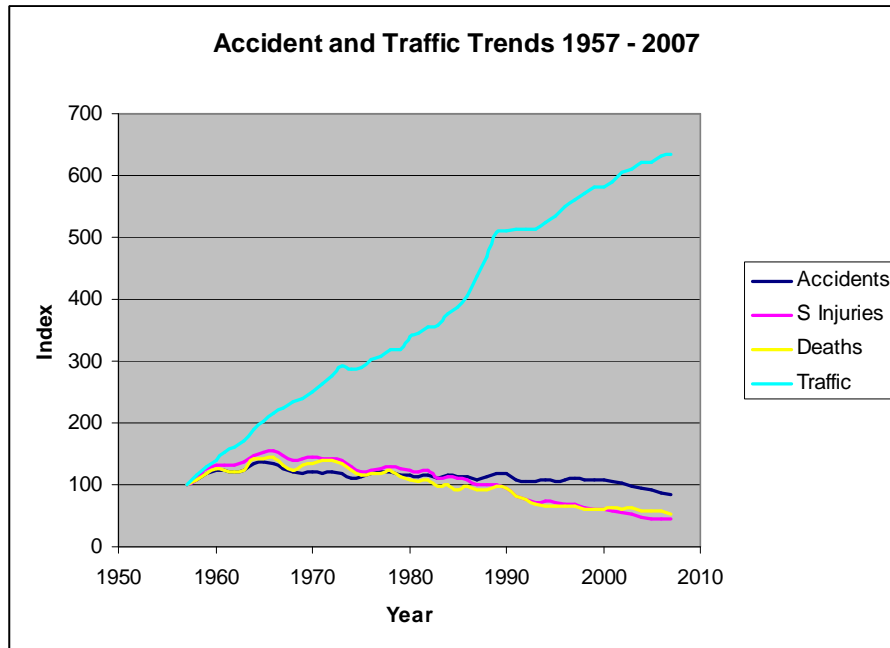
Running costs are also rather different. In 2007 the average running cost for a mid priced petrol engine car doing ten thousand miles a year was 35p/km. At this cost an average weeks earnings would have purchased 1,580 kms of motoring. In 1970 the costs for a broadly comparable vehicle was 3.6p/km and an average weeks earnings would have purchased 720 kms of motoring. Motoring has therefore become much more affordable over the last thirty-eight years.

Motoring safety

The chances of being killed or injured on the roads have reduced substantially. Whilst traffic has increased more than six fold over the last fifty years the numbers of deaths and serious injuries have fallen (See: Figure 5).

This reduction in accident rates is a result of vehicle design, vehicle maintenance, improvements to the road system and tighter regulation of driver behaviour. The compulsory roadworthiness test was not in force in 1958 - it was introduced two years later but only for vehicles more than ten years old – not three as at present. Adult vehicle occupants must now wear seat belts and children must use special seats or boosters. Although driving when drunk has been against the law since the beginning of the last century, now there are strict limits on the amount of alcohol permitted in the driver's bloodstream coupled with simple and effective roadside detection. More recently the use of mobile phones by car occupants has been restricted. These regulations have made a major contribution to reducing road deaths.

Figure 5: Trends in Road Accidents and Traffic 1957 - 2007



Roadside facilities

In the late 1950s most garages were small and provided fuel, repairs and servicing (See: Figure 6). Taxi operations also tended to be based at local garages. Aside from garages roadside picnicking provided drivers with an opportunity for a break from driving.

Figure 6: A Service Station in the 1950s (courtesy of ESSO)



In the 1950s garage most hand fuel pumps had largely been replaced by electric pumps but the fuel was dispensed by an attendant and paid for by cash. It was also possible (and indeed frequently necessary) to buy a pint or half pint of oil to top up the engine and water and air was also available. Fuel was usually of a single octane value and there were some garages that provided fuel to cars at the roadside from hoses mounted on overhead gantries. Garages did not have automatic car washes and only the wealthiest of drivers would have their vehicles hand washed at the local garage – that is if they did not have a chauffeur. At the dawn of the motorway era cars were much less complex than they are today and there were far fewer customised components and systems so it was possible for a good local garage to service and repair a wide range of models and a ‘handyman’ could carry out most routine servicing and repairs on his car at home.

This has changed and filling stations rarely provide any motoring services other than fuel, air, water and car washes. In addition to these motoring services most filling stations provide corner shop services and some provide catering (See: Figure 7). The motorist of the late 1950s would find it very strange to be able to buy a bottle of wine at his local garage but not a can of grease or set of spark plugs! Car servicing has become a much more specialized affair as specialist diagnostics, tools and parts mean that it is normal for motorists to have their cars serviced at a specialist garage – often linked to the local dealership of that particular make.

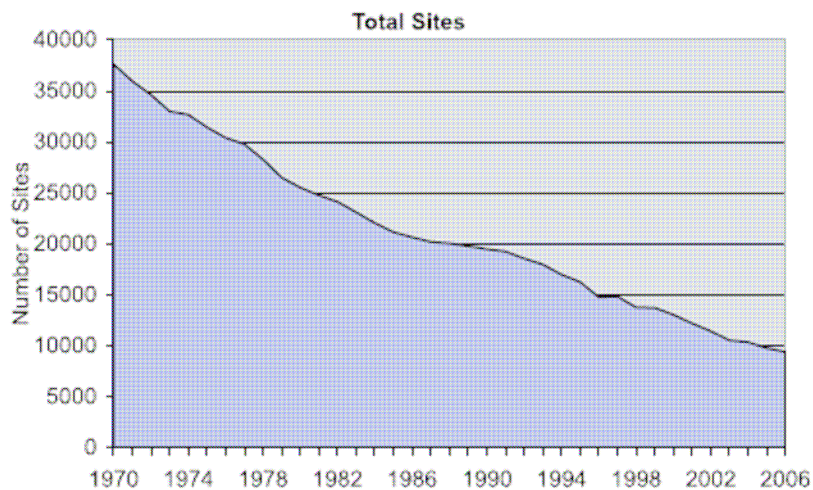
Figure 7: A Service Station in 2008 (courtesy of Williams Photography)



For those people who serviced and repaired their own vehicles buying spares meant a trip to an independent motor manufacturers or queuing with tradesmen at a dealers stores. There were no motoring large motoring parts stores as there is today.

The number of filling stations has fallen dramatically since the late 1950s. A reduction of three quarters has occurred since 1970 and over recent years the number has been reducing by about 600 annually (See: Figure 8). Since 1970 the number of cars has increased by a factor of $2\frac{2}{3}$ which means that the ratio of cars to filling stations has grown by a factor of over 10; making Britain the leanest filling station provider in Europe. This change has seen the disappearance of some familiar names such as *Cleveland* and *Regent* and the appearance of some new ones such as *Jet* and *Tesco*. Indeed supermarket filling stations, which first appeared only twenty years ago, now account for 37% of all motor fuel sales in the UK. Consequently filling stations are much bigger than the old local garage and more automated, with self-service almost universal and card payment becoming increasingly common.

Figure 8: Trends in the Number of UK Filling Stations



Source: UKPIA Statistical Review 2007.

Some of the largest fuelling facilities are to be found in Motorway Service Areas (MSAs) which, of course did not exist prior to the opening of the first section of the M1 in 1959 (Watford Gap Services opened November 1959).

The motorist could expect to have less trouble parking his/her car in 1958 than today with the number of cars at 13/km of road compared with 67/km today making kerb space much more freely available. Although parking restrictions had existed since before the Second World War it was not until the late 1950s that traffic pressures meant they started to become commonplace on main roads and in town centres. The first parking meters appeared in Mayfair in 1958, Traffic Wardens and Fixed Penalties in 1960 and wheel clamping in 1983. During this time the police started to use private contractors to tow away vehicles parked dangerously. The consequence of the growing demand for kerbside parking is that, in most town centres and many other busy destinations, parking has to be paid for whether on the street or in off-street car parks.

A third of people experience difficulty with access to local facilities and of these almost a quarter refer to lack of parking as a source of such difficulty. In London, where parking can be particularly difficult, an average 33% of the time taken for journeys in the centre is spent parking and walking and even in outer London this can average as much as 12% and on an average day. Another parking phenomenon that has appeared over this period is that of park and ride. With the growing number of car owners the railways have provided car parking at many of their stations (often on former coal) sidings) so that this has become an important form of commuting into large city centres. More recently dedicated bus and light rail park and ride facilities have been built.

Owning a garage at home was unusual in the late 1950s, but residential parking was not a problem except in, and close to, the centres of the larger cities. Today 43% of homes have garages and 67% have some form of off street parking. However one home in seven does not have satisfactory parking available, which tends to be particularly the case in urban areas. Whilst multi store off street car parks existed in the late 1950s (indeed they first appeared in Britain in the 1930s) they were uncommon. Where off street parking was provided it was usually at ground level with rudimentary facilities. The 1950s saw the introduction of planning requirements to provide off street parking as part of commercial developments so the supply of off street workplace and visitor parking steadily grew.

Conclusions

Over the last half century the number of cars has increased almost eightfold and the number of drivers more than fourfold. Driving is now much more widespread between the sexes and age groups than it was in the late 1950s. There have been major technological changes in the automotive product, its means and location of manufacture and over the last fifty years: some of the most important of which have been identified in this paper. The results of these are that driving is safer, noise levels are lower, exhaust emissions are much reduced, fuel consumption has improved and on road performance is much better. Riding in cars is also much more comfortable than it was fifty years ago.

Improvements in safety have been particularly noteworthy with the fatality and serious injury rates falling by one order of magnitude. Ranking the scale of improvements, emissions come top, safety second, performance third, economy fourth and price last. The off road facilities for motoring have also changes markedly. The local multi functional garage has largely disappeared to give way to a range of dealership showrooms and service stations that rarely sell fuel. Fuel is instead bought from filling stations, which frequently support a 'mini-mart' and automated car wash. DIY servicing is now less common because of the complexity of modern vehicles and what motoring accessories and parts are needed they are no longer bought at small motor stores but at a large motor product supermarket.

Growing parking difficulties have been an important feature of motoring over the last half century. Whilst the parking stock has grown it is frequently too little to meet demand in dense areas and indeed parking policy is now used as an instrument of traffic restraint. The appearance of parking meters, wheel clamping and tow trucks are testimony to this for on street parking and off-street parking has been expanded with the widespread provision of workplace and visitor parking as well as park and ride.

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APPENDIX

FIFTY OR MORE INNOVATIONS FOR MOTOR CARS 1958 -2008

Active suspension systems
Air bags
Air conditioning
Aluminium wheels
Anti-lock braking systems (ABS)
Automatic transmission
Alternators
Automatic radio/CD volume control
Catalytic converters
CD/DVD player
Central Locking
Cigar lighter/12v outlet
Corrosion resistant bodywork
Cruise control
Diesel engines
Disc brakes
Dual circuit brakes
Electric sun roof
Electric windows
Electric wing mirrors
Electrically heated rear windows/windcreens
Electric seat heaters
Electronic engine management
Electronic stability control
Emergency hazard warning lights
Energy absorbing steering column
Fuel injection
Four wheel drive
Frost warning system
Headlight wipers
Hybrid engines
Independent rear suspension
Limited slip rear differential
Metallic paint
Mobile phones
MP3 player
Multi-lamp headlights
Parking sensors
Radial tyres
Rear view mirror compass
Remote locking
Retractable wing mirrors

Satellite navigation
Sealed batteries
Sealed for life bearings
Sealed fuel tanks
Seat Belts
Self adjusting brakes
Self adjusting tappets
Self dimming interior mirrors
Servo assisted brakes
Servo assisted steering (some speed sensitive)
Side impact protection beams
Solid state ignition distribution systems
Steerable headlights
Streamlined body moulding
Synthetic oils
System diagnostics
Television
Three way adjustable seats
Traction control
Trip computers
Tubeless tyres
Two stage door latches
Unleaded petrol
Variable speed electric windscreen wipers
Vehicle alarms
Vehicle immobilisers
Vehicle tracking
Wider variety of body styles

There are more than fifty innovations as not all cars will have all these features; however most will have fifty or more compared with the 'equivalent' vehicle in the late 1950s.