



Newsletter

Spring 2020



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GAM urgently needs a new
Newsletter Editor

Editorial matters

We need a new GAM Newsletter Editor. You may have noticed this edition is a little shorter than normal because the Chairman is holding the Editor fort for now. The GAM Newsletter is published Quarterly (4 e-versions, 2 of them hard copy). There is an established format and template (Editor is free to refresh this). The main tasks are editing input from members and IAM-RS, soliciting articles and researching subjects of interest. Please contact if you are interested or have questions. Editor@guildford-IAM.org.uk .

Welcome to the latest edition of our GAM Newsletter. In this edition we have GAM reports and association information, articles of interest and guidance generated by IAM RoadSmart. This edition has been sent to members as a pdf e-Newsletter and hard-copy. When you receive the e-version, please try printing it if you want to. In your pdf print dialogue box, you should see options to print it as an A5 booklet, or A4 double/single sided.

Remember that we want to hear from you..... Letters, comments and articles should be sent to editor@guildford-iam.org.uk .

How about a better driving course as a Christmas or birthday present for a partner or family member?

If so, please put them in contact with us, membership@guildford-iam.org.uk .

Editor's small print

Please note that the views and comments herein are published without prejudice, being those of the writers and not necessarily those of the Guildford and District Group of Advanced Motorists or IAM RoadSmart.

Disclaimer: Driving is never a black and white activity, but full of grey areas, therefore neither GAM or IAM RoadSmart are liable for any consequences you may experience as a result of reading our advice. You are the driver. You should be in control of your vehicle at all times.

Data Protection Act. Members and Associates are reminded that names, addresses, telephone numbers and membership details are stored on computer files to assist with the management of the group and the distribution of Guildford Group correspondence. We do not pass your details on to anyone else.

Letter to the editor

Dear Editor,

Smart motorways

I have a natural aversion to anything that is described by marketing people as 'smart'. I am never sure if a smart phone isn't in fact just a small hand held computer that could make phone calls if you fancied using that old communication technology, and I have absolutely no time for the energy giants who are trying to pretend that smart meters will make a massive difference to the way we use electricity at home. It's all about them making profit from not having to employ someone to read the meters. No householder is going to check the meter before putting on the kettle – human nature simply is not like that.

"Smart motorways" fell into this category as well, until I started to think about what is actually happening. For the poor souls and their families who have lost family

members in motorway crashes, this is a very serious matter. So what has actually happened with the way these motorways have been re-constructed, and is it all the fault of the consultant or highways engineer who persuaded the government to follow this route?

Two main concerns have come to the fore. The loss of a hard shoulder to make a running lane is possibly not the brightest move we ever made. Apart from the cost and the construction disruption (caused partly because the original hard shoulders did not have the underlying strength to cope with moving HGVs, only stationary ones), the loss of a route for emergency vehicles is clearly going to cause delays in them reaching roadside events. The response is frequently that Highways England controllers will see or hear of the incident and close lanes by setting the overhead signs to a red 'X'. However, if the four lanes of the motorway are already solid with traffic when the red X is eventually displayed, where are the vehicles in lane one supposed to go to clear the lane?

Equally, if a vehicle breaks down and can actually reach lane one (but not get as far as a safe refuge at the side of the motorway), this again requires the Highways operators to see the problem and set the signs. So calling the motorway 'smart' is no such thing. The controllers have to be watching 100% of the time, scanning dozens of screens and spotting incidents as they arise, hoping that the incident is within range of one of their cameras. The whole process relies completely on human intervention and the judgment of a remote individual, and it's certainly not 'smart' in the way we might expect it to be.

But now look at the problem from the driver's point of view. If you are cruising down the motorway in Lane 1 and you see a vehicle slowing in front of you, you surely slow down yourself or make a safe lane change to lane 2 or 3. No-one purposely continues down a blocked lane towards impending disaster, or do they? Could they see well enough to spot the hazard ahead? Were they paying enough attention commensurate with the speed they were driving at? Were they distracted, heaven forbid, by the smart phone they had to hand?



As for the overhead gantries, do all motorway users know what red 'X' signs mean, and are they inclined to obey the instruction? Can they see well enough to spot the signs as they change many hundreds of metres away and make safe adjustments to their driving?

Is the pressure to increase motorway capacity by the cheapest possible means inappropriate? Surely designers of any product or system have a reasonable expectation that users will read the instruction manual and behave in a manner that most of us would consider reasonable? Why penalise the smart motorway designers and operators for the stupidity of motorists who drive with poor eyesight, don't follow simple road signs, allow themselves to become distracted whilst driving, and then blame someone else when it all goes wrong?

Despite this, I actually do believe that motorways are really only safer when there is somewhere to go if a problem arises, and a hard shoulder is frequently that solution. Not having a safety net with hundreds of other motorists around you is clearly going to lead to the occasional disaster. So I support a cessation of this solution to motorway congestion, but I can see that the short-term answer will be to put a solid white line down the right hand side of lane 1 and turn the red 'X' signs on permanently to return the lane to a hard shoulder.

Any offers for a better solution to the chaos that will ensue?

Paul Whitehead – GAM Member

Let's hear your views! Editor@Guildford-IAM.co.uk

Dear Editor,

I have just emailed the New Chancellor, Rishi Sunak and his senior Treasury Ministers to ask for a cut in the highest fuel duty in the world in their March 11 Budget. Please can you do the same. Since 2010 FairFuelUK has saved drivers over £100bn in planned tax hikes in duty and VAT through constructive and objective campaigning involving drivers like me.

Despite Boris Johnson's pre-General Election promise not to hike Fuel Duty, it could still be increased in the March 11th Budget. This is a real possibility as Boris's top advisor, Dominic Cummings, wants our Prime Minister to be seen as a green evangelist in the year the UK hosts COP26, the 2020 United Nations Climate Change Conference.

Disguising any tax increase as a benefit to the environment will be dishonest and indefensible. FairFuelUK has made it easy to email the Treasury. Go to this link and follow the instructions and we can add weight to FairFuelUK's efforts.

<https://fairfueluk.eaction.org.uk/cut-fuel-duty>

Many thanks, Peter Laub

Tuesday 3rd March 2020

Chairman's message March 2020

Another quarter has passed and we find ourselves in challenging times again wondering about COVID-19. It seems certain that there will be a barrage of conflicting advice. Probably culminating in an urge to be sensible and do a "Risk Assessment". This made me think about risk, its assessment and management in the GAM and IAM RS context. Those involved in any aspect of risk assessment and management will be clearly aware of the 5 phases of a classic risk assessment process. They are:

Step 1: Identify hazards, i.e. anything that may cause harm.

Step 2: Decide who may be harmed, and how.

Step 3: Assess the risks and take action (mitigation measures).

Step 4: Make a record of the findings.

Step 5: Review the effectiveness of the risk assessment, and mitigation measures.

Just imagine applying business style risk assessment to every driving hazard as it was met and if it were a potentially unique challenge or event. We would never go anywhere, and our little brains would be so consumed with the formality of the RA process that we wouldn't be able to drive safely. In employment situations accidents must be reported and serious events are reportable to relevant statutory authorities. My experience in construction was that we treated a 'near-miss' as seriously as an accident, we were just lucky no-one was killed or injured. A full investigation would be implemented, root-cause determined, corrective and preventative action taken (CAPA), training and re-training as required, and actions monitored.

In advanced driving, our life is somewhat simplified in that the IAM RS Advanced Driving Course (ADC) helps us become familiar with the most frequently encountered hazards, provides us with a structure for taking action through the system of car control (IPSGA) and of course the feedback is virtually instant (no accident or emergency action and the Observer run report). However, we must always be alive to changing circumstances and conditions that might change the nature, severity or frequency of the hazards we meet every day.



Pot-holes and water damage are obvious examples. Recently, I came across a more obscure and subtle trend that illustrates increased risk we perhaps should be aware of. I saw the following in both the Daily Mail and Times at the end of February 2020 under the headline **Drivers of expensive cars are more dangerous to pedestrians** “If the car you see in your rear-view mirror

tailgating you always seems to be flashy models, it is not coincidence. Owners of more expensive vehicles really are less considerate drivers, a study has found. People with expensive cars are less likely to stop at zebra crossings — possibly, researchers speculate, because they tend to be more self-absorbed and less capable of empathy. After observing nearly 500 drivers, psychologists discovered that the



value of their car was the best predictor of whether they would stop. The odds of them allowing a pedestrian to cross — as they are required to do by law — decreased by about 3 per cent for every £800 increase in how much their vehicle was worth.”

Your thoughts and comments would be appreciated. Safe driving as we look forward to Spring.

Gordon Farquharson GAM Chairman

Chief Observer's message



Next week, we are off skiing to the French Alps. I haven't skied for three years, so I thought it a reasonable precaution to go to the Hemel Ski Centre for a little practice before the big day. It is a 160 by 40 metre tunnel of real snow pitched at somewhere between a green and a blue run. I arrived with my chum who skis every year and is of a similar age to me. To say I was nervous would be an understatement. My hands were shaking and stomach churning.

Button lift - stayed on and disengaged at the top. Stood on the edge ski tips hanging over - it seemed like a huge leap of faith. Launched.... and made it down, slowly, but safely! Phew! A few more runs and old skills started to return. My chum then pitched in - Gra - move your arms forwards and stick your derriere out a bit more...! Which I attempted and lo and behold, my passage down hill was improved! I had just received some coaching in a stressful situation.

My point here is that as observers, we coach people to do what they do already but to try and help them to do it better - for themselves. To take away new skills and to practice them until they become proficient.

Apart from working with GAM to develop associates to become members, I am also contracted by IAM RoadSmart to professionally assess drivers in companies across the south. For each candidate I have 3.5 hours to do introductions, vehicle systems, a check drive, stop for a chat and a demonstration drive. The whole lot is brought together by my documenting the assessment with notes from the drive and development recommendations. To find a balance between instruction and coaching is sometimes hard to do within the constraints of time, but the act of 'telling' people what to do or how to do it can sometimes backfire on the trainer. Many learn through kinesthetics, or 'doing' something in order to perfect it, others need to read about it or look at diagrams. Finding all of this out in limited time is tough.

Driving brings many skill sets together - decision making, spacial awareness, technical understanding, mechanical sympathy, head on conflict, time management, and many more. Telling people how to do any one of these can land you in dangerous waters. The pupil having an interest in the subject helps and I always welcome a 'pull'

of information. Recommending that a pupil read up on the subject, watch the excellent 'Reg Local' advanced driving videos or ask an observer for some instruction before or during the run can all work to everyone's benefit. Using all methods can form an all round model in the pupil's mind as to how to self-improve. This must be supported by an 'ideal' model in the observers mind. Sadly driving is an imperfect science and best advice given can sometimes be wrongly received or misconstrued. This is seldom the case however, and most pupils receive wisdom well. A few argue the point and a few ignore all advice!

Now, I need my chum more than ever next week to help me get down some pistes in a safe way, whilst staying legal and also making progress. Wish me luck please...!

Safe driving everyone

Graham Ranshaw GAM Chief Observer – March 2020

Become an IAM Qualified Observer! Yes really. Want more information, then email training@guildford-iam.org.uk

From IAM RoadSmart

Check out the IAM RoadSmart YouTube channel

Have you had a look at the IAM RoadSmart YouTube channel? Our videos cover lots of driving and riding topics including advice from our ambassadors, technical tips and clips from events and skills days. Feel free to share these videos with your group members through your social media channels. To browse through these videos follow this link: <https://www.youtube.com/user/RoadSkillsUK/featured> .

Don't let that new car steal your heart: car buying advice from IAM RoadSmart

The start of a new decade has prompted many of us to try new things – a new job maybe, an expensive gym membership or the temptation of buying a new or used car. However, today's high-tech cars could be concealing unknown wallet-crunching problems. Fortunately, you don't need a degree in electronics to avoid falling into the traps - Tim Shallcross, IAM RoadSmart's head of technical policy, is on hand to help.

Service history

Modern engines are much more efficient compared with their predecessors, but proper maintenance is essential to keep them that way. Oil, brake fluid, filters and coolant must all be changed when the manufacturer says, otherwise expensive problems can happen. Ask for the service history and take time to look through it carefully. If the service record is incomplete or missing walk away, otherwise you could be footing the bill for someone else's neglect.

Dashboard lights

ABS, SRS, ESC, engine management – every electronic system has a warning light. Make sure they all light up when you turn on the ignition – unscrupulous sellers have been known to remove a bulb to disguise a faulty system. You may need to turn the ignition on and off a few times before you spot them all. Most should go out within a

few seconds, the rest of them when you start the engine and release the handbrake. After that, a light means a problem. Don't be fobbed off with "they all do that" or "that's normal." The car has a fault, so walk away.

Engine

Listen carefully for the first few seconds – knocks or rattles on start-up could mean trouble. Watch the exhaust smoke; white vapour from a cold engine is normal provided it disappears as the temperature rises. Black smoke on heavy acceleration means dirty or worn injectors and blue smoke at any time indicates a badly worn engine – often through neglected maintenance. Avoid the car.

Road test

Listen for suspension rattles and clunks over rough roads. Check gear-change smoothness, and that the car steers straight ahead and brakes squarely. Try stopping at different rates – gently and rapidly. The engine should never stall as the car stops, nor should the revs drop very low then pick up to the right idle speed. If it does, there's a problem with the management system.

Learn to walk away

Keep your head and reject a car with signs of problems. Cars are more often an emotional choice than a rational one, but the emotional choice is much more likely to end in tears. If you have any doubts at all, go home and sleep on it. If the salesperson hints at other buyers on the way, call their bluff – there are thousands of other bargains out there.

Guildford Advanced Motorists celebrate successful 2019



GAM recently hosted a celebration of another great year where over 40 people met to congratulate new GAM members on their achievements in 2019. GAM membership certificates were awarded to those who passed their test during last year, and they were cheered on by a selection of local examiners, observers, committee members and Stuart Haythorn, area

service delivery manager. GAM had 19 F1RSTs and 29 test passes in 2019 – another record year. And to cap it all, national observer John Holcroft was awarded the David McCarthy Award for his outstanding service to the group during the year, presented by Gordon Farquharson, group chair, and Stuart Haythorn. Congratulations to everyone.

Living electric dreams?

Christmas was an opportunity to catch up with family, friends...and the odd bit of TV. Relaxing on the sofa, surrounded by abandoned chocolate wrappers, I was struck by

the car ads I saw. So many of them were for electric vehicles, the drive to a greener and more environmentally friendly approach to travel seems to have finally taken off.

It all put me in mind of one of my highlights from 2019, when I drove my first electric vehicle. And not just any old electric vehicle either. I was lucky enough to take a drive in an I-Pace, Jaguar's first full battery-electric vehicle. I've been driving a hybrid car for the last couple of years and I was excited to have the opportunity to try out an all-electric car. I'd love to go electric and I was interested to find out how different a driving experience it is.

And what I discovered was just how different it really is. The quiet start, I was expecting. The handling – accepting my normal car isn't a Jaguar – was largely similar. What took some getting used to was the use of the accelerator and brake pedals. In my experience a hybrid car behaves much like a petrol or diesel vehicle. Take your foot off the accelerator and your speed decreases gradually. Using the advanced driving principles of observation, anticipation and planning means driving smoothly by adjusting the amount of acceleration gently, with less need to dab or jab the brakes to adjust to the speed of other vehicles and the prevailing conditions and speed limits. It also helps with fuel economy, always a bonus in my view.

An all-electric car is a different kettle of fish completely. Slowing down is dramatically different. As you take your foot off the accelerator, instead of speed gradually reducing you slow down immediately and rapidly. Approaching a roundabout, I instinctively moved to cover the brake, in case I needed to stop completely, just as I was taught and have done for my 30+ years of driving. I was almost stationary in a heartbeat and way too far back from the junction. By a process of trial and error – hopefully more trial than error – I discovered that almost all the driving is on the accelerator. The skill is to balance the accelerator pedal and slow down progressively. The only time you really end up touching the foot brake is when you're stationary.

The point of all this, for me, was that while I made adjustment to my driving style to take into account the vehicle, I felt more vulnerable out on the road. I wasn't helping other road users and I was driving in a way that made me unpredictable and potentially dangerous.

Now I'm sure those of you who are much more familiar with cars and probably the laws of physics than me are wondering how I could have been so naive. But that's the point. Because sooner or later we're all going to try out and even choose to drive an electric vehicle. And in order to do so safely and enjoyably, we're all going to have to learn new driving skills which take into account a different response from the vehicle.

Researching for this blog, I discovered that my experience is a common one. And while it can take some people a few moments to accommodate the change in driving style, for others it could take considerably longer and carry more risk, for all road users. What's the solution? Well, as this is about driver behaviour, it's my view that IAM RoadSmart could have a valuable role to play. I am frequently asked what we believe our long-term future is if autonomous cars are just around the corner. This feels like a more immediate opportunity and one which I hope we will find ways to rise to.

Meantime, I wonder how many more pennies I need to add to the piggy bank to afford one...?

By Kate Tonge, IAM RoadSmart director of marketing, communications and membership

What to do if you're involved in a collision

If you've been involved in a collision, you'll know how scary it can be. But do you, and your family and friends, know what to do? Hopefully you will never need this advice but just in case, Richard Gladman, IAM RoadSmart's head of driving and riding standards has written some helpful tips on the steps to follow:



- Stop your vehicle as soon as it is safe to do so. Your hazard lights may have already come on but if not, switch them on to alert other motorists. And remember, failing to stop is an offence.
- Speak to the other driver(s) involved. You need to supply your name and address, the details of the owner of the car and the insurance details if you have them. Make sure you record these details from the other driver(s) as you will need them if you make an insurance claim.
- Take photos of any damage on your car and theirs. Try to get at least one photo which includes the registration number.
- If you're involved in a collision on the motorway and you're uninjured, and able to get the vehicle to the hard shoulder, make sure you move to a safe place like behind the Armco barrier. If you are in a live lane and unable to move, put your hazard lights on and call for help. Knowing which carriageway you are on (either A or B) will help the emergency services locate you.
- If you're in a residential area, ensure your hazard lights are on and move to a safe place to inspect your vehicle. If you or any other party is injured call an ambulance.
- Try to remain calm. You may be in shock and it's normal to feel shaken after a collision, but it's important you do not drive away until you feel safe to do so.
- Do not admit liability. Stick to the facts and report these accurately to your insurance company.
- If there are witnesses make sure you speak with them and get their details, they may be able to give a statement to the police or to your insurance company.
- If you have dashcam, this footage could be useful to police and your insurance company to help apportion blame.

When should you call the police?

- If anyone involved is injured, the road is blocked, or the location is such that a danger is being caused then call the police.
- If the collision involves a large animal or a dog and the owner is not present.
- If you think the other driver is under the influence of drink or drugs or is guilty of a traffic offence.
- If the driver doesn't stop or refuses to exchange details or leaves the scene.
- If you have any suspicions speak to the police, they may not attend but will record the call and give advice.

If you've been involved in an incident, and have lost some confidence on the road you may benefit from an Advanced Driver Course. Or if you want some support with particular aspects of driving, our Driver Assessment may be for you.

Richard said: "Being involved in a collision can be stressful, even a minor bump can disable a car and may be costly to fix. Make sure you get as much information as you can from the other driver and any witnesses.

"Try to stay calm. It is likely that no matter who is to blame, the other party is feeling the stress as much as you are. The main priority is to make sure you are all safe whilst dealing with the collision."

The following article is from some GAM research

Is Left-foot braking, OK?

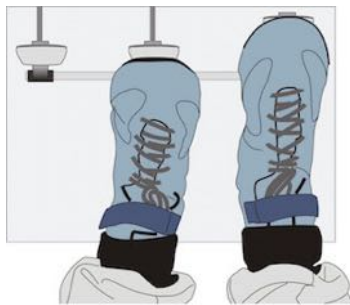
This guidance was published in a national newspaper and triggered some concern. Admittedly the endorsement of left-foot braking only applies to automatic transmissions.

Is this good advice and who reads it?

Daily Telegraph's 'Honest John' stated "Right is Wrong' in the newspaper on 4th January 2020

Reader's question: You often mention using one's left foot to brake in an automatic car. Have I been driving incorrectly for many years when I follow what I was taught? I was told that using my right foot ensured I didn't brake and accelerate at the same time. EG

HJ's response: In my opinion, you have been driving incorrectly.



The advice you mention was often trotted out to drivers who had previously owned manual transmission cars and simply could not retrain their left feet to operate the brake. In truth, left-foot braking eliminates entirely the old Highway Code "thinking distance" and at relatively low speeds can mean you stop in half the distance.

Write to us: For consumer and used car advice, or car faults, email *Honest John:* honestadvice@telegraph.co.uk



This seemed to me to be challenging advice, is certainly contra to IAM RS and GAM coaching, so I thought I would dig into the subject and research some sources.

From Wikipedia:

Left-foot braking (LFB) is the technique of using the left foot to operate the brake pedal, leaving the right foot dedicated to the throttle pedal. It contrasts with the practice of using the left foot to operate the clutch pedal, leaving the right foot to share the duties of controlling both brake and accelerator pedals.

At its most basic purpose, left-foot braking can be used to decrease the time spent moving the right foot between the brake and throttle pedals, and can also be used to control load transfer (see later notes about vehicle balancing using throttle & brake).

LFB is most commonly used in racing and rallying for balancing the vehicle and maximising performance. (e.g. for a turbo-charged engine, simultaneous throttle and brake keeps up turbo pressure and reduces turbo lag). So here we see a strong hint that LFB is principally targeted at competition scenarios.

The following has been adapted from 'Car Throttle' claimed to be the internet's largest community for car enthusiasts

6 Ways Left Foot Braking Will Improve Your Driving

It's one of the trickiest skills to master, particularly for people used to using the clutch, but mastering the use of your left foot for braking will make you drive faster and more smoothly. If you have tried, there is a good chance that left foot insensitivity has propelled you towards the windscreen. This identifies one of the greatest challenges with LFB. If you're swapping from manual to automatic transmission often, then the insensitivity risk is likely to increase.

1. Puts you in control of weight shifting

One of the most important aspects of fast driving is controlling where the weight of the car is. This is something that's most obviously useful in rallying, where throwing the car's weight from side to side while keeping the throttle pinned is the best way to maintain momentum. You can also use this in grip driving situations, though, as modulating the brake and throttle can help keep the car settled in order to minimise understeer and oversteer.



2. Exit corners faster in a FWD vehicle by braking as you accelerate

Chris Harris (with hair) has a great video to illustrate this.

<https://www.youtube.com/watch?v=vcSAiRxmm0w>

This might seem counter-intuitive, but if you have a front-wheel drive car with a differential this technique will drastically improve the speed you can carry through, and out of, a turn.

As you accelerate through a corner you can push on the brakes with your left foot to distribute the torque more effectively through the front wheels. This allows you to carry more speed as power is spread more evenly across the two front tyres, and ensures your exit speed is higher. Easing off the brake on corner exit then gives you full power for the straight to take full advantage of the extra speed you've already carried without unsettling the balance of the car or spinning the wheels.

3. Settling the suspension

Again, this is a technique most useful in rallying. When braking and shifting weight around, you're also loading and unloading the suspension in different ways. You can take this knowledge and use it to counteract unwelcome movements.

For example, if you spot a bump ahead, you can keep your right foot on the throttle to keep momentum up, while dabbing the brakes to load and unload the suspension. With the extra travel available you can glide over bumps that might otherwise have unsettled the car.

4. Tidying your line

Here's another useful tip for bringing the nose in in high speed corners. If you're cornering at speed but feel yourself washing wide, the answer is to scrub some speed. You could lift your foot of the throttle, but a sudden shift forwards in weight could cause you to oversteer. Instead, applying a little brake while still on the throttle ensures all four wheels are being slowed, and your line is tightened without unsettling the machine.



5. Trail braking



This is trickier in a manual car where you're using your left foot on the clutch, but it is possible with a quick shift of your feet. The idea is to gradually ease off the brake as you enter a corner and begin to accelerate out of it. This has the advantage of keeping the weight forward, giving the front tyres the highest possible grip for turn in and limiting understeer. It also reduces unwanted weight shifting that can come from lifting off the brake quickly in order to accelerate, as is required with right foot braking.

6. Reducing the time between braking and accelerating

Colin McRae (RIP) explains left-foot braking in a rally car. Note the car has a sequential manual gearbox and gear changes are made without clutch use. https://www.youtube.com/watch?time_continue=31&v=BMEqOGejlrw&feature=emb_logo .

When you receive driver coaching, one of the first things they'll try to get in your brain is that you should either be fully accelerating or fully braking. Now obviously there are exceptions to this, such as some of the techniques above and in longer corners that require throttle modulation. However, for the most part, you should either be braking or accelerating - anything else loses time.

Therefore, every time you brake with your right foot you have a very brief period in limbo where you're doing neither. Add together all those fractions of a second over the course of a lap or a race, and it can be the difference between a podium or not. This might not be too relevant to road driving, but for trackday drivers looking to shave time lap after lap, this could help immeasurably.

GAM Technology exposé

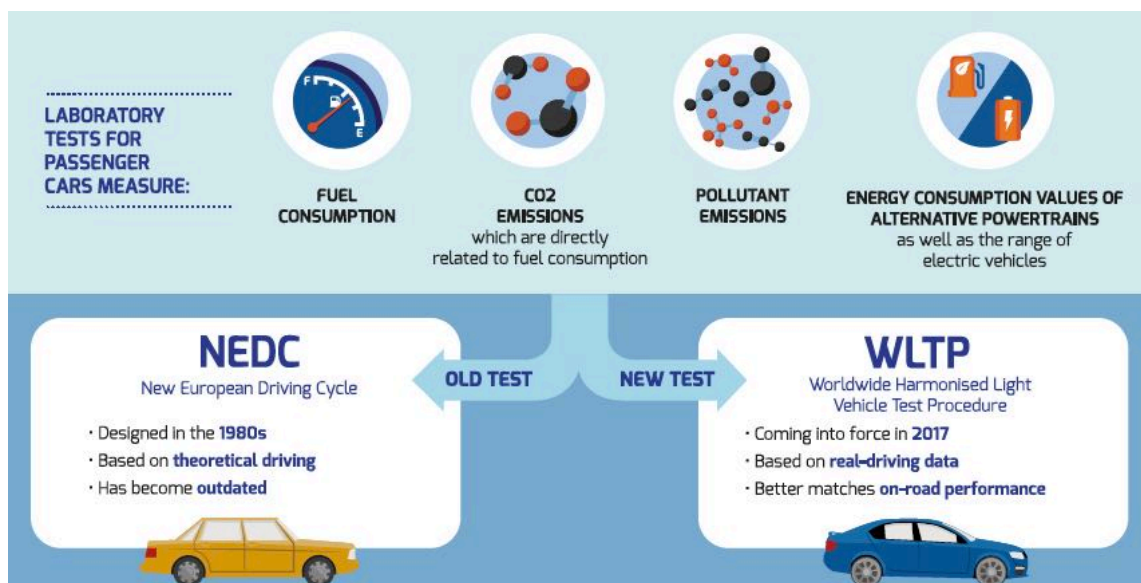
EV Energy Efficiency

For the equivalent of "petrol-heads", "Electric-heads" EV car-talk is often about speed, acceleration, Tesla "ludicrous mode", range, but rarely efficiency. Surely if we believe Greta Thunberg and/or Sir David Attenborough, we really need to be sensitive to efficient conversion of the energy source into movement.

EVs have several advantages over conventional vehicles from a pure energy perspective. EVs can convert over 77% of the electrical **energy** from the grid to power at the wheels. Conventional gasoline vehicles (ICEs) only convert about 12%–30% of the **energy** stored in the fossil fuel to power at the wheels. If you want to get into the carbon comparison, then you really have to get to grips with the electrical energy source in your country. We investigated this aspect in a previous GAM Newsletter. In the UK our electrical energy is progressively becoming greener due to renewables.

Is an EV really cheaper to drive than an ICE car? That depends – mostly on where you live. One of the annoyances of buying an electric vehicle is that the operating costs are not readily comparable to gasoline cars. Unfortunately, your real EV costs per mile are highly dependent on your own unique situation, most importantly how much you pay for electricity.

In the UK you could pay 5 pence for kWh off peak with Octopus Go and >30 pence at a service station rapid charger. This illustrates the tremendous variability in electric rates currently, and things are likely to become more complex as we move to tiered pricing and demand variable pricing. Therefore a simple calculation of EV cost per mile is inevitably a personal question. Here is a straight-forward way to calculate your own EV cost per mile, and to compare your cost to a similar ICE car.



EV Costs Per Mile. To calculate your EV cost per mile, you just need to know two things: 1) how much your electricity costs per kilowatt-hour (kWh), and 2) how many units of electricity (kWh or Wh) your vehicle uses per unit of distance (usually 100 miles). Let's start with the second item. Most manufacturers publish or you can find average ratings of kWh/100mi or Wh/mi for all electric vehicles. You will also find nowadays the WLTP (Worldwide Harmonised Light Vehicle Test Procedure) and real-world range per charge quoted.

EV Transmissions Are Coming – Part of the quest for energy efficiency and performance



ZF's 2-speed drive unit.

Recently, ZF announced a two-speed EV transaxle/drive unit, and around the same time, more details about the Porsche Taycan came out. For the Taycan, there was more confirmation that the vehicle will have a two-speed gearbox (at least in the rear).

"EVs don't need transmissions," seems to be the common theme. Supposedly, the added complexity, maintenance, and expense aren't worth it. Some development engineers are coming to

the conclusion that this is over simplistic and wrong. Let's remember why ICE Cars have Multi-speed Transmissions. For IAM RS Associates, Members and Observers, all of whom know how to drive manual and automatic vehicles, the reason for transmissions is obvious. ICE engines only make good power with reasonable efficiency and acceptable noise levels in relatively narrow RPM ranges. Depending on the goal (power or efficiency), the transmission needs to shift to the next gear at the right time to keep the engine in the optimum rev range. For instance, go much below 1,000 RPM, and a petrol engine will stall; go past redline on the tachometer, and the engine will start damaging itself in various ways. For this reason, most modern cars have a "rev limiter" safety feature that cuts fuel and/or spark to stop the engine from going faster and self-destructing. Finally, there's the tradeoff between vehicle speed and torque multiplication. In "low" gears, the gearing has the same effect as having a longer lever: more torque. This allows a vehicle to have an acceptable amount of grunt when you first start. However, if you stay in that low gear, the engine will be going too fast before you can get up to an acceptable speed. To be able to go faster, you need to switch to a different gear that won't turn the engine so fast, but at the cost of losing that initial torque. You're already moving, so that doesn't matter as much.

There's one big reason that EVs can get away with not having a multi-speed transmission. Electric motors have a wide operating range. At the bottom end, they can go all the way to 0 RPM without stalling. There's no need to idle, and when you hit the power/accelerator pedal, full power is available. At the top end, most EV motors can go beyond 10,000 RPM without damage, with some approaching 20,000 RPM at top speed. With few moving parts, they don't fly to pieces at those speeds. There's a problem, though. Electric motors do not generate the same torque from zero to maximum RPM. They all put out full power until a certain speed, and then their torque

begins to drop off. Efficiency is also not consistent across the full range of speeds the motor is capable of going. The speeds at which they're most efficient can vary, but the "sweet spot" is usually around $\frac{1}{3}$ to $\frac{1}{2}$ power at 30–40 MPH (50–65 km/h).

While an EV will work at anywhere from 0 RPM to max motor speed, it will have lower power and/or less range at highway speeds if its single gear is optimized for city driving. Making this gear "taller" could help, but then the car would suffer from lower performance and efficiency in the city. But you hear them say "Teslas are the best and they don't have a transmission!" . Tesla's design development with the issue of gears has been particularly interesting, and the company has come up with a couple of workarounds. Apparently Tesla originally planned to put a 2-speed gearbox in the original Roadster. To achieve the best performance, they wanted to have a lower gear for initial acceleration and a higher gear for a high top speed. Contrast this with the other EVs in development at the time. The Nissan LEAF with its 94 MPH (151 km/h) top speed and the Chevrolet Volt, which ended up with a top speed of about 101 MPH.

Tesla's quest to avoid these nasty compromises kept running into a brick wall, though. It couldn't come up with a light weight multi-speed gearbox that wouldn't be destroyed by the torque from a high powered electric motor. Ultimately, Tesla ended up finding another way to have two different gears: put one in the front and one in the back. Dual-motor Model S, Model X, and Model 3 vehicles all have different gear ratios in their front and rear drive units. At lower speeds, at least half of the power goes to the rear drive unit, which is optimized for lower speeds. When you get up to highway speeds and have "range mode" enabled, the car's computers direct power to the front drive unit, which has a better highway gear ratio. So, in the end, even Tesla effectively uses two gear ratios.

The benefits of having more than one gear ratio for an EV is currently being pushed by ZF's modified VW e-Golf. They have produced information about motor efficiency improvements. In their testing, ZF claim that the benefits for mass-production EVs as they are similar to those for conversions. Not only did they achieve a 5% increase in vehicle range, but they also got better acceleration numbers compared to a single-speed vehicle. This allows a vehicle to sidestep the tradeoff between efficiency and performance by allowing for both. In ZF's case, they have the unit shift gears at 70 km/h (just under 45 MPH). Since they sell mostly to manufacturers, they also allow for the car's computer to command the drive unit and optimize shifting to better fit the manufacturer's goals (performance, efficiency, towing, etc).

If you follow the world of EV conversions. For decades before mass-produced EVs emerged on the scene, people in garages were taking their ICE (internal combustion engine) vehicles and turning them into electric cars. Without the ability to have a special gear reducer made, they often just bolted an electric motor to the ICE car's original transmission. The one big advantage about using a manual transmission is that you avoid the problems Tesla faced with its abandoned 2-speed project, in that you can interrupt the power during shifts to keep from destroying the gears. In the case of a manual, the driver does this, but if you wanted an automatic EV, a torque converter or automated double clutch could soften the gear change.

To sum this up, it all comes down to cost. For a cheaper vehicle that largely gets driven in the city, one gear is fine. For a performance car, or one that is going to spend more time at higher speeds, it makes sense to find ways to get at least one more gear ratio.

Gordon Farquharson – GAM National Observer

GAM - IAM RoadSmart 'Fellows' Roll of Honour'



Craig Featherstone
Philip Sivelle
Val Pascual
Rosemary Henderson
Neil Fuller
James Sohl

Matthew Lawes
Ben Bridge
Celia Dunphy
Alan Powley
Paul Whitehead – F1RST
Brian Miller
Brian Mellor

REFLECTIONS OF A MATURE MOTORIST

(GAM Fellow Brian Mellor – on the right with his XK)

I first passed the advanced test in 1991. This was after 35 years of driving with no claims or points! It included 3 years in the USA where we drove on packed snow all winter in large cars with large engines! I had a company car and was encouraged to take the test by my company as I was doing a big mileage around the UK. At that time conditions were rather different from today. There was less traffic, fewer road signs, fewer motorways and fewer speed zones. After that I continued to drive safely and I retired in 1999.

Then I switched to owning my own cars and joined the Jaguar Enthusiasts Club. I had several sports and saloon cars and my late wife and I drove on UK rallies and with club tours on the continent once or twice every year. In 2015 I acquired my current baby Jaguar, the XE, and decided to restrict my driving to the UK, so I'm doing a much lower mileage now.

When the IAM introduced the Fellows membership I thought it was time to refresh my skills and take the advanced test again. I did one pre-test run with a GAM observer and then took the test but failed! This was due to overconfidence. I had not fully realised some poor habits that had been picked up over the years. I needed to take the associates course again, which has now been done and I passed the Fellows test in November with thanks due to all my observers.

My advice to our younger members is to get your grandparents to take the course and the test and they will have a lot of fun and drive more safely for the rest of their life. I am certainly encouraging my grandchildren to do just that.

Brian Mellor GAM & IAM RS Member



GAM's Advanced Driving test successes in 2020 so far

Graeme Blackmore Pass

Robert Haines

Pass

Neil Betty	Pass	Ian Cole	Pass
John Riley		Elaine Blackmore	
Brian Mellor	Pass	Paul Robinson	Pass

For the record, we had 43 passes in 2019, 17 of them a F1RST – Keep up the good work, and welcome to all our new Associates.

GAM - IAM RoadSmart 'Masters' Roll of Honour'



Peter Laub	2013	Mike Hughes	2017 Distinction
Howard Quinnell	2013	Gearoid Conneely	2018 Distinction
Dmitri Savin	2016	John Panting	2018
John Holcroft	2016 Distinction	Shaun Dymond	2019 Distinction
Phil Headen	2016 Distinction	David Nancekievill	2019 Distinction
Ben Bridge	2017 Distinction	Victor Olisa	2019
Graham Ranshaw	2017 Distinction	Peter Laub	2019 Distinction

GAM Scorecard

We thought you might be interested to see what GAM has achieved recently. The table below is a summary of our scorecard is doing in comparison with other groups. We receive periodic scorecards like the one here from February 2020:



Group Scorecard for Guildford Adv.Motorists (2062) (GAM)

Date: Wednesday, 05 February 2020

New Joiners		
	Group	National Average
Last Month	7	2.8
Same period last year	2	1.9
<i>Based on allocation date to group in DTE</i>		
Enrolments		
	Group	National Average
Enrolled Last Month	7	2.6
Time to enrolment (Days)	4	18.4
Waiting enrolment	0	3.3
<i>Based on enrolment date in DTE. Enrolment is the process by which a group acknowledges allocation of an associate via DTE, and which triggers payment to the group</i>		
Members		
	Group	National Average
Full group members	520	186.6
<i>Based on members linked to group (regardless of membership status)</i>		

Associates		
Training in Progress	103	
Last 12 months average days from enrolment to test ready	314	
<i>Associates with a course linked to the group - shown under OS Test ready lists in DTE</i>		
Observers		
Local Observer Assessor	6	
Trainee Observer	3	
National Observer	16	
Local Observer	11	
<i>Based on links to group and qualifications held in DTE</i>		
Test Statistics		
	Last Month	National Average
First and Pass	1	1.1
Fail	0	0.1
<i>Based on results submitted date and if course associated to group</i>		

IMPORTANT GAM DIARY DATES

Look out for events in 2020 – See the the [GAM Facebook page](#).

Observer Meetings 2020 Starting at 1930 hrs, venues to be advised. These meetings will provide an important opportunity to get information and

guidance, and importantly share experience and best practice with GAM peers. Look out for venue and timing details! Apologies to Tim Lyon our training officer please.

Dates (to be confirmed nearer each event as details can change): April 2nd (status to be confirmed), 4th April (joint training day with CSAM), June 4th, August 6th, October 1st, December 3rd

Committee Meetings 2020 5th March, 7th May, 2nd July, 3rd September, 29th October. At the Drummond Arms in Albury, 7.30pm - 10pm.

GAM Management Team – Officers and Committee Members

PRESIDENT	Victor Olisa	president@guildford-iam.org.uk
CHAIRMAN	Gordon Farquharson	chairman@guildford-iam.org.uk
Secretary	Paul Whitehead	secretary@guildford-iam.org.uk 07860 600477
Treasurer	Michael Tilney	treasurer@guildford-iam.org.uk
Membership Secretary	Neil Fuller	memsec@guildford-iam.org.uk
Chief Observer	Graham Ranshaw	Chief.observer@guildford-iam.org.uk
Newsletter Editor	Gordon Farquharson	editor@guildford-iam.org.uk 07785 265 909
Local Observer Assessor	John Panting	assessor@guildford-iam.org.uk 07999 338616
Observer Training Officer	Tim Lyon	Training@guildford-iam.org.uk
Non-Sunday Run Manager	Clive Heavens	NSRManager@guildford-iam.org.uk

Observed Runs "Sunday-Runday"

SUNDAY Observed Runs (now called 'Sunday Runday'): These are our main training runs. They will normally be conducted on the 3rd Sunday of each month between 9.15am and midday.

Observed Sunday Runs for 2020 – March 15th; April 19th; May 17th; June 14th; July 19th; August 16th, September 20th; October 18th; November 15th; December 13th.

Location for SUNDAY Observed Runs:

Guildford Borough Council Woking Road Depot, Guildford, GU1 1QE (see map on back page).

Front desk manager - Telephone contact number 07706 930 315.

ALTERNATIVE Appointed Observer Runs (NSRs): We can also offer some alternative observed runs on any day subject to agreement with your appointed observers. These maybe helpful if you need additional support or are unable to attend a regular series of Sunday runs. Meeting arrangements will be handled by your nominated Observer(s). Make sure you have his/her contact details. Contact our Chief

Observer or Non-Sunday Run Manager Clive Heavens NSRManager@guildford-iam.org.uk .

Appointments for Observed runs - contact the Associate Co-ordinator: e-mail associates@guildford-iam.org.uk .

***Can't make your Observed run appointment?** We try to match the number of available Observers (all volunteers) with the number of booked Associates, but sometimes we realise things can go wrong. If you cannot attend your booked appointment please let us know. E-mail the Associate Co-ordinator as soon as possible.*

CONTACT GAM

Guildford Advanced Motorists



FOLLOW US ON **twitter**

@IAMgroup



Find us on **Facebook**

facebook.com/guildfordiam

GAM Website: www.guildford-iam.org.uk

(website devised and managed by Guildford Advanced Motorists (GAM)).

Location for our GAM Sunday runs:

Guildford Borough Council Woking Road Depot, Guildford, GU1 1QE

