

Scottish Public Health Specialty Registrar Group

Embedding Sustainable Development into Public Health Training: Travel Audit

2017/2018

Executive Summary

Climate change is a major threat to global public health. Radical reductions in greenhouse gas emissions are required to prevent a level of global warming which will be unacceptably dangerous to the survival of ecosystems and to human life. Climate change mitigation and adaptation should therefore be public health priorities. As future public health leaders, and with a curriculum that acknowledges the importance of sustainable development, Scottish public health registrars wish to ensure that public health training is delivered in a sustainable manner paying particular attention to carbon reduction. In response to the challenge of decarbonisation, public health registrars in Scotland have been considering preventable carbon emissions associated with training- and work-related travel.

Public health registrars in Scotland were asked to record work-/training-related travel over 3 weeks in summer 2017 and again in the winter to establish baseline mileage and associated greenhouse gas emissions. Additionally, a focus group was conducted in May 2018 to explore the barriers and opportunities to using greener modes of transport and remote working.

Results Summary

Mean daily miles per participant – All: 44.7 miles

Mean daily miles per participant based in Central Belt: 31.4 miles

Mean daily miles per participant based outside Central Belt: 53.5 miles

Mean commuting distance – All: 25.3 miles/day

Mean commuting distance for participants based in Central Belt: 11.6 miles/day

Mean commuting distance for participants based outside Central Belt: 34.4 miles/day

Commonest Modes of Travel: Rail 52.9% of total miles travelled, Car 40.6% of total miles travelled

Active travel (Bicycle/Walk/Run): 4.4% of total miles travelled

Greenhouse Gas Emissions: Car 73% of total greenhouse gas emissions, Rail 24.5% of total greenhouse gas emissions.

Focus group: Participants recognised barriers and opportunities to using greener modes of transport and remote working. These included factors relating to the individual; non-work related commitments; public health departments and workplace infrastructure, practice and culture; NHS Education Scotland policy; NHS board policy; and wider public transport and active travel infrastructure.

The findings will be reported to numerous groups including the Scottish Public Health training programme director and local training programme co-ordinators. Public health registrars will be encouraged to share the results in their local areas and supported to implement the report's recommendations.

Introduction

Climate change has been named as the biggest threat to global public health in the 21st century and tackling it as the biggest opportunity for population health improvement.¹

As current and future leaders in the field of public health in the UK and overseas, specialty registrars (StRs) must develop the knowledge, skills and attitudes necessary to lead cross-agency action to mitigate and adapt to the effects of climate change and champion the pursuit of sustainable development in the health, public health and social care systems.

Reflecting the emergence of this training need, the Faculty of Public Health (FPH) added an overarching statement that sustainability and carbon reduction are fundamental to all core competency areas as well as a specific learning outcome (Learning Outcome 5.7) to its specialty training curriculum in its review of the curriculum in 2015.

We, the Scottish Public Health Specialty Registrars (PH StRs), are committed to developing our own public health practice in a manner which recognises and promotes sustainability in all aspects of our work. As part of this commitment, we present the results and conclusions from a recently conducted audit of StR work-related travel.

Aim

The primary aim of the audit was to measure the carbon footprint resulting from training-/work-related travel by PH StRs in Scotland.

Objectives

1. Measure total miles travelled (for the purposes of work and training) by PH StRs in Scotland, and modes of transport used.
2. Consider the effect of training location on miles travelled for work and training.
3. Calculate total greenhouse gas (GHG) emissions (measured as carbon dioxide equivalent, CO₂e) related to this travel.
4. Explore opportunities and barriers to using greener transport and not travelling at all.

¹ Watts et al. [The Lancet, Vol. 386, No. 10006](#) 2015. Health and Climate Change: Policy Responses to Protect Public Health.

Methods

The methodology was adapted from a similar travel audit conducted in the East Midlands public health training programme.²

Quantitative – Travel audit

All public health registrars on the public health training programme were asked to complete a work-/training-related travel log for 3 weeks in June/July 2017 and then to assess for the effect of seasonality the registrars who completed the log in Round 1 were asked to complete it again in November/December 2017. Registrars were asked to record:

- Number of miles travelled for work and training;
- Purpose of journey (e.g. commute/meeting/training);
- Mode of transport used;
- Miles and time saved by not travelling.

Completed logs were sent to a Public Health StR to collate, analyse and interpret. Greenhouse gas emissions were calculated using UK government GHG conversion factors (2017).³

Qualitative - Focus Group

Four PH StRs also participated in a focus group in May 2018 to explore the barriers and opportunities to using greener modes of travel, as well as not travelling at all. Participants included a mix of:

- Part time/full time StRs
- StRs whose home health board was in Central Belt/outside of Central Belt.

The focus group was conducted over the phone. A high-level summary of the collated travel log results was provided to participants to facilitate the discussion.

² Burgess-Allan J, John C, Mackenzie K. Audit of East Midlands Public Health Registrars' Service- and Training-related Travel. Poster session presented at: Faculty of Public Health Conference; June 2016, Brighton. Available on request.

³ <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2017>

Results

In June/July 2017 19 out of 25 registrars (76%) completed the travel log – 47% of respondents were full time registrars; 42% were based in NHS boards in the Central Belt. 14 out of the original 19 respondents (74%) completed the log in November/December 2017 – 38% of respondents were full time registrars; 38% were based in NHS boards in the Central Belt. NHS Greater Glasgow and Clyde, NHS Forth Valley and NHS Lothian were classified as Central Belt health boards, with the remaining boards being outwith/outside the Central Belt. Participant's home health board was used regardless of current attachment due to classification issues with split placements and incomplete data.

Miles

Table 1 provides the mean and median total miles over the two periods, as well as the mean number of miles travelled per day per participant. The mean number of total miles per participant over the 3-week periods was 566.2 and 460.4 for June/July and November/December respectively. The median for June/July was 605 miles and in November/December was 333.5 miles. The mean number of miles travelled per day per participant for the two periods combined was 44.7.

Table 1: Mean and median total miles for three weeks monitored and mean miles/day in June/July and November/December.

	June/July (n=19)	November/December (n=14)
Total number of days worked	225	160
Total miles	10,757	6,446
Mean number of miles per participant over 3 week period	566.2	460.4
Median number of miles per participant over 3 week period	605 (extremes = 29, 1170; quartiles = 151, 988)	333.5 miles (extremes = 29, 1138; quartiles = 133.5, 844.5).
Mean number of miles/day per participant	47.8	40.3

Figure 1 illustrates the different modes of travel over the two periods. In June/July, more miles were accumulated through rail travel (60.8% of total for that period). In November/December more miles were spent travelling by single occupancy car (54.1% of total for that period).

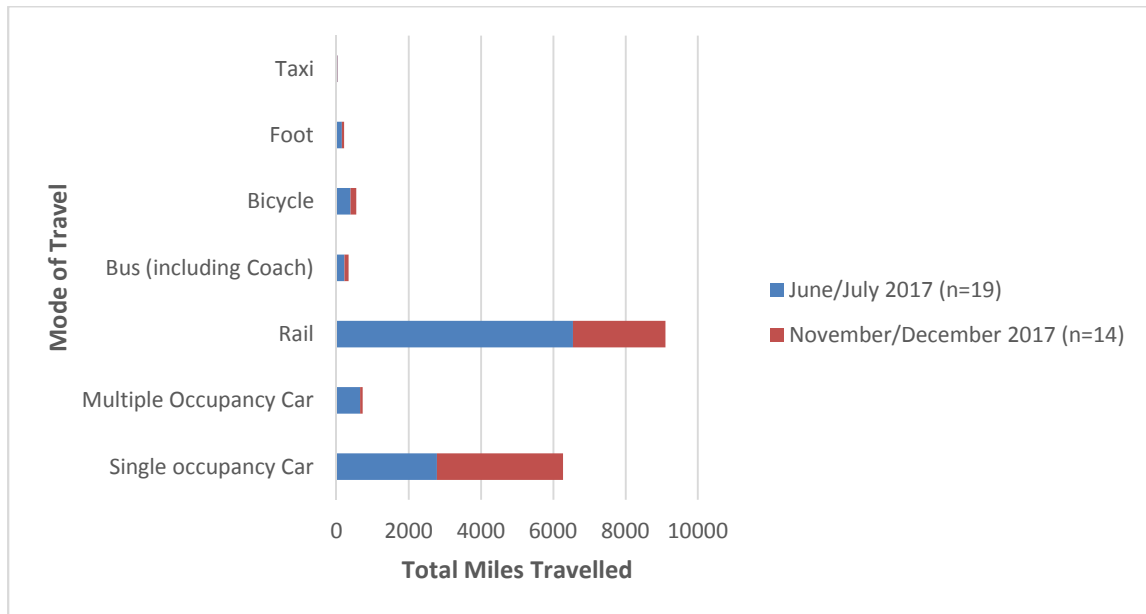


Figure 1: Total miles travelled by all participants by mode of travel in each 3-week period.

Figure 2 shows the total miles travelled by journey purpose. The commonest reason for travelling was to commute to work bases. This is more marked in November/December.

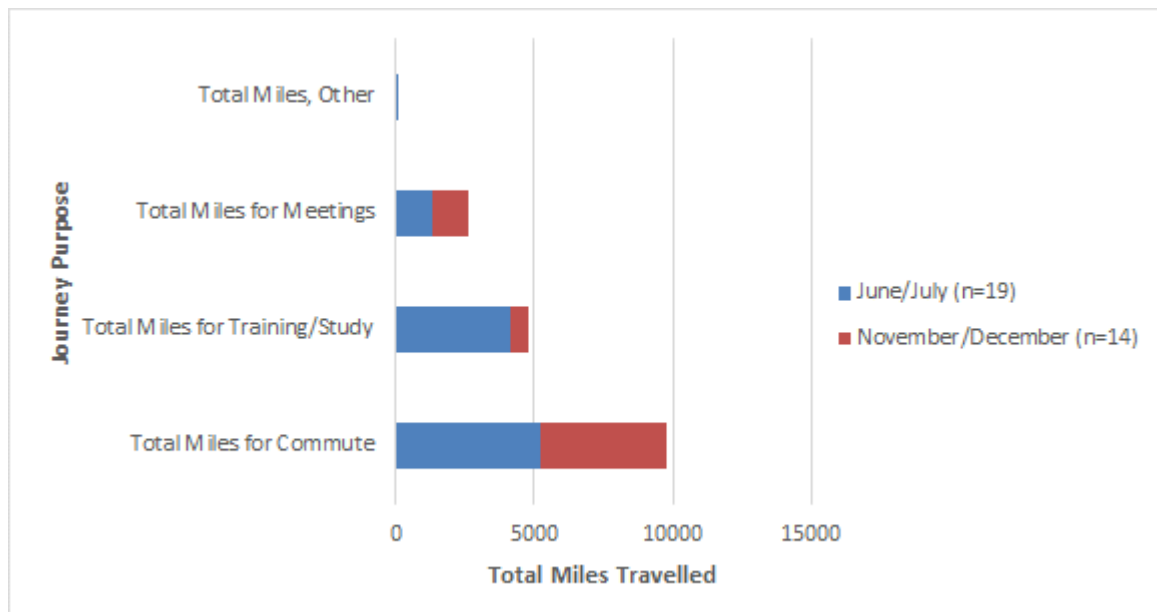


Figure 2: Total miles travelled by journey purpose for each 3-week period.

The boxplots in Figure 3 and 4 demonstrate the mean, median and range of miles over the two periods for participants whose home health board was in the Central Belt and those whose home board was outside of the Central Belt. StRs whose home board base was outside of the Central Belt had greater mean/median total miles than those registrars based in the Central Belt in both periods observed.

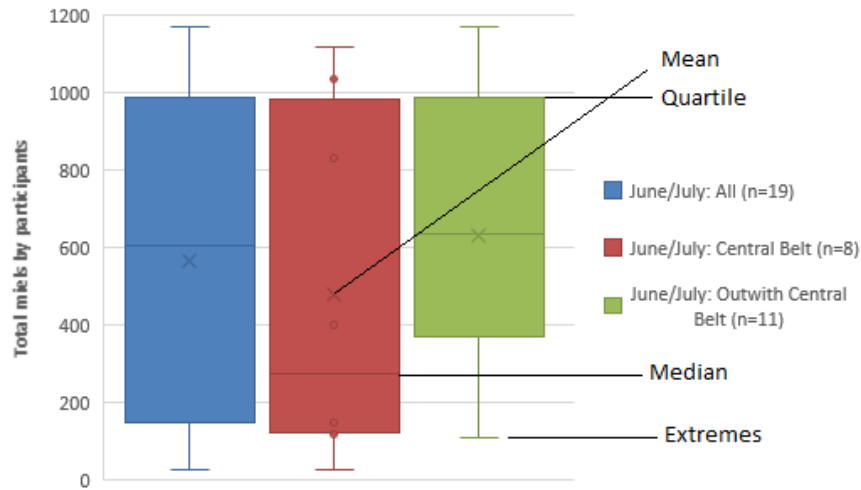


Figure 3: Total miles travelled by PH StRs during three-week period in June/July - All, Central Belt, Outwith Central Belt.

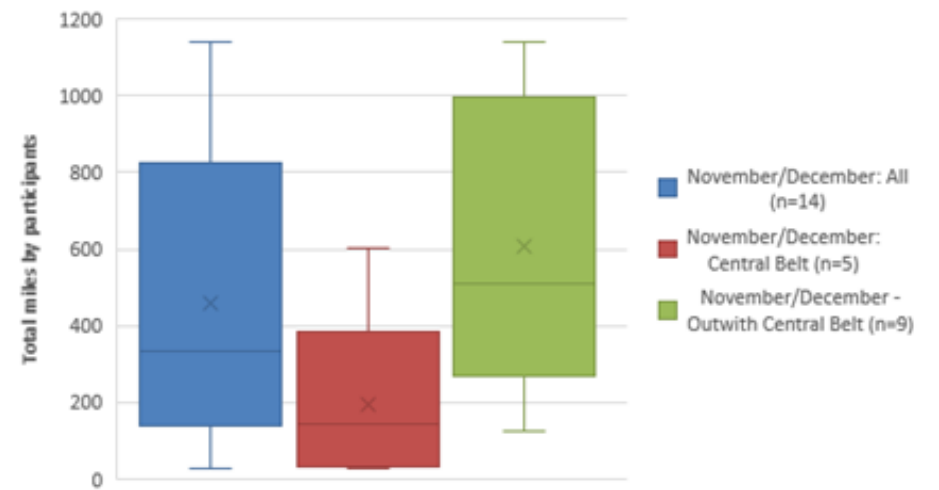


Figure 4: Total miles travelled by PH StRs during three-week period in November/December - All, Central Belt, Outwith Central Belt

Figure 5 shows the mean number of miles per day for participants whose home health board was within the Central Belt compared to those outside of the Central Belt. Mean miles per day for registrars based in outside of the Central Belt was greater than those based within the Central Belt for both periods.

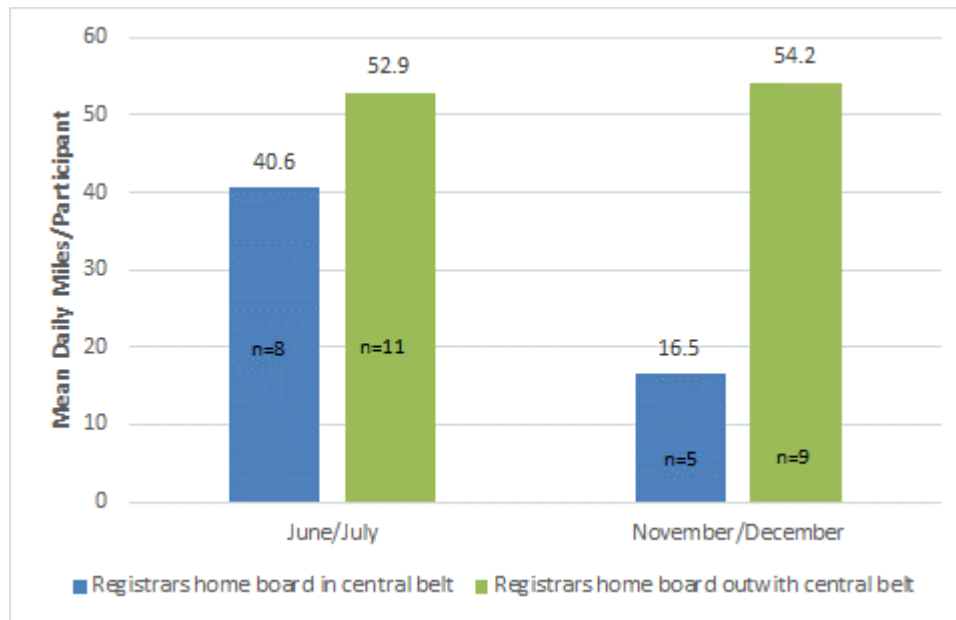


Figure 5: Mean number of miles per day for registrars whose home board is within the Central Belt and those outside the Central Belt.

Figures 6 and 7 illustrate the differences in modes of travel between StRs whose home board was in the Central Belt and those based outside the Central Belt for the two periods monitored. In both periods, StRs based in the Central Belt travelled further by public transport than any other mode of transport. For StRs based outside of the Central Belt more miles were travelled by public transport in June/July but in November/December the commonest mode of travel was car. Active travel was a more common mode of transport for StRs based in the Central Belt than those based outside the Central Belt during both periods studied.

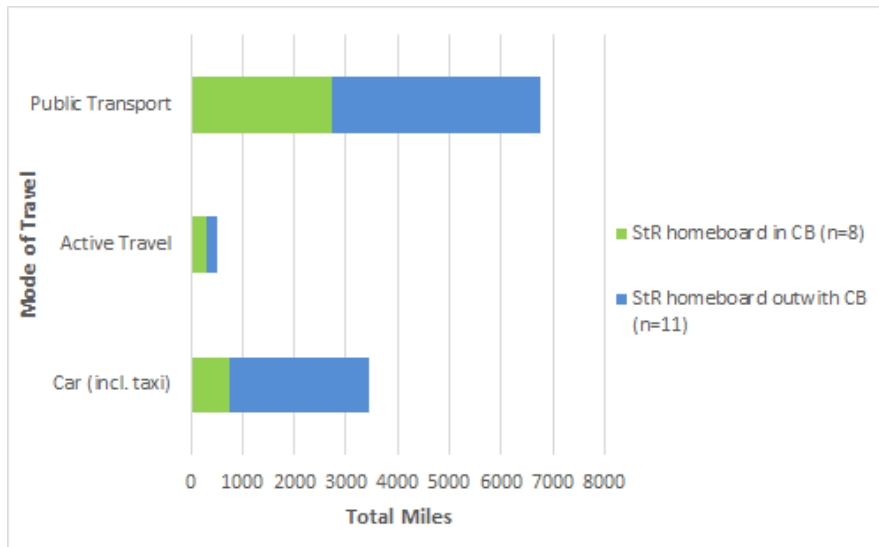


Figure 6: Total miles by mode of travel by StR home board location in June/July.

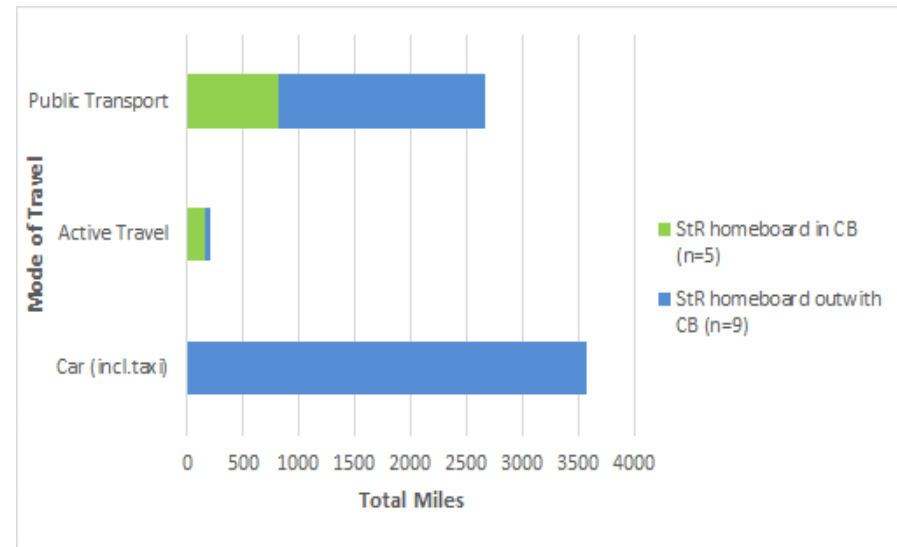


Figure 7: Total miles by mode of travel by StR home board location in November/December.

Figures 8 and 9 display the mean daily miles by journey purpose for participants in the Central Belt and those outside of the Central Belt. StRs based outside of the Central Belt travelled more miles commuting than for any other reason. In June/July, more miles were travelled on average for training/study for StRs in the Central Belt. In November/December, commuting was the commonest reason for travelling for this group.

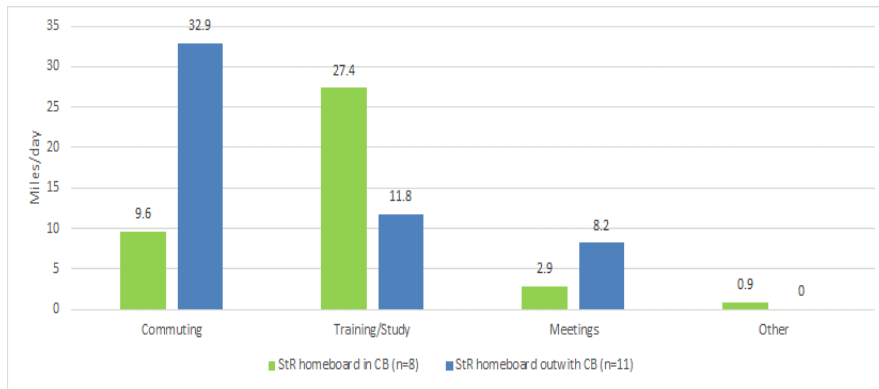


Figure 8: Mean miles/day and purpose of travel – June/July

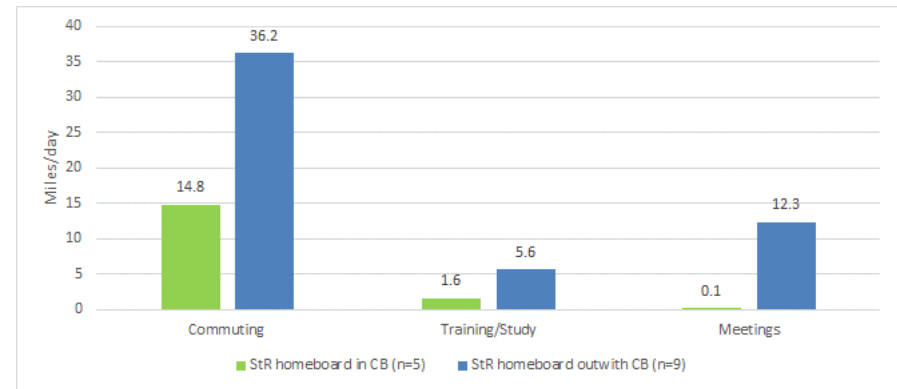


Figure 9: Mean miles/day and purpose of travel – November/December

Greenhouse Gas Emissions

The total GHG emission (CO₂e) footprint of StR's travel over the six weeks was 2,791.4kgCO₂e. Figure 10 shows CO₂e emissions by mode of transport combined for the two periods monitored. Figure 11 presents the proportion of the total miles travelled and proportion of total greenhouse gas emissions by each mode of travel.

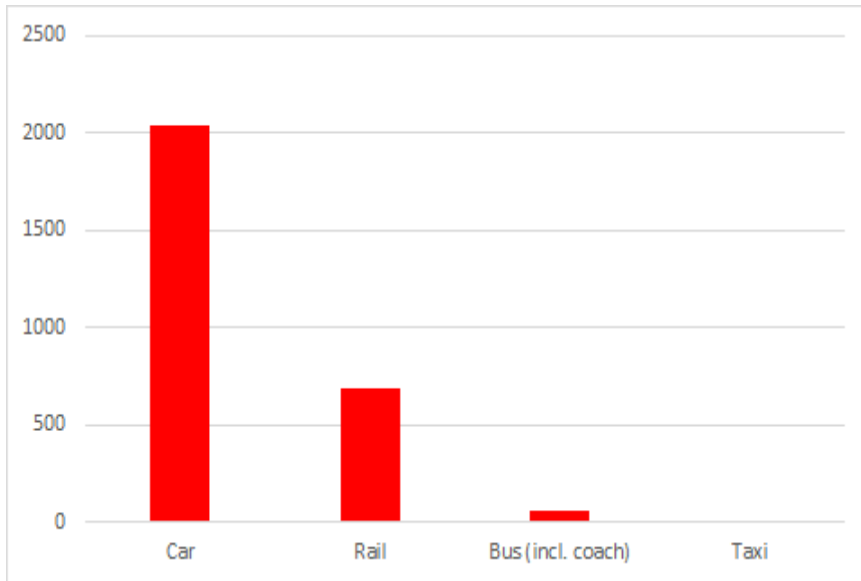


Figure 10: Greenhouse Gas Emissions by mode of transport over total 6 weeks audited

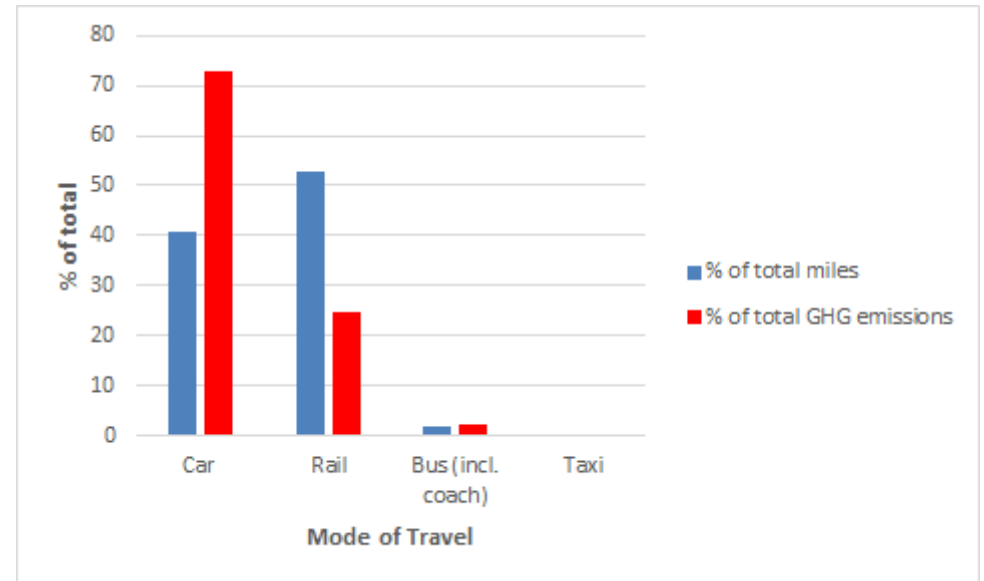


Figure 11: Percentage of total miles and greenhouse gas emissions by mode of travel

Travel avoided

During the six weeks, 2387 miles (59 hours) of travel were avoided by working from home/remote working and using videoconferencing and teleconferencing for meetings instead of attending in person. 72% of the miles saved by not travelling were by registrars whose home board was outside of the Central Belt.

Qualitative Results

The focus group participants were provided with a high-level summary of the quantitative results. Initial reaction to the results was mixed; some were surprised that mean daily miles was as high, while for others this was not unexpected. Additionally, miles avoided by not travelling was lower than anticipated. This may be the result of underreporting or differences between different health boards particularly remote working/working from home policies.

The group explored the barriers and opportunities to greener modes of travel, public transport, and remote working. The focus group concluded by considering recommendations.

Greener modes of travel – Barriers and Opportunities

Distance and time were identified as the biggest barriers to using active modes of transport and public transport. Family/childcare commitments e.g. dropping off children at childcare at certain times added to this time pressure, and public health offices not centrally located and therefore not close to bus/train stations created an additional barrier to registrars using public transport. Furthermore, a suitably private location to undertake a confidential handover over the telephone on public transport was recognised as a deterrent for registrars using public transport on on-call and post on-call days. Nonetheless, the train was an appealing travel option as it provided a desk space and an opportunity to use travel time productively. The cost of public transport and lack of integrated public and active transport routes were also acknowledged as barriers.

Walking and cycling routes in around work places were seen to be improving. There were also lots of initiatives to support active travel to and from work. However, it was recognised these activities, in the main, encouraged existing active travellers to travel further rather than attract new employees to greener modes of travel. Internal infrastructure (e.g. showers, cycle lockers, dedicated change rooms) were reported to be variable in workplaces/meeting places and did not create a culture which appeared to support active travel. Without the right level of security, there was a fear of bikes being vandalised or stolen. Some workplaces supported active travel through the provision of pool bicycles.

The modelled behaviour of seniors was important to influence change. In some public health departments, senior colleagues set a good example by travelling actively to meetings, normalising this as a mode of travel and inferring permission, and even an expectation, for junior members of the team to travel this way. In other areas, even when taking a train or cycling would take a similar length of time, it was the culture to always take the car.

Reimbursement for travel for study leave was felt to be a reasonably straightforward process. While there is a slight delay in reimbursement, this did not appear to influence the mode of transport StRs chose to take. Organising travel and/or reimbursement through placement boards was recognised as more complex for registrars.

Remote Working (including working from home)

Remote working refers to working from home, working from a different work base and remotely accessing meetings/training using technology either at home or at work. Remote working was recognised as having benefits by the focus group participants – e.g. less time travelling, more time working, more family time, time for activities to support personal health and wellbeing.

The level of support for remote working and working from home differed by boards and placements. In some boards, it was recognised that in some instances working remotely was on occasion necessary and could be more productive but was dependent on the piece of work currently being undertaken. In other areas, board policies strongly discouraged working from home.

While remote working saved time and money, there were also associated risks from overly encouraging this way of working. PH StRs want to be an integral part of a health board and public health team, but this is difficult to achieve when spending short periods of time with different teams, particularly in work bases with hot desk arrangements. Remote working increases the risk of isolation. Additionally, remote ways of working can mean training opportunities that arise at short notice may be missed (e.g. health protection cases/incidents, media enquiries).

It was felt that remote working may be more suitable for later stages of training. The risks from remote working for registrars in Phase 1 of training were thought to outweigh the benefits, whereas it was felt there should be a bit more flexibility for remote working for registrars in Phase 2 of training.

Many placements did not have the necessary hardware to support remote work. There are several boards where StRs do not have personal or easy access to work laptops, mobile phones, and remote access to files and emails. Systems to support phoning/videoing into meetings remotely while are in place in some workplaces are non-routinely used and often require advanced booking. Instant messenger was identified as useful both for line managers to crudely monitor at home working if needed and an easy means of communication with colleagues. In some workplaces there was a perception that working from home would not be as productive, and laptops and other hardware would not be secure.

The group recognised that meetings held by the NHS in Scotland are increasingly accessible remotely. Nonetheless there is still on occasion an expectation to attend in person. In addition, the technology does not always work or is of poor quality and there are missed networking opportunities. Meetings and training opportunities with colleagues in the rest of the UK is mixed. For example, evening lectures held by Faculty of Public Health do not usually cater for people wanting to participate remotely. On the other hand, some UK wide registrar groups meet exclusively by teleconference.

There was a recognised need and desire to be physically present when undertaking out of board (OOB) placements. For trainees living outside of the Central Belt it was not usually possible to commute daily for some OOB attachments, and registrars in some situations relocated to the Central Belt during this part of their training. This was not felt to be feasible for some trainees not located in central Scotland, particularly those with family commitments. Some OOB placements were seen to be flexible with remote working arrangements. However, the benefit of this was offset by a missed opportunity to integrate within a new public health team, and ad hoc training opportunities.

Interventions

Potential interventions were discussed in the context of the behaviours (identified above) they sought to address. These have been summarised into Table 2 using the Social Ecological Behavioural model as a framework.⁴

Table 2: Potential interventions

	Barriers	Facilitators	Potential Interventions
Individual	<ul style="list-style-type: none"> Confidence on bike 	<ul style="list-style-type: none"> Ability to ride a bike StRs recognise importance of greener travel for personal and population health Access to bikes 	<ul style="list-style-type: none"> Participate in cycle skills training e.g. Essential cycling skills by Cycling Scotland. Annual audit both acting as an intervention and a monitoring tool. Log miles for 2-4 weeks. Set target for active travel and public travel usage. Need to explore tool/app to support this so it is less labour intensive.
Interpersonal	<ul style="list-style-type: none"> Time Family/caring commitments Behaviour of seniors Networking, ad hoc training opportunities, peer support (particularly for StRs in smaller health boards outwith the Central Belt) missed with remote working. 	<ul style="list-style-type: none"> Behaviour of seniors 	<ul style="list-style-type: none"> Share results with TPD and local training programme co-ordinators. Present results at Train the Trainer event Let colleagues know how you are getting about, invite people to join you on your journey. Sharing ideas as to how you get from place to place to give people ideas how they might manage their travel. Recommend to colleagues cycle skills training e.g. Essential cycling skills by Cycling Scotland.
Organisational	<ul style="list-style-type: none"> Travel reimbursement from board Remote working policy Hardware and technology for remote working. Distance from home to office/training location allocation Confidential handovers Infrastructure – showers/lockers changing rooms/secure bike storage. 	<ul style="list-style-type: none"> Travel reimbursement from NES Remote working policy Hardware and technology for remote working. 	<ul style="list-style-type: none"> Actively raise sustainable travel as an issue in our boards e.g. advocate for sustainable travel for all events, highlight what registrars are doing about sustainability. Public Health Registrar organised training days: <ul style="list-style-type: none"> Checklist/Model for organising training days e.g. how will people get there; ensure buses/trains arrive at location; realistic travel times before the start and at the end; liftshare communication for training days that are harder to reach - ?whatsapp group; consider how people are going to remotely access; map where registrars live and most central/public transport accessible locations for training days. Once we have a good model, something we can take to various workplaces as we go through training. Feedback to organising committee for FPH in Scotland conference on importance of location with good public transport links. Advocate for how we do confidential handovers in new HP on call structures around people's realistic travel patterns. Support/create appetite for bids to improve cycling infrastructure in and around workplace (including changing facilities etc.) e.g. Cycling Scotland – Cycle Friendly Employer Development Fund
Community	<ul style="list-style-type: none"> Public health offices not centrally located 	<ul style="list-style-type: none"> Improving active travel routes around work places Train provides desk space 	<ul style="list-style-type: none"> Support/create appetite for bids to improve cycling infrastructure in and around workplace (including changing facilities etc.) e.g. Cycling Scotland – Cycle Friendly Employer Development Fund and/or Sustrans Community Links
Public Policy	<ul style="list-style-type: none"> Transporting bikes on public transport Cost of public transport Dedicated cycle routes 		<ul style="list-style-type: none"> Advocating for better investment in active travel infrastructure and integrated public transport system (Priority 8: Healthier Lives, Fairer Futures)

⁴ Bronfenbrenner, Urie (1989). "Ecological systems theory". In Vasta, Ross. *Annals of Child Development: Vol. 6*. London, UK: Jessica Kingsley Publishers. pp. 187–249

Discussion

The audit was conducted to establish baseline mileage and greenhouse gas emissions from work- and training-related travel for PH StRs in Scotland, and explore the barriers and opportunities to greener modes of transport and remote working.

The average daily miles per StR was large – 47.8 and 40.3 miles – in the two periods studied. The average daily miles for work/training purposes for Public Health StRs in the East Midlands in 2015 was between 37 and 43 miles in the periods studied.

The average daily commuting distance was 25.3 miles, with StRs whose home board was outside of the Central Belt commuting considerably further often by single occupancy car. The reasons behind this are multifactorial including distance and home board allocation, time constraints, public health offices being located out of town/city centres, and caring commitments. StRs based outside of the Central Belt travelled on average 3.4 times and 2.4 times (June/July and November/December respectively) as far commuting than registrars based in Central Belt. The average daily commute for a person in Scotland in 2012 was 18 miles.⁵

In June/July more miles were travelled by train, whereas in November/December more miles were travelled by single occupancy car. This may be a reflection of more miles travelled for training/study (including Part A preparation and examination, and conferences) in June/July compared to November/December.

The total GHG emission footprint of StR's travel over the six weeks was 2,791.4kgCO₂e. This is the equivalent GHG release from using 1200 litres of petrol, and the carbon sequestered by 3.3 acres of forest in one year. 73% of these emissions were directly from car travel. StR's travelled 1.3 times further by rail than by car, and despite this GHG emissions from car travel were 3 times more than that of rail travel.

The focus group felt that PH registrars do a substantial amount of travelling, driven by the need to access training opportunities, develop broad public health competence, and demonstrate a wealth of varied experience by the end of the five-year training programme. If the time StRs spent travelling could be reduced as much as feasibly possible this would have benefits for a registrars personal and professional life, as well as reducing carbon emissions.

Barriers and opportunities for active travel, public transport and remote working were reviewed by the focus group. Personal and workplace cultural factors, organisational policy, and workplace infrastructure to support active travel and home working were perceived as the biggest barriers. Remote working was supported by some workplaces and discouraged in others. It was recognised the benefits of home working – e.g. less time commuting, more time for work, more family time, time for activities to support personal health and wellbeing – had to be balanced with the risks of isolation and missed training opportunities.

The focus group recognised that there were areas that public health registrars in Scotland can have direct influence to increase greener modes of transport and remote working (e.g. how we organised training days), and an indirect influence in other areas (e.g. board remote working policy, training allocation, cycle routes). Realistic interventions were identified by the group which StRs could feasibly support.

⁵ <https://www.sustrans.org.uk/sites/default/files/images/files/Key%20Scotland%20Statistics%20Data%20Sheet%201214.pdf>

Limitations

The number of public health registrars in Scotland is small, although a substantial proportion of registrars participated in the audit (76%). Nonetheless, the results will be subject to fluctuations particularly due to placement rotations. Additionally, a participant's home board was used to group participants into whether they were based in or outside of the Central Belt, without considering current placement. This was due to split placements and incomplete data.

Next Steps

Public Health Specialty Registrars are committed to practicing in a manner that promotes sustainable development and are keen to pursue measures which promote active travel, public transport use, and remote working where appropriate, in their workplaces. Next steps identified are:

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1. Develop a travel plan template for PH StR training days;
2. Encourage and support Scottish PH StRs to support interventions identified in Table 2 in their local areas. e.g. through shared resources, clear priorities for action;
3. Repeat audit annually;

NHS Education Scotland

4. Share results of the audit with Training Programme Director and local training programme co-ordinators (e.g. at 'Train the Trainer' event), in order to advance the interventions outlined in table 2;
5. Use the results of this audit to encourage and support registrars on other specialty training programmes to undertake a similar audit e.g. through presentation at Scottish Medical Education Programme;

Other Audiences

6. Through dissemination and discussion in our workplaces, use the results of this audit to encourage and support colleagues to undertake a similar audit e.g. consultants, wider public health workforce;
7. Share results of audit with FPH in Scotland (e.g. CFPHS, Scottish FPH conference);
8. Share results of audit with Scottish Directors of Public Health.

Acknowledgements

Thank you to the PH StRs who completed the travel log and participated in the focus group. Thanks also to those who provide comments on the initial versions of the report.

Dr Emily Stevenson
Specialty Registrar in Public Health
March 2019