HEALTH OF PEOPLE WHO TRAVEL TO WORK:
THE EFFECT OF TRAVEL TIME AND MODE OF TRANSPORT ON HEALTH

WHAT HAVE WE LEARNT FROM THE KENT AND MEDWAY HEALTH AND LIFESTYLE SURVEY?

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The Effect of Travel Time and Mode of Transport on Health
What have we learnt from the Kent and Medway Health and Lifestyle Survey?

Executive Summary

This is the first study of the health of people travelling to work. The paper describes a study from the 2001 Kent and Medway Health and Lifestyle Survey. It focusses on the health of people commuting to London and those working elsewhere who were travelling for more than 45 minutes.

The survey included 3195 people currently employed, of whom 328 described themselves as a 'commuter' defined in the study as someone who works in London. Men working full time were more likely to commute than women. 3493 people reported how they travelled to work. In all 647 people were travelling 45 minutes of more to work, 228 (35.2%) were travelling for 90 minutes or more. 51% of the 328 who travelled into London took at least 90 minutes and 14% two hours or longer.

74% of people aged 16-74 in employment were using some form of rail or road transport; 56.8% drove a car and 6.4% went by train. 17.8% of car drivers took longer than 45 minutes to arrive at work. 84% of people travelling by train and 37% travelling by bus took 45 minutes or longer.

Commuters reported better health than those working outside London. They were less likely to have visited a doctor in the past 2 weeks, they could more easily walk a mile and climb stairs, but their lifestyles are less healthy and they were more likely to be obese, more likely to smoke and less likely to eat healthily. People travelling by bus were more likely to be depressed than people travelling by train or driving a car; depression did not seem to be related to whether or not someone commutes.

The study found that there appears to be a healthy commuter effect, however commuters being healthier should be balanced by the risk factors they carry threatening their future well-being; although poorer health was seen in people travelling by bus it may be that they choose this method of travel because they are less fit. A larger study focussing on people travelling 45 minutes or more to work is called for.

To Commute

- To travel some distance between one's home and place of work on a regular basis - Oxford English Dictionary

- Workers whose journey from home to work normally does not take less than 45 minutes - Costa et al.[1]

Factors affecting Health of People who Commute

Current literature explores a number of facets of the effect of travel to work on people's health, however nowhere has any report of the physical and mental health of commuters been found.

Where people choose to live and work affects such important aspects of people's travel patterns as journey times, number of changes, stability[2 3]. People travelling to work are putting themselves at increased risk including risk of RTAs[4 5], rail crashes[6], terrorism, also because they are driving while tired[7 8] they are at additional risk of road accidents. People travelling to work are exposed to respiratory disease due to dust, CO[9 10], noise[11], volatile hydrocarbons[12], smoke[13], and infection.

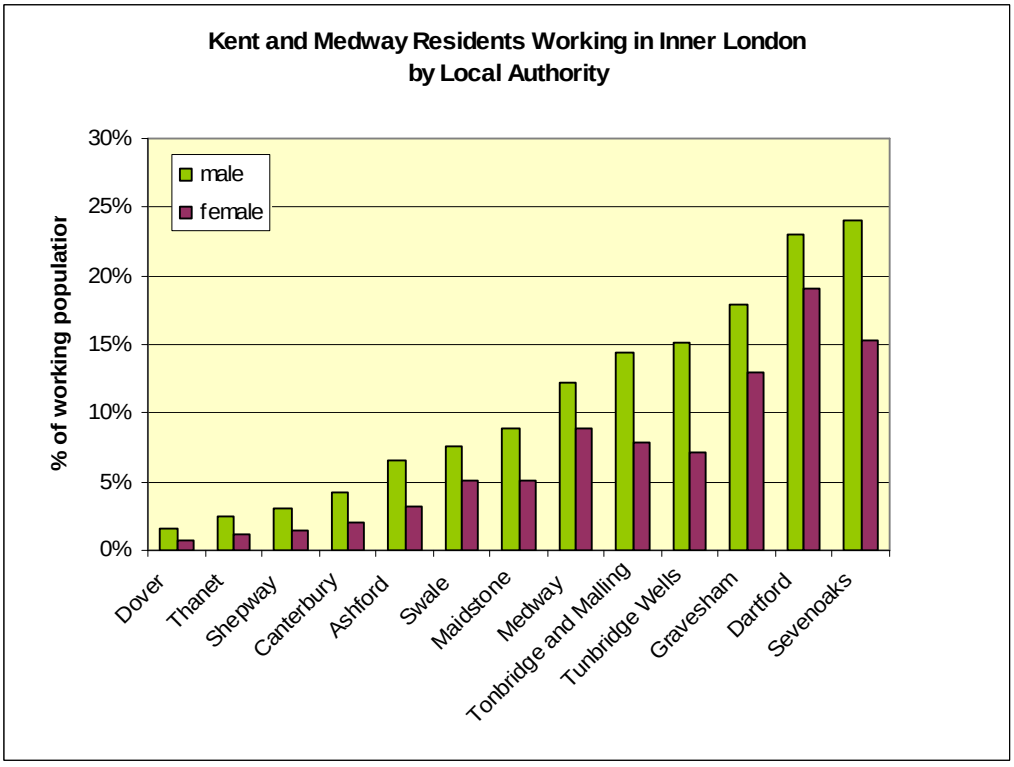
The social consequences of travel to work include isolation from family and friends, separation from health protective amenities, for example it is difficult to visit a doctor out of hours or to visit a leisure centre, and exacerbation of inequalities. The hours spent away from home or travelling mean commuters have reduced leisure hours, difficult working hours, less opportunity to sleep[14], greater stress[15 16 17 18], risk of depression[19], change in biological rhythms[20], fatigue, and difficult family and social life[21 22].

Access to exercise, healthy diet, attitudes to active commuting[23 24 25 26 27 28 29], sedentary lifestyle, leisure time[30] are all affected by spending time commuting and as a result are likely to affect health[31]. Developments in transport policy are now being encouraged to take into account the effect on the health of the commuter[32 33].

Hypothesis

- That commuters will be less healthy as a result of long hours (travel + working hours) which result in a reduction of access to and motivation for a healthy diet and exercise, also increased stress and likelihood of smoking and alcohol consumption

Figure 1



Source: 2001 Census

Findings from the Census

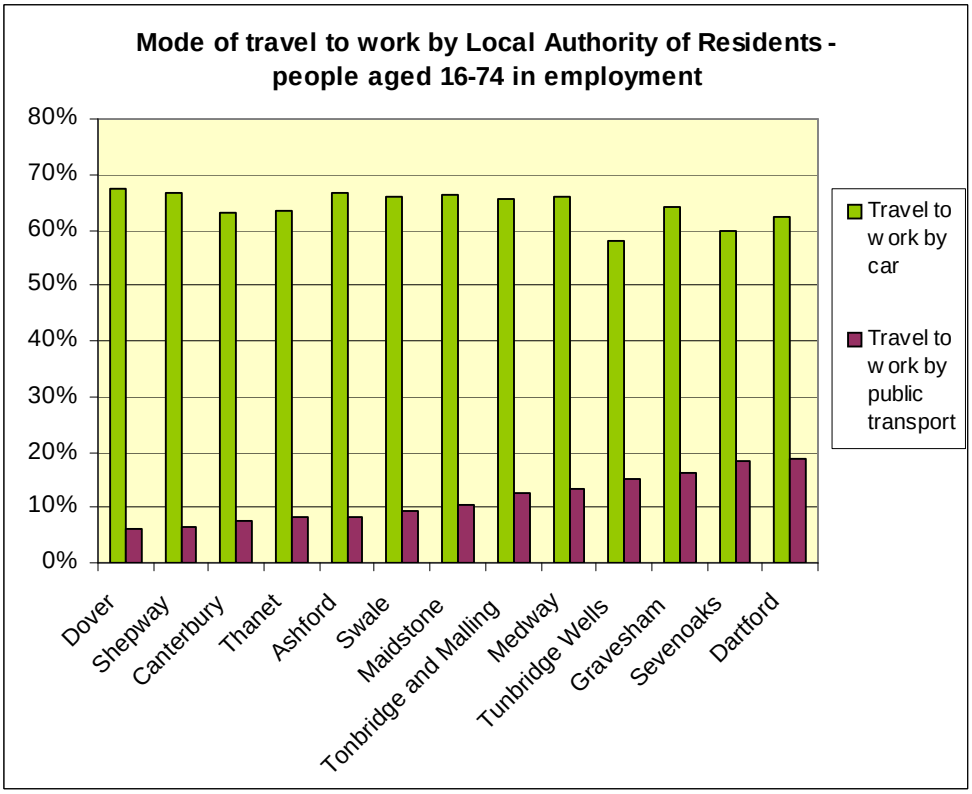
The 2001 Census illustrated that more people travel outside their local area for work the closer they live to London (Figure 1).;

- in Dover where people have the furthest to travel only 2.4% of working men and 0.9% of working women were travelling to Greater London
- in comparison, in Dartford which is the closest local authority in Kent and Medway to London 42.7% of working men and 35.5% of working women commute to Greater London,

- In Dartford 23.1% of working men and 19.1% of working women were traveling to inner London to work

The 2001 Census also confirms that people living closer to London are more likely to use public transport to travel to work (Figure 2).

Figure 2



Source: 2001 Census

Who is in the Kent and Medway Health and Lifestyle Survey?

The Kent and Medway Health and Lifestyle Survey is a large survey of 8071 adults aged 16 and over living in Kent and Medway. A random sample of one in a hundred people aged 16-74 and one in twenty five people aged 75 registered with a General Practitioner in Kent and Medway were sent a postal questionnaire in summer 2001; prepaid envelopes were enclosed for return, with one reminder post card sent after two weeks. Poorly responding areas of Dartford, Gravesham and Swanley and Medway and Swale were sent a second reminder enclosing a second copy of the questionnaire.

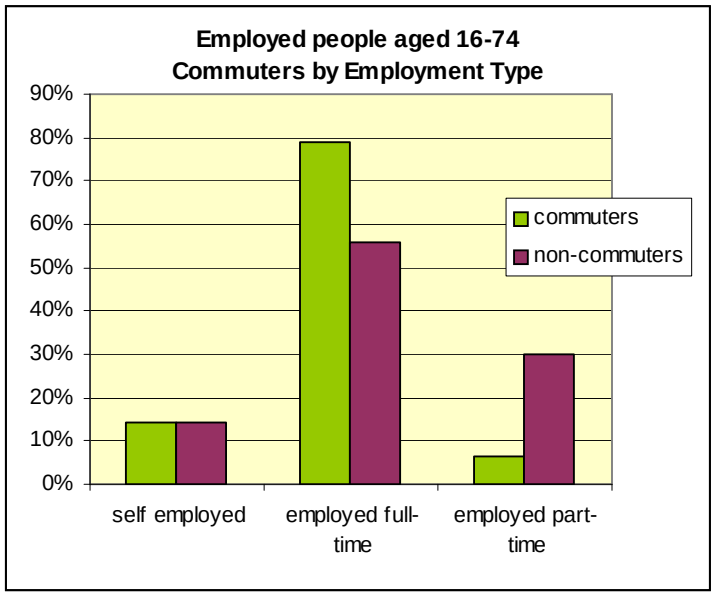
15,958 people were surveyed, 8071 people responded; this is a 51% response rate overall and 48% aged 16-74. Demographic details of the responders and information about their general health and lifestyle are published in the main survey report[34].

Employment and Travel to Work

The survey asked questions about employment and travel to work, and because it primarily asked about health and lifestyle the survey provides a rich source of information about working people.

There were 3195 (59.4%) people aged 16-74 who reported they were currently employed; 3088 (96.7%) reported whether or not they were a commuter. 15% were self employed, 58% were full time employed and 28% were part time employed. 31% of commuters and 48% of people who don't work in London did not provide their working hours so it has not been possible to use this information.

Figure 3



The survey asked :

'How do you usually travel to work?' 'Do you work in London (a commuter)?'

- 328 (10.3%) described themselves as a 'commuter' defined in the study as someone 'who works in London'

326 employed people aged 16-74 (11% of the sample) were commuters and 89% were not. People in full time employment were significantly more likely to be commuting than those who were self employed or part timers.

- 14.8% of people in full time employment were commuters; this compared to 10.4% who were self employed and only 2.6% of part timers (Chi sq. = 351; 6df; p=0.000).

Men were more likely to be commuting to work than women.

- 18.9% of men aged 16-74 in full time employment were commuting compared to only 10.4% of women (Chi sq. = 38.7; 2df; p=0.000).
- Although more men in part time employment commuted (5.0%) compared to 2.2% of women the numbers were small and the difference was not significant.

The survey asked

'How long does it take you on average to get to work? _____hours

_____minutes'

In our sample of employed people aged 16-74, 3193 (all but 2 of the respondents) provided information about whether they commute and how long it takes to travel to work.

- In all 647 (20.3%) people were travelling 45 minutes of more to work
- 228 (35.2%) of these for 90 minutes or longer and 73 (11.3%) for more than 2 hours

Figure 4

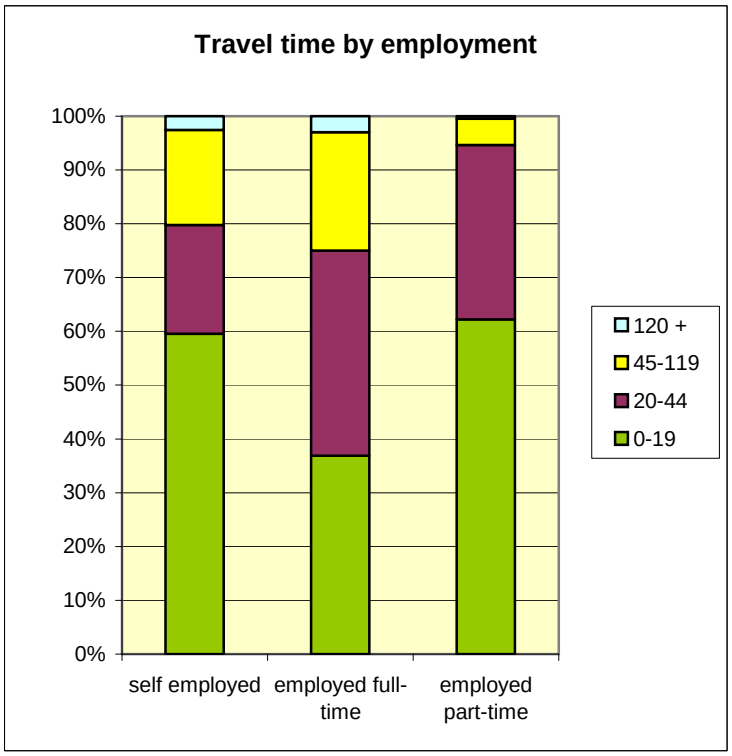
10.5% of Kent and Medway commuters aged 16-74 arrived at work in under 45 minutes compared to 89% of non-commuters; the difference is highly significant (Chi sq. = 1382; 2df; p = 0.000)

- 51% of commuters were travelling for 90 minutes or more.
- 83% of commuters took longer than an hour to arrive and 14% took longer than 2 hours (Chi sq. = 2005; 12df; p = 0.000) (Figure 2).

Only 5% of part time employees travelled more than 45 minutes to work compared to 20% of self employed people and 25% of full time employed people.

More than 60% of part timers travelled less than 20 minutes as did nearly 60% of self employed people (Figure 5).

Figure 5



The survey asked:

'How do you usually travel to work? (please tick the box for the longest part, by distance, of your usual journey to work)'

6.3% of people in the sample were working at home, 9.9% went to work on foot, and 2.1% by bike. 6.7% did not respond to the question (66% of these did not respond if they were commuting either).

Thus 74% were using some form of road or rail transport:

- 56.8% drove a car to work
- 5.3% were a passenger in a car
- 6.4% went by train
- 4.0% by bus or coach
- 1.4% by motor bike

People who worked at home were more likely to be self-employed.

- 59% of people working at home were self employed compared to 4.1% on the train, 2.9% on the bus and 11.8% driving a car.
- 80.5% of people travelling by train and 60.3% on the bus were full time; 63% driving a car were full time employed and 22.1% part time.

4 out of 5 people (80.4%) travelling to work on the train desribed themselves as 'a commuter'. This compared to 22.3% on the bus, and 6.3% of car drivers.

81% of the 3493 people who responded to the question arrived at work within 45 minutes; this figures includes those working at home (Table 1). Cyclists arrived at work in the shortest time, then car drivers and next people on the bus; people travelling by train took the longest to arrive at work (Figure 6). The difference between the modes of travel and time to arrive at work is significant (Chi sq. = 820; 9df; p=0.000).

Table 1

Time to travel to work by mode of travel

Time to get to work	**work at home**	**train**	**bus, minibus or coach**	**motor cycle**	**drive a car**	**passenger in a car**	**bicycle**	**foot**	**other**	**Total**
less than 45 minutes	217	36	87	40	1644	163	73	341	245	2846
	98.6%	16.0%	63.0%	81.6%	82.8%	87.6%	97.3%	98.3%	91.8%	81.5%
45 minutes or longer	3	189	51	9	342	23	2	6	22	647
	1.4%	84.0%	37.0%	18.4%	17.2%	12.4%	2.7%	1.7%	8.2%	18.5%
Total	220	225	138	49	1986	186	75	347	267	3493

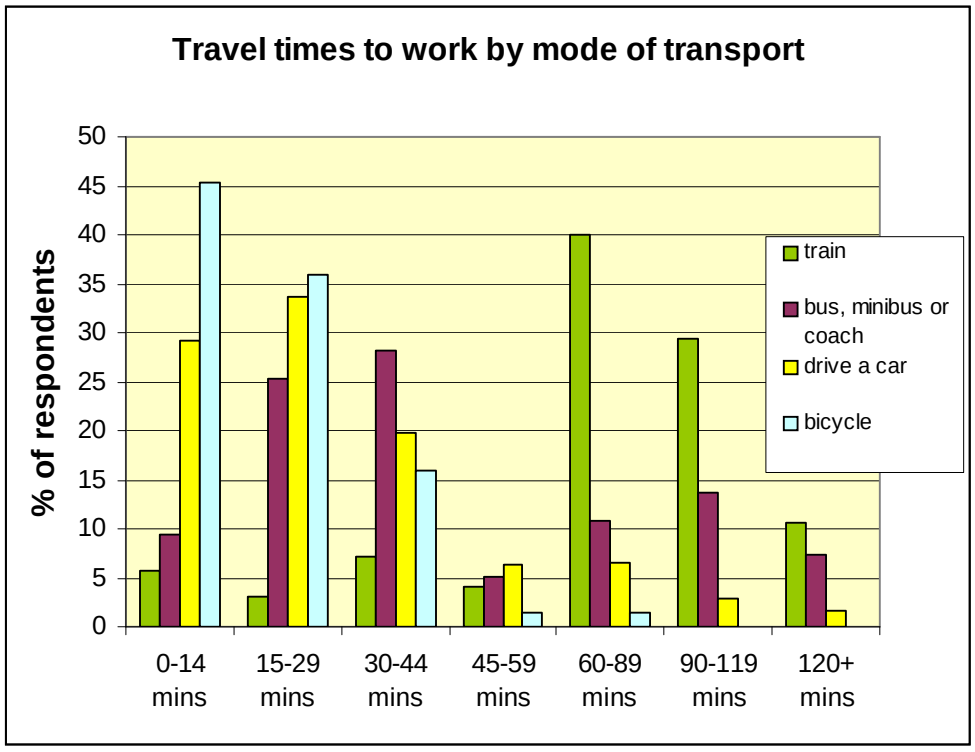
- 84% of commuters travelling to work by train and 37% travelling by us were those most likely to take longer than an hour to arrive at work,
- 81% of bus travellers and 76% of train travellers who were not commuters arrived at work in less than 45 minutes

- there was a cohort of bus travellers (47% of non-commuters who travel by bus) who were travelling for less than 30 minutes.

There were also 342 car drivers (17.8%) in the sample who took longer than 45 minutes to arrive.

- 83.6% of car drivers who were commuters took longer than 45 minutes to get to work
- 36% of commuting car drivers took longer than 90 minutes to asrrive at work

Figure 6



Travel and General Health

General Health

In this survey commuters reported better general health than those who are working outside London, and fewer were disabled. They were less likely to have visited a doctor in the last 2 weeks, or to have been given a prescription; they could more easily walk a

mile and climb stairs, but their lifestyles were less healthy and they were more likely to be obese, more likely to smoke and less likely to eat healthily.

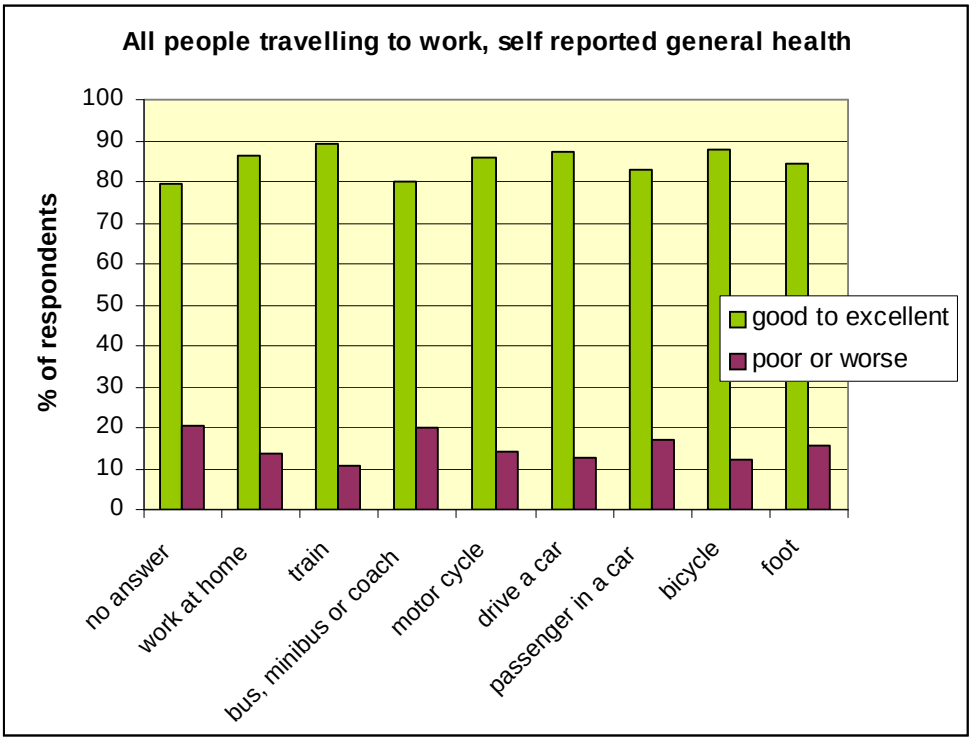
49.1% of people travelling for more than 45 minutes reported their health to be excellent or very good, compared to 45.7% of people travelling for less than 45 minutes. The difference was not significant.

- 9.9% of people commuting to London and travelling 45 minutes or longer reported their general health to be poor; this compares to 12.6% who travel for 45 minutes or more and do not go into London to work.

There is a difference between self reported health by different modes of travel to work (Figure 8).

- 9.1% of people travelling by train for 45 minutes or longer reported their general health to be poor, compared to 16.0% on the bus, and 11% who drive a car.

Figure 8



Long Standing Illness or Disability

Commuters were less likely to report long-standing illness or disability. 28.8% of people travelling for less than 45 minutes reported long standing illness or disability compared to 22.7% of people travelling for more than 45 minutes (Chi sq. = 10.17; 2df; p = 0.006)

- 20.4% of the 328 people commuting to London and travelling more than 45 minutes and 19.7% of all 365 commuters in the study said they had a long standing disability or illness.
- 24.9% of the 313 people travelling 45 minutes or more but not into London, and 28.2% of all people travelling to work but not working in London reported a long standing disability or illness.
- 22.2% of the 189 people travelling for 45 minutes or longer, by train, reported they had a long-standing disability or illness compared to 19.6% on the bus and 22.8% driving a car.

Limits to daily activity

Commuters were less likely to report their daily activity to be limited than were people who were not commuting. Non-commuters were more likely to be limited in moderate activity, climbing stairs and walking a distance (Table 2).

Table 2

Health Limits by whether a commuter

	Commuters (n=365)		**Non-commuters (n=2934)**		**Significance**
	Limited a lot	**Limited a little**	**Limited a lot**	**Limited a little**	
Moderate activity	1.1%	7.7%	2.7%	9.9%	Chi sq. = 54.9; 6df; p=0.000
Climbing several flights of stairs	2.7%	14.8%	4.0%	18.2%	Chi sq. = 75.7; 6df; p=0.000
Walking more than a mile	2.5%	7.4%	3.9%	10.3%	Chi sq. = 71.8; 6df; p=0.000

This held even for people travelling for 45 minutes or more but not a commuter; commuters to London who travelled for 45 minutes or longer were more likely to report

they had no limit in moderate activity or their ability to climb stairs or to walk a mile than people travelling for 45 or more but not commuting to London; the differences were not significant.

People travelling by bus or coach were more likely to report a limit to their activity than those on the train or driving a car.

- 84% of all people of working age in this study (3496 people) reported they had no limit to moderate activities;
- the proportion ranged from 81.3% travelling by bus to 94.7% of those travelling to work by bicycle.

Table 3

Health Limits – all people aged 16-74 who travel for 45 minutes or more to work by mode of travel

	Train (n=189)		**Bus (n=51)**		**Car Driver (n=342)**		**Significance**
	Limited a lot	**Limited a little**	**Limited a lot**	**Limited a little**	**Limited a lot**	**Limited a little**	
Moderate activity	2.1%	6.9%	2.0%	9.81%	0.9%	9.1%	Chi sq. = 96.0; 27df; p = 0.000
Climbing several flights of stairs	2.1%	11.6%	2.0%	27.5%	2.6%	13.7%	Chi sq. = 96.0; 27df; p = 0.000
Walking more than a mile	1.1%	7.9%	5.9%	5.9%	2.0%	8.8%	Chi sq. = 96.0; 27df; p = 0.000

People travelling by bus were especially limited in being able to climb several flights of stairs; 29.5% of bus travellers on the bus for 45 minutes were limited a little or a lot(Table 3); this rose to 38.7% of the 31 respondents who were commiting to London by bus.

Health Behaviour

Smoking

Smoking rates were heavier amongst those with longer journeys except for those travelling on the train.

- 22.6% of commuters (who travel for more than 45 minutes) were current smokers compared to 25.2% of those travelling for 45 minutes who did not go into London (Chi sq. = 23.4; 10df; p = 0.009)
- 23.5% of people travelling for less than 45 minutes and not going into London were current smokers

People who travelled passively were also more likely to be current smokers; smoking rates were higher amongst those travelling on the bus and those who were car passengers. Car drivers also smoked more heavily than those who were on the train (Table 4) (Chi sq = 90.2; 45df; p = 0.000).

- there is little difference in quit rates between commuters (27.7% were ex-smokers) and non-commuters (28.4%)
- more than one in four people travelling by train (26.2%), and nearly one in three car drivers (30.5%) had given up smoking
- people travelling passively were significantly less likely to have given up smoking. Only 20.8% of all people travelling by bus and 19.4% of car passengers had given up smoking

Table 4

Current smoking by mode of travel – all people travelling to work

	N =	**Smokes daily**	**Smokes occesionally**	**Ex-smoker**
Train	225	11.1%	4.9%	26.2%
Bus	139	26.6%	3.6%	20.8%
Car driver	1986	18.5%	4.6%	30.5%
Car passenger	186	30.1%	5.4%	19.4%

Exercise and Obesity

Respondents were asked:
*'On **average**, how often do you undertake **any** physical activity which lasts for **30 minutes** or more?'*

There is no significant difference between the BMI or exercise patterns of commuters and others travelling for 45 minutes or more to work.

- 14.6% of people travelling less than 45 minutes and 14.2% of people travelling more than 45 minutes had a BMI of 30 or more
- 14.1% of commuters and 14.3% of people not commuting had a BMI of 30 or more
- 14.9% of people travelling less than 45 minutes to work and 13.4% of those travelling longer than 45 minutes exercised for 30 minutes or more 5 times a week
- 12.3% of commuters and 14.8% of non-commuters exercised 30 minutes or more 5 times a week (this difference was not significant)

The biggest differences were seen between modes of travel (Table 5). There is very little difference with length of journey between difference modes of travel. Car drivers who travel for 45 minutes or more do appear in this study to be slightly heavier, with 15.9% who have a BMI greater than 30 compared to 12.7% on the train, 8.2% who travel on the bus, 13.0% of car passengers.

Table 5

All people travelling to work aged 16-74

	Train (n=225)	**Bus (n=139)**	**Car driver (n=1986)**	**Car passenger (n=186)**	**Significance**
Exercise more than 5 times a week	12.0%	10.1%	11.6%	17.2%	Chi sq. = 116.9; 18 df; p = 0.000
BMI > 30	12.5%	8.1%	15.7%	12.8%	Chi sq. = 16.2; 9df; p = 0.062

Mental Health

The survey asked standard questions related to depression.

***'In the past year**, have you had **2 weeks or more** during which you felt sad, unhappy or depressed, or when you lost all interest or pleasure in things that you usually cared about or enjoyed?'*

*'Have you had **2 years or more** in your life when you felt depressed or sad most days?'*

There was no difference between commuters and non commuters travelling for 45 minutes or longer to work. People travelling for less than 45 minutes were significantly more likely to have been depressed in the two weeks before they responded to the survey

- 33.2% of people travelling for less than 45 minutes said they had been depressed or sad in the past 2 weeks compared to 25.5% of those who travelled for 45 minutes or longer (Chi sq. = 15.9; 2 df; p = 0.000)
- The rate was slightly higher amongst people on the bus (29.4%) and people driving a car (27.5%) than those on the train (23.3%).

31.8% of all people travelling to work reported feeling depressed or sad in the past two weeks. This ranged from 24.9% travelling by train to 36.7% travelling by bus. There was even greater difference for reporting feeling sad and depressed for two years between modes of travel with 25.5% of people travelling to work by bus for 45 minutes or longer compared to 10.8% of people driving a car and 12.2% travelling by train feeling sad and depressed for two years (the difference was not significant).

Conclusions

The evidence from the analysis of the Kent and Medway survey shows that people commuting from Kent and Medway to London are probably more healthy than other working people. This begs the question why? Are they self selected because they need to be fit to negotiate the long journey, walking from station to station, using the underground etc. Or do people working in London generally fall into the more affluent

socio-economic groups who are better educated, better informed, and more likely both to lead a healthy lifestyle but also to have better health.

There is very little evidence from the literature to support this finding; most of the published work highlights the health problems commuters are subjected to as a result of unclean air, risk of accidents, and to some extent unsocial hours and long days with disturbed sleep patterns. This work does not support the theory that commuters cannot have the time to look after their health (defined as diet and exercise, smoking and alcohol).

Differences may be age related. Commuters ibn this study were slightly younger than non-commuters - 27.7% were aged between 25 and 34, and 28.2% 35-44, compared to 16.5% and 24.1% of non-commuters. 30.2% of bus passengers and 28.5% of car passengers were aged under 25 compared to 9.8% on the train and 7.1% of car drivers.

Discussion

This is the first study to examine the health status of people travelling to work. Previous work has concentrated on the effects of the environment including pollution and risk (4-13), and there has been work which examines the possibility of sleep deprivation, upset to patterns of waking, effect on family life for people who travel to work (12-22). There is also a literature examining the effect of work on health. There is a growing literature on active commuting (23-30), however this work assumes the benefits of cycling or walking over the car.

This study specifically sets out to analyse the health status of individuals who travel more than 45 minutes to work, or who call themselves a commuter; it therefore includes people travelling by car across the county or to other parts of the south east as well as those who travel into London. People who called themselves a commuter were by definition here people travelling into London.

Health outcomes in this study included self reported health, self reported long term illness or disability and health limits (questions from the SF-36). In addition this study starts to provide insights into the risk of obesity related to different modes of travel. In

particular the study has highlighted that people travelling into London (commuters) were more healthy by these measures, but there is also a significant difference in the health status by mode of transport, the study picking up a significant risk amongst people travelling on the bus, who reported poorer health, were more likely to smoke, less likely to exercise 5 times a week and more likely to suffer from depression. Car drivers were those most likely to be obese.

This study used a small sample of commuters (n=326) and suggests a bigger study would be valuable to examine in depth the possibility of a healthy commuter effect, and also why we have found that the health of people on the bus is so much worse, for example are they from a more deprived background, in more poorly paid jobs, or do they take the bus for convenience because they are less able to cope with the amount of physical activity demanded by train travel.

APPENDIX

Survey Questions

How do you usually travel to work? (**please tick the box for the longest part, by distance, of your usual journey to work)**

Work mainly at or from home	☐
Train	☐
Bus, minibus or coach	☐
Motor cycle, scooter or moped	☐
Driving a car or van	☐
Passenger in a car or van	☐
Bicycle	☐
On foot	☐

Other (please specify)

_____

Q65. How long does it take you on average to get to work? _____hours _____minutes

Q66. Do you work in London (a commuter) Yes ☐ No ☐

Q70. Which of the following best describes your employment position?

I am self employed	☐
I am employed full-time (more than 30 hrs a week) (How many hours exactly?_____)	☐
I am employed part-time (less than 30 hrs a week)	☐
I am retired	☐
I am unemployed and looking for work	☐
I am not working and not looking for work	☐
I am unable to work due to disability or ill health	☐
I am caring for my home and family/dependents	☐
I am a full-time student	☐
Other(please describe below)	☐

_____

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