GoWell East Study of Physical Activity in Secondary School Pupils in Glasgow

Headline Indicators Report for S2 Pupils in 2014

December 2014

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Acknowledgements:

We would like to thank the pupils and staff at the six participating schools for their interest and participation in the study. We also appreciate the support of Glasgow City Council Education Services. Thanks to Elaine Hindle, and other staff of the MRC SPHSU survey office for the organisation and management of the collection of the data, and to Laura Baggley for liaising with the schools and arranging the data collection periods. The research is funded by the Scottish Government as part of the GoWell in the East End programme.

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The GoWell East Study of Physical Activity among Secondary School Pupils:

Introduction

In 2013, GoWell East commenced a cohort study of physical activity among secondary school pupils in Glasgow. The study will run from 2013 to 2017, following a group of pupils in six Glasgow secondary schools throughout their school careers from S1 to S5. The study tracks pupils' participation in physical activity, including sports, as well as other types of activity (including travel to and from school), during their school time and leisure time, during the week and at the weekend. The research is done by asking pupils to complete the Youth Physical Activity Questionnaire (YPAQ)[1]. A group of S5 pupils were also asked to complete the survey in 2013 in order to provide a benchmark with which to compare the S1 study cohort when they reach S5 in 2017.

In 2013, the pupils in the six schools who were in S1 were invited to complete the YPAQ survey and the key findings were published in a Headline Indicators report available at: http://www.gowellonline.com/publications/332_physical_activity_in_secondary_school_pupils_headline_indicators_2013. This report is from the second survey of the same pupils, now in S2.

A total of 722 S2 pupils completed the Wave 2 YPAQ survey across the six schools in 2014: 366 girls and 355 boys[2]. The data was collected between 28th April and 15th May 2014, the same year as the Commonwealth Games, around three months prior to the Games themselves.

[1] The YPAQ was assessed for validity and reliability in: Corder K, van Sluijs EMF, Wright A, Whincup P, Wareham NJ, Ekelund U: Is it possible to assess free-living physical activity and energy expenditure in young people by self-report? *Am J Clin Nutr* 2009, 89:862-870. At Wave Two, we amended the survey form we used in a number of ways. The main change was to ask pupils to record the average time spent on each activity per occasion, rather than to record the aggregate or total time spent on the activity across the weekdays and weekend. This change was made because pupils found it difficult to do the mental arithmetic required at Wave One. We also amended the listing of free time activities to include a number which specified 'sitting' so as to give a better measure of sedentary activity; and we expanded the reporting of travel to and from school to each mode for each journey.

[2] The gender is unknown for one of the pupils who completed the survey.

This report presents some of the key findings from the wave two of the survey, comparing results for boys and girls across four activity areas:

- Physical Activities, including Sports
- Active Travel to School
- Homework
- Screen Time

Physical Activities, Including Sports

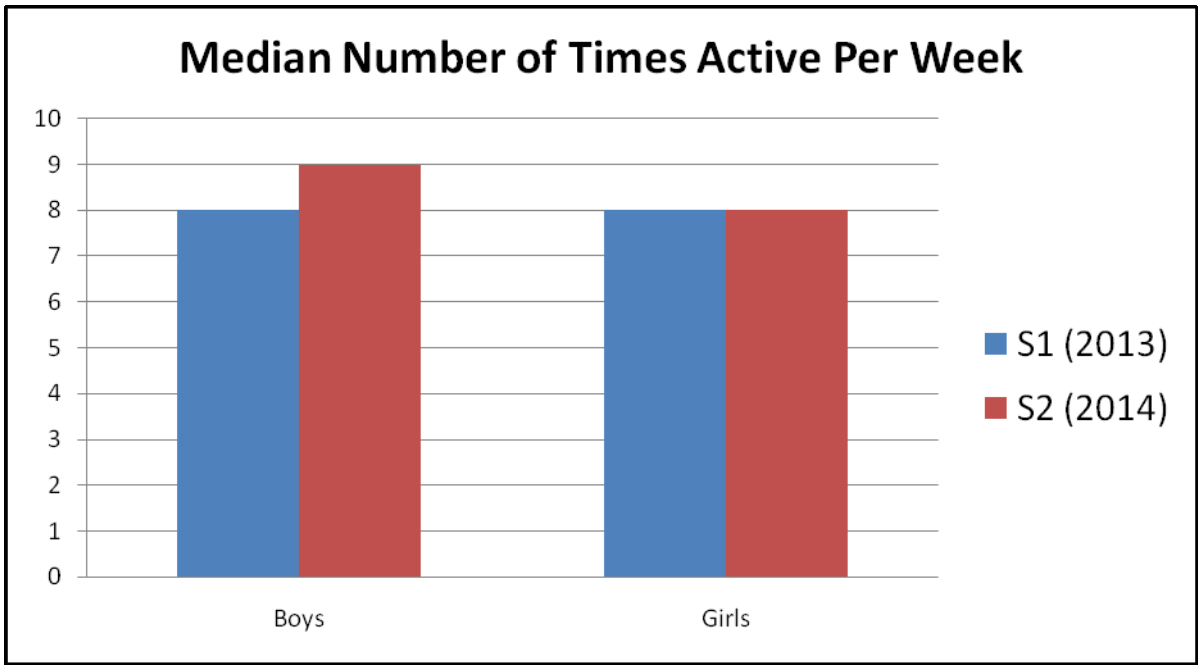
Pupils were asked to record if they did any of a list of 25 physical activities (including sports), in the past week, separately for weekdays and at the weekend. If they did any of the activities listed, they were also asked to record how many times they did each activity. The physical activities included in the count were:

Aerobics	Martial arts / boxing	Bike riding
Baseball / softball	Netball	Trampolining
Basketball / volleyball	Rugby	Bowling
Cricket	Running or jogging	Rollerblading / roller skating
Dancing	Swimming lessons	Skateboarding
Football	Swimming for fun	Skiing, snowboarding,
Shinty, Gaelic football, lacrosse	Racquet sports, e.g. table tennis, tennis, badminton, squash.	Skipping rope
Gymnastics	Golf	Walk for exercise / hiking
Hockey (field or ice)	Bike riding	

Number of Physical Activity Episodes

This chart shows the median number of times that pupils took part in any of the above listed physical activities over the past seven days, both during school time and during leisure time, combined[3].

[3] The use of the median avoids the inflation of the average (mean) by the extreme values reported by a small number of pupils.

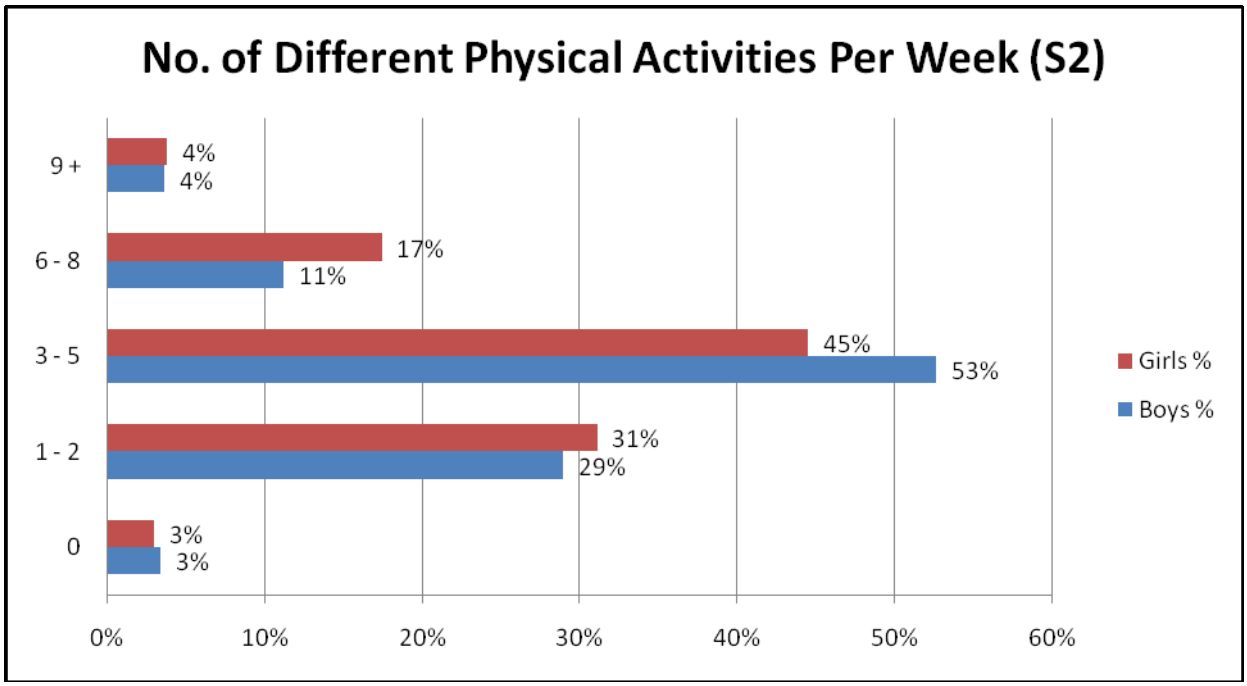

Median Number of Times Active Per Week
10
9
8
7
6
5
4
3
2
1
0
Boys
Girls
S1 (2013)
S2 (2014)

Key findings

- Between the time points 2013-2014 girls reported a similar number of episodes (median 8 times per week). Boys increased their median number of active episodes from 8 to 9.
- In both waves, 10% of pupils were active only twice per week.

Range of Physical Activities

Across school-based activities and leisure time activities, we can see how many different physical activities pupils did in the past week.



Key Findings:

- Most pupils reported that they took part in between three to five different physical activities per week. This pattern was similar to wave one.
- Around a fifth (18%) of pupils reported that they participated in six or more physical activities in a week, a decrease from wave one when around a quarter (24%) of pupils did so.
- Very few pupils, three percent of girls and boys, did not take part in any physical activities in the past week.

Most Common Physical Activities: Weekdays

Looking just at how many pupils took part in each physical activity in the past week (irrespective of how many times they did the activity in question), we can see what the most popular activities were during the weekdays and weekends.

Key findings:

- Similar to wave one, football and running were the top two sports for boys during the week, and running and dancing the top two activities for girls.

- In contrast, swimming for fun which was third most popular for boys and girls in wave one, was relatively less popular at wave two, replaced by basketball for the boys, and hiking/walking for the girls.

- For boys, participation in most sports was slightly lower in S2 than in S1. The biggest drops were for swimming for fun and gymnastics, where rates of participation fell by 7%. Only three sports saw an increase in participation from S1 to S2: running, basketball and netball, with rises of between 2 and 5%.

- Similarly for girls, participation fell from S1 to S2 in the case of two-thirds of the sports, the biggest change being a substantial drop (by almost 50%) in the number of girls who reported swimming for fun, from 33% to 18%. Five sports saw an increase in participation of between five and 10%, these were netball (the highest increase), basketball, running, hiking, and hockey.

Boys' Participation in Sports during Weekdays, S1 (2013) and S2 (2014)

Boys	S1 (2013) Mon-Fri	Boys	S2 (2014) Mon-Fri
football	62.2%	football	62.0%
running	54.7%	running	59.4%
swimming (fun)	28.9%	basketball	26.5%
basketball	22.1%	swimming (fun)	21.4%
racquet	21.2%	bike	17.7%
bike	18.9%	racquet	15.5%
martial arts/boxing	16.9%	martial arts etc	14.1%
hiking/walking	14.0%	hiking/walking	13.0%
baseball	13.5%	baseball	11.8%
gymnastics	11.7%	rugby	9.3%
trampoline	10.6%	trampoline	8.2%
rugby	10.3%	cricket	6.5%
cricket	6.9%	gymnastics	4.8%
hockey	6.9%	golf	4.8%
skateboard	6.6%	swimming (lessons)	4.5%
swimming (lessons)	6.0%	hockey	4.2%
golf	5.7%	aerobics	3.9%
aerobics	4.6%	netball	3.9%
Skiing etc	4.6%	bowling	3.1%
dancing	4.3%	skateboard	3.1%
bowling	4.0%	skipping	2.0%
skipping	3.7%	Skiing etc	1.4%
rollerblading	2.3%	rollerblading	1.4%
netball	2.0%	dancing	0.6%
shinty	1.7%	shinty	0.6%
n	(349)	n	(355)

Girls' Participation in Sports during Weekdays, S1 (2013) and S2 (2014)

Girls	S1 (2013) Mon-Fri	Girls	S2 (2014) Mon-Fri
running	69.3%	running	75.1%
dancing	45.8%	dancing	38.3%
swimming (fun)	33.0%	hiking/walking	27.6%
gymnastics	25.3%	basketball	20.2%
trampoline	23.5%	trampoline	18.9%
hiking/walking	22.5%	swimming (fun)	18.0%
football	17.9%	gymnastics	17.8%
bike	15.1%	football	15.8%
basketball	12.0%	netball	12.6%
racquet	10.5%	aerobics	11.2%
aerobics	10.0%	bike	10.9%
netball	9.7%	racquet	8.5%
martial arts/boxing	9.2%	baseball	8.2%
baseball	9.0%	hockey	8.2%
skipping	9.0%	skipping	6.0%
swimming (lessons)	6.9%	martial arts etc	4.9%
rollerblading	5.9%	bowling	4.9%
bowling	5.1%	swimming (lessons)	4.6%
skateboard	4.3%	rollerblading	4.1%
hockey	3.1%	skateboard	3.8%
skiing etc	2.8%	rugby	2.7%
rugby	2.3%	golf	1.9%
golf	1.3%	cricket	1.1%
cricket	1.3%	Skiing etc	1.1%
shinty	0.3%	shinty	0.8%
n	(391)	n	(366)

Most Common Physical Activities: Weekends

Key findings:

- Boys' participation at the weekend fell from S1 to S2 for *all* sports. In the case of seven sports, the drop in participation was ten percent or more, with the biggest declines observed for running (-29%), swimming for fun (-19%), football (-16%) and racquet sports (-16%).

- As in wave one, football, running and swimming for fun were the top three weekend activities for boys, with football being by far the most popular, played by the half the boys at the weekend.

- Girls' participation at the weekend also fell from S1 to S2 for *all* sports. In the case of six sports, the drop in participation was ten percent or more, with the biggest declines being for running (-48%), dancing (-31%), swimming for fun (-25%) and gymnastics (-21%).

- For girls, only running remained as a top activity, played by a quarter of girls. The next most popular activities were hiking/walking and dancing/cheerleading, rather than swimming for fun and trampolining which were more common at Wave 1.

Boys' Participation in Sports during Weekends, S1 (2013) and S2 (2014)

Boys	S1 (2013) Weekend	Boys	S2 (2014) Weekend
football	67.0%	football	51.0%
running	55.3%	running	26.2%
swimming (fun)	34.7%	swimming (fun)	16.1%
bike	25.5%	bike	14.6%
racquet	23.8%	basketball	13.0%
basketball	22.1%	hiking/walking	10.7%
martial arts/boxing	17.5%	racquet	7.6%
hiking/walking	17.2%	baseball	4.5%
baseball	14.0%	martial arts etc	4.5%
trampoline	11.7%	golf	4.2%
gymnastics	11.7%	rugby	3.7%
rugby	10.3%	trampoline	3.4%
swimming (lessons)	7.7%	cricket	2.5%
hockey	6.9%	skateboard	2.3%
skateboard	6.6%	swimming (lessons)	2.0%
golf	6.3%	bowling	2.0%
cricket	6.0%	Skiing etc	1.7%
bowling	4.6%	aerobics	1.4%
Skiing etc	4.6%	gymnastics	1.1%
aerobics	4.3%	hockey	1.1%
dancing	4.3%	netball	1.1%
skipping	3.7%	skipping	1.1%
rollerblading	2.3%	rollerblading	0.8%
netball	2.0%	dancing	0.3%
shinty	1.7%	shinty	0.3%
n	(349)	n	(355)

Girls' Participation in Sports at Weekends, S1 (2013) and S2 (2014)

Girls	S1 (2013) Weekend	Girls	S2 (2014) Weekend
running	72.6%	running	24.6%
dancing	48.6%	hiking/walking	22.4%
swimming (fun)	39.6%	dancing	17.5%
trampoline	27.1%	swimming (fun)	14.5%
hiking/walking	26.1%	trampoline	10.4%
gymnastics	25.8%	football	9.6%
bike	19.4%	bike	8.7%
football	18.7%	gymnastics	4.9%
basketball	13.3%	basketball	4.4%
racquet	11.5%	aerobics	4.1%
skipping	9.7%	netball	3.8%
aerobics	9.5%	racquet	3.8%
netball	9.5%	rollerblading	3.6%
martial arts/boxing	9.0%	skipping	3.3%
baseball	9.0%	bowling	3.0%
bowling	7.4%	skateboard	3.0%
swimming (lessons)	7.4%	martial arts etc	2.2%
rollerblading	6.6%	rugby	1.9%
skateboard	5.1%	golf	1.6%
skiing etc	3.6%	skiing etc	1.4%
hockey	3.3%	swimming (lessons)	1.1%
rugby	2.3%	baseball	0.8%
golf	2.0%	cricket	0.5%
cricket	1.3%	hockey	0.5%
shinty	0.3%	shinty	0.0%
n	(391)	n	(366)

School Organisation of Physical Activities

In the questionnaire, pupils were asked, for any of twenty of the sports they participated in during the week or at weekends, whether the school had organised the activity, whether this took place within school hours, or outside of school time. This section includes two activities not asked in Wave 1: Other athletics and Strength training.

Key findings:

- There was some school involvement recorded for all 20 sports activities.

- For most of the sports (12 out of 20), the school was involved in organising the activity (either within or outwith school hours) for the majority of those pupils who participated in the sport in question.

- The highest level of school involvement was recorded for 'Other athletics' (i.e. athletics other than running), with some 83% of pupils reporting this was organised within school hours, and 4% outwith.

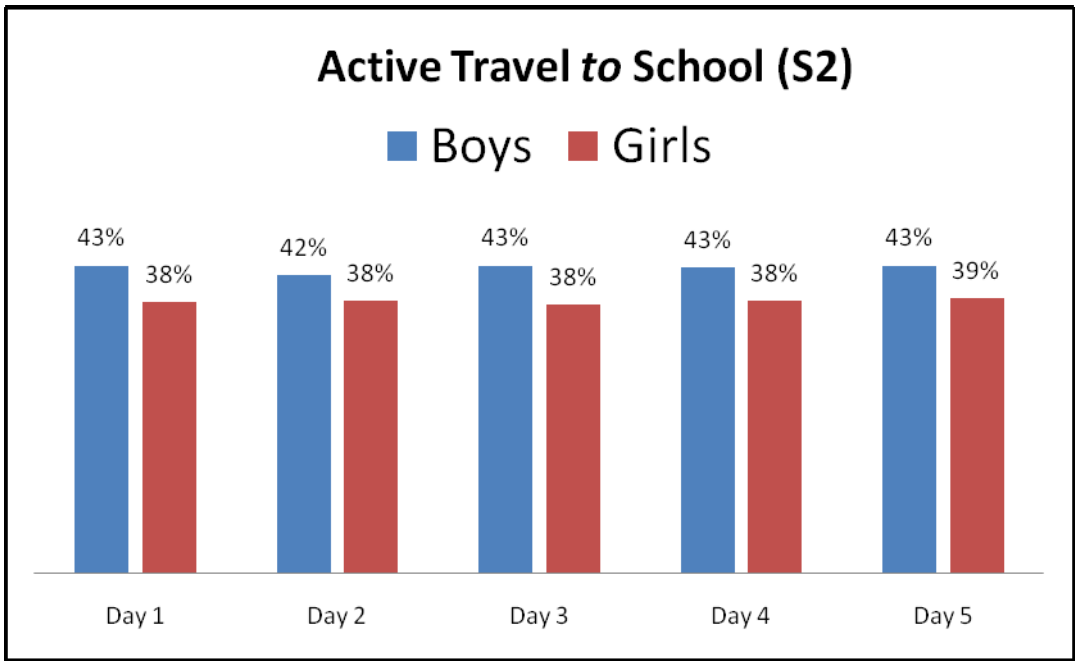
- The lowest level of school involvement was recorded for shinty (0% within school hours, and 14% outside) and golf (0% within school hours, and 25% outside). Golf and shinty also had the lowest numbers of pupils reporting as having participated.

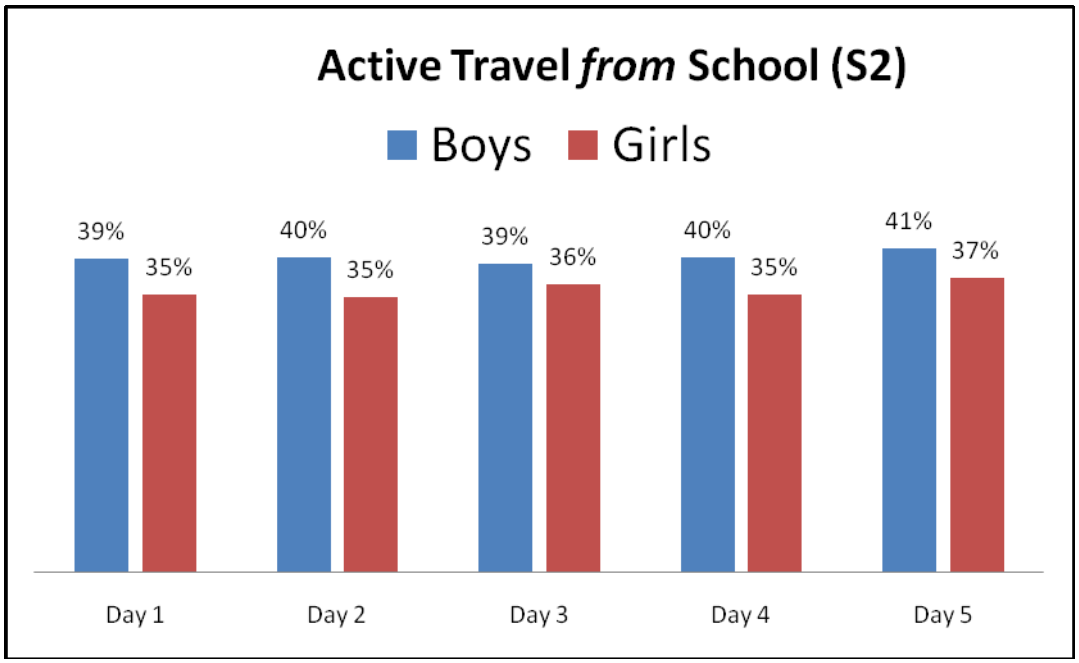
Involvement of Schools in Organising Sports Activities for Pupils

Sport	Organised within school hours	Organised outside school hours	No school organisation	Number reported doing activity
Aerobics	15%	32%	58%	59
Baseball/softball	64%	8%	30%	86
Basketball/Volleyball	51%	18%	39%	187
Cricket	19%	38%	47%	32
Dancing/cheerleading	6%	54%	41%	151
Football	22%	36%	50%	309
Shinty/lacrosse/Gaelic football	0%	14%	86%	7
Gymnastics	40%	25%	41%	88
Hockey	35%	35%	31%	52
Martial arts/boxing	4%	32%	64%	77
Netball	52%	19%	30%	63
Rugby	37%	51%	31%	51
Running/jogging	59%	19%	30%	513
Other Athletics	83%	4%	16%	286
Swimming lessons	26%	39%	39%	38
Swimming for fun	6%	30%	66%	199
Racquet sports	29%	29%	46%	106
Golf	0%	25%	75%	36
Skiing/sledging/snowboarding	5%	42%	53%	19
Strength training	14%	29%	61%	219

Modes of Travel To and From School

In Wave 2, more detailed information was collected on the nature of travel to and from school, identifying the actual time spent each day in different modes of transport to school: walking, cycling, car, bus or train. Thus, multi-mode journeys were reported at Wave 2. This level of refinement has produced contrasting results to the Wave one findings, and it is difficult to make a direct comparison. Active travel is defined as walking or cycling, with other modes of transport classified as inactive travel. The charts below show the size of the ideal group – those who ***only*** use any of the active means to travel to or from school – for each day of the week.





Note: charts above show % of pupils who reported *only* using walking or cycling for the trip.

Key findings:

- From the responses given in wave one, it was estimated that around 60% of boys and girls used *only* active travel means to get to school.
- Under the daily refined responses, around 40% of boys and girls used *only* active methods of travel to get *to* and from school.
- Slightly fewer pupils used active travel *only* to get home *from* school.
- Boys are slightly more likely (by 2-4%) than girls to use only active means of transport to/from school.

The main mode of transport for each day's journey (derived from the greatest time travelled in each mode) is also presented in the following table.

Key findings:

- Walking is the principal mode of travel to or from school, comprising the main component for at least two-thirds of journeys for both boys and girls in our sample. This is higher than found across schools in Scotland, where 4-in-10 (43%) secondary school pupils have walking as their usual mode of travel to school, and higher than for secondary school pupils in deprived areas across Scotland, where 57% of pupils usually walk to school[4].

[4] Scottish Transport Statistics No.32, 2013 Edition, Table 11.19.

- For both boys and girls, the car is the main component for around 1-in-8 of all journeys to/from school.
- The bus is slightly more important as a mode of transport for girls than boys, comprising the main component for 1-in-6 journeys for girls, and 1-in-7 journeys for boys.
- Boys are more likely than girls to have cycling or the train as the main component of their journeys to/from school, these being the main elements of 2% and 3.5% of boys' journeys, respectively.

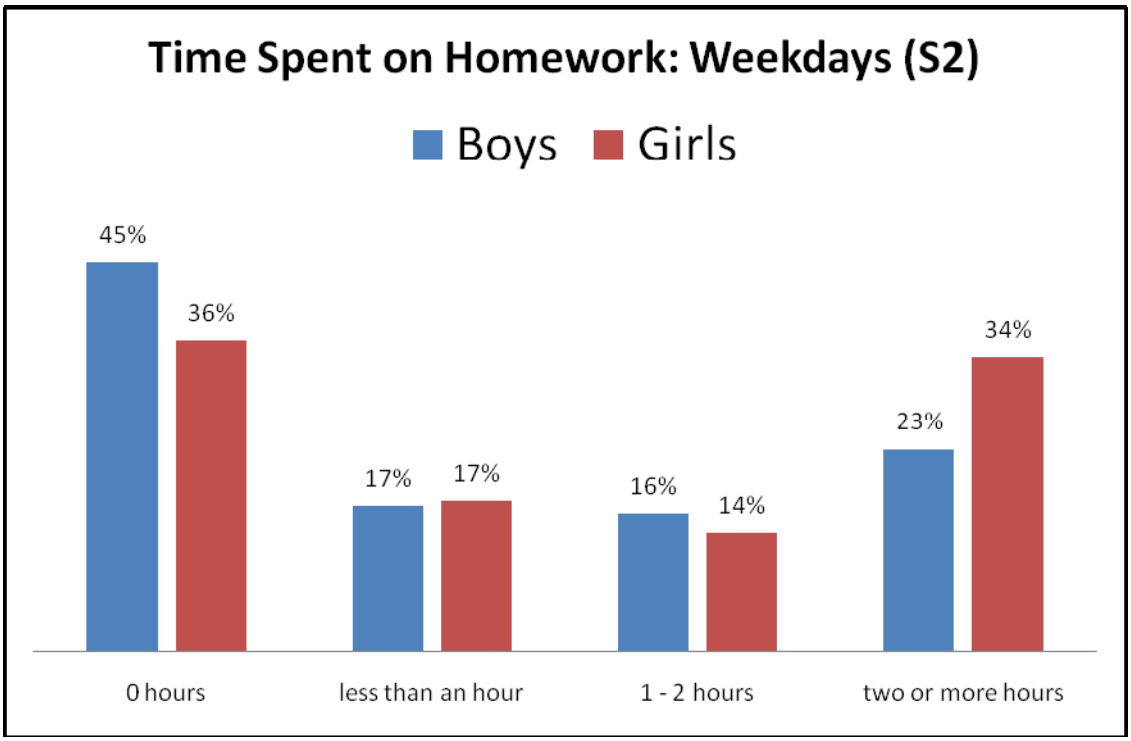
Proportion of Pupils for Whom Each Mode is the Main Component (by time) of the Journey to/from School

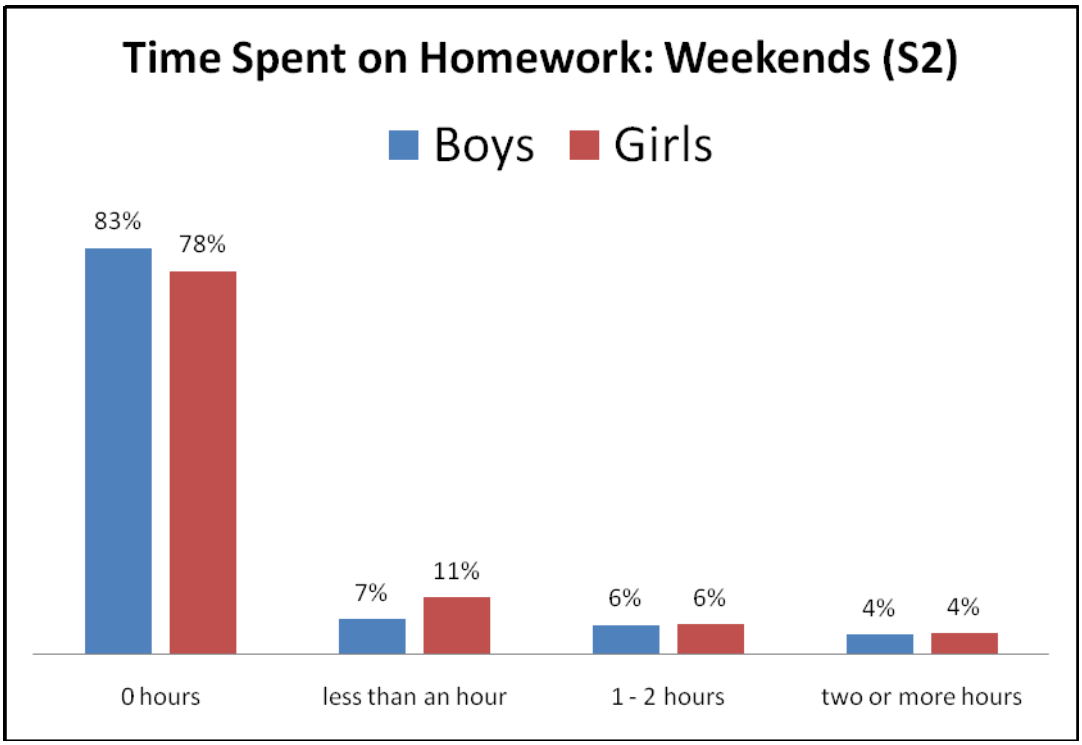
Main Mode	Day 1		Day 2		Day 3		Day 4		Day 5	
Males	To	From	To	From	To	From	To	From	To	From
Walk	63.4%	65.1%	66.8%	73.0%	65.9%	73.5%	65.9%	71.5%	66.2%	72.7%
Cycle	1.7%	1.7%	1.7%	1.7%	2.0%	1.7%	2.0%	2.3%	1.7%	1.7%
Car	14.1%	10.4%	14.4%	10.7%	13.8%	10.1%	14.6%	10.7%	13.5%	10.4%
Bus	15.2%	12.1%	15.2%	11.8%	16.1%	12.1%	15.5%	12.7%	16.3%	12.7%
Train	5.6%	10.7%	2.0%	2.8%	2.3%	2.5%	2.0%	2.8%	2.3%	2.5%
	355	355	355	355	355	355	355	355	355	355

	Day 1		Day 2		Day 3		Day 4		Day 5	
Females	To	From	To	From	To	From	To	From	To	From
Walk	66.9%	69.1%	67.2%	72.7%	69.1%	71.9%	67.8%	73.5%	67.8%	71.6%
Cycle	0.3%	0.3%	0.3%	0.3%	0.0%	0.0%	0.3%	0.3%	0.3%	0.0%
Car	13.9%	9.8%	14.2%	10.1%	13.7%	11.5%	13.9%	10.7%	14.5%	12.8%
Bus	16.4%	16.1%	17.2%	15.6%	16.4%	15.0%	16.9%	14.2%	16.4%	13.9%
Train	2.5%	4.6%	1.1%	1.4%	0.8%	1.6%	1.1%	1.4%	1.1%	1.6%
	366	366	366	366	366	366	366	366	366	366

Homework

Pupils were asked how much time they spent doing homework during the week and at the weekend. 58% of boys and 68% of girls are reported as doing homework at any time over the past seven days.





Note: Pupils who did not answer the question as to whether or not they did homework, or who did not indicate

any time duration for homework, are assumed not to have done any homework.

Key Findings:

- Two out of five boys (45%) and a third of girls (36%) reported that they did no homework in their own time, at home, on weekdays. These figures are slightly higher than at S1 (39% and 26% respectively).

- Girls did more homework than boys during the week. Nearly half the girls (48%), and two-in-five boys (39%) did one hour or more homework in total, Monday to Friday.

- Eight out of ten boys and girls did no homework at the weekend. In each case, there was an increase of 3-4% in the numbers doing no homework, compared with the findings at S1.

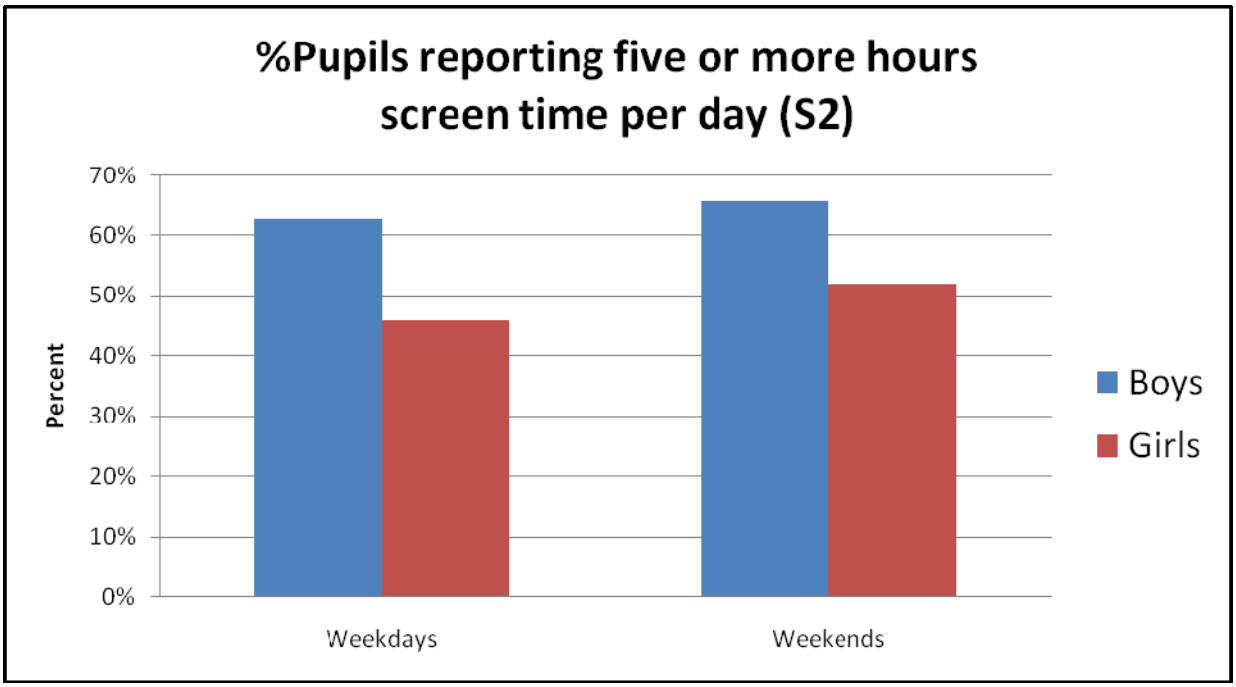
- One in ten boys and girls did one hour or more homework in total at the weekend.

Screen Time and Sedentary Behaviour

Screen Time

Two measures of total screen time are presented, one for weekdays, and one for weekends. The survey form used for Wave 2 was slightly amended from the version used at Wave 1, and hence the data is not directly comparable to the screen time measures reported for Wave 1. For Wave 2, pupils were asked to estimate *how much time per day on average* they spent of their free time (i) online, (ii) watching tv/dvds, and (iii) playing computer games[5]. To produce total screen times, these values were capped to six hours each during weekdays, and eight hours each during weekends, and then summed to give an overall screen time. On the one hand, this can lead to some overestimation, as times given for each of the activities can overlap, conversely the capping of extreme values may lead to underestimation for some cases.

Ninety seven percent of boys and 96% of girls report as having some form of screen time during the past seven days.



[5] At Wave One, pupils were asked to estimate the *total* time they spent doing each of the screen time activities, first for Monday to Friday and second at the weekend.

Key findings:

- As at Wave One, screen time is higher for boys than girls, and higher at the weekends than during the week.

- Two-thirds of boys reported more than five hours screen time per day during the week and on weekends[6].

- Around 40% of girls reported more than five hours per day screen time during the week; this increases to over 50% during the weekend[7].

Sedentary Free Time

Overall sedentary activity levels were derived by adding the computed screen time above to the average times per day reported as: sitting talking/texting on the phone; sitting talking; sitting listening to music as a main activity; and other activities while sitting. This covers two of the four forms of sedentary behaviours, namely technological and social, not motorized transport or homework[8]. All these items are reported for pupil's leisure time, in accord with the argument that measuring what children do outside school when they can exercise choice is important[8].

It is recognized that 'the measurement of sedentary behavior is not a well-developed field'[7], and that direct observation or viewing diaries are better methods for measuring sedentary behaviours like tv viewing than self-report survey questions. On the one hand, our survey includes a single item for tv viewing, and this is said to lack content validity and be subject to measurement error[9], and the responses in our survey were open-ended in format (i.e. recording hours and minutes with no limits applied), rather than being time-bounded, which is said to be better[8]. On the other hand, our inclusion of sedentary behaviours within a survey of more intense physical activities is a common approach[9], and our sedentary activity measure comprised, or was broken down into, a number of separate items, which is the recommended

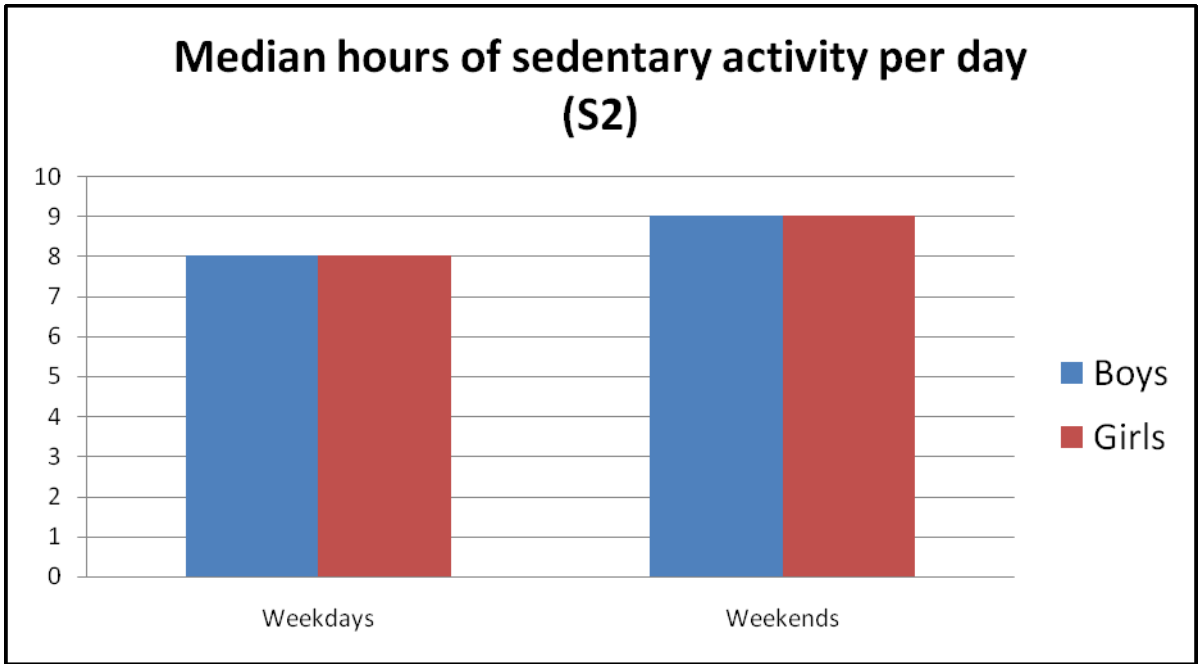
[6] The proportions reported here for boys spending five or more hours on screen per day are three times the proportion estimated at Wave 1 for weekdays and nearly twice the figure reported at Wave 1 for weekends. We think this may be due to the different question asked at Wave 2, but that the Wave 2 figure may closer to reality since it asked pupils to record their average daily duration rather than to mentally compute the aggregate figure across all the weekdays and across the two weekend days, which is more likely to lead to inaccuracies.

[7] The proportions reported here for girls spending 5 or more hours per day on screen are approximately four times higher than at Wave 1 for the weekdays and twice as high as at Wave 1 for the weekend. Again, this may be due to the reasons noted above.

[8] MRC: *Physical activity assessment – sedentary behaviours*. www.dapa-toolkit.mrc.ac.uk/

[9] Bryant,M.J., Lucove,J.C., Evenson,K.R. and Marshall,S. (2007) 'Measurment of television viewing in children and adolescents: a systematic review', *Obesity Reviews*, 8, 197-209.

approach[8].



Key Findings:

- Median levels of sedentary activity during pupils' free time are the same for boys and girls, both during weekdays and at the weekend.

- Median sedentary free time for pupils is 8 hours per day during the week and 9 hours per day during the weekend. These figures are much higher than found for adults, where the equivalent median sedentary leisure time for adults in Scotland is 5.0/6.0 hours for men (weekdays/weekend) and 5.0/5.5 hours for women[10].

[10] Scottish Health Survey 2012 Volume 1 Main Report, Table 6.8

Conclusion

This report gives results for some of the main indicators that can be produced from wave two of the schools survey, with more detail analyses to be produced and published over the next year. Both the first and second waves of the schools survey referred to in this report took place before the Commonwealth Games occurred in July/Aug 2014, although legacy programmes were in operation at the time. The third wave of data collection from the pupils, who are now in S3, is scheduled to take place in spring 2015, approximately 8-9 months after the Games.

As pupils have moved from S1 to S2, we see that the number of times per week they are physically active playing sports is similar to last year, though the range of sports they participate in has slightly reduced. Rates of participation have fallen for most sports during the week, and for all sports during the weekend. These declines in participation rates for particular sports are more sizeable for girls than for boys. We have yet to work out what the effects of these changes in active episodes and sports participation rates are upon levels of physical activity, for which we need to take into account the relative intensity of the activity in question and the duration of the episodes as recorded by pupils on the survey form. Some of these changes from S1 to S2 will reflect pupils own preferences for doing other things as they get older, but the schools themselves are also very influential: for many of the sports exhibiting declining participation rates, the school is involved in organising the activity for the majority of pupils. The exception to this is swimming for fun, where large declines in participation seen both during the week and at weekends may have more to do with family support and facility access than school organisation.

Using a more refined survey instrument than last year, we have revised downwards our estimates of the number of pupils who use *only* active means (walking and cycling) to get to and from school. However, using new information on the duration of stages of multi-mode journeys, we can say that walking is the principal mode of travel for around seven out of ten school journeys. The other active means of transport, cycling, is very rare as a main mode for getting to/from school (predominating in 2 percent of journeys for boys) and is far less common than use of the car or bus.

We specifically asked pupils about homework done *at home*, and thus we have not investigated homework or other forms of supported study outside normal lessons done at school. Nevertheless, we find slightly more pupils at S2 than at S1 reporting doing no homework during the week, and the same for the weekend: around two-in-five pupils reported that they did no homework during the week; eight-out-of-ten did no homework at the weekend. At the other end of the spectrum, at least two-in-five pupils did one hour or more homework in total during the week, and one-in-ten did one hour or more at the weekend. Girls did more homework than boys, particularly on week days. Thus, substantive amounts of homework are still uncommon among the study cohort, and we have yet to see an upward trend in homework, which may occur as pupils progress further in their school careers and be recorded in later waves of the survey.

The vast majority of pupils' free time, both during the week and at the weekend, is spent on sedentary activities. Boys spend more time than girls on screens (computers, game consoles and tv), while girls spend more time than boys on other sedentary activities such as talking, texting and listening to music. Weekends represent a big challenge, as pupils have a lot of free time and are less dependent on schools for the organisation of activities than during the week. At weekends, we see a rise in sedentary activity compared with during the week, and a big drop in rates of participation in sports compared with last year. The sports of most concern here are running and swimming for fun, which both had much higher rates of participation at the weekend in S1, and dancing in the case of girls, which has also seen a large decline in participation in the current year. If these popular sports suffer a decline in participation, this adds greatly to the risk of pupils being almost entirely sedentary in their behaviours.

GoWell is a collaboration between the Glasgow Centre for Population Health (GCPH), Urban Studies at the University of Glasgow (US), and the MRC/CSO Social and Public Health Sciences Unit (SPHSU). GoWell in the East End is funded by The Scottish Government, NHS Health Scotland, and **sport**scotland.