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# Reducing WC flush volumes in schools – are we overestimating the water savings?

An ech<sub>2</sub>o report • July 2015

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This data was collected from pupils (and their siblings) at the following schools: Ashford Primary School, Billingshurst Primary School, Holy Trinity Primary School (Hackney), Holy Trinity Primary School (Cuckfield), Kobi Nazrul Primary School, Parkwood Primary School, St John the Baptist Junior School, Grey Court Secondary School, Heston Secondary School, Lampton Secondary School and Waldegrave Girls Secondary School, between January 2010 and April 2012.

We would like to thank everyone who answered the survey about how they use water, especially the school pupils who collected data about siblings as well as completing the information about themselves.

Thank you to Trevon Jervis and Yaoussa Bagayoko of ech<sub>2</sub>o for analysing the information.

All conclusions drawn in this report are by ech<sub>2</sub>o.

Please contact us at [info@ech2o.co.uk](mailto:info@ech2o.co.uk) if you have any questions about this report, or would like us to work with your school pupils, tenants or building users about how they use water.

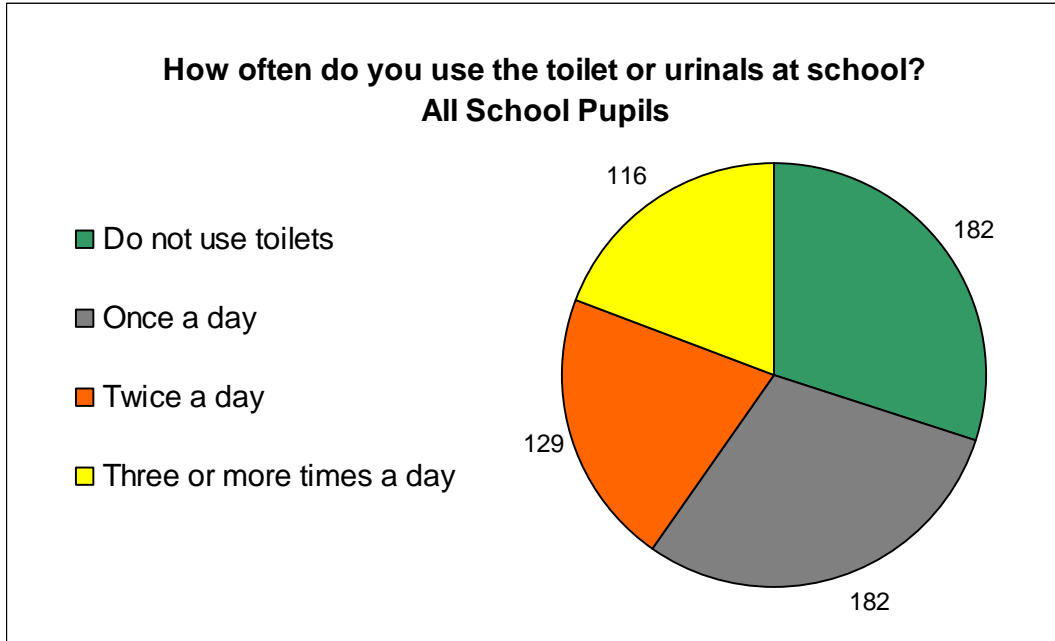
### Reducing WC flush volumes in schools – are we overestimating the water savings?

- When calculating water savings from efficiency upgrades in schools it is the industry norm to assume that pupils use the WC an average 3 times a day.
- This is the same figure that is used for office workers and yet schools toilets are very different to office toilets.
- It is unclear where this 'fact' of three WC uses a day in schools has come from.
- Anecdotal evidence we had heard from working with pupils was that they used the toilets as little as they possibly could.
- We thought it was important to find out the actual amount of WC (and urinal) usage to ensure we did not overestimate water savings from various efficiency measures such as save-a-flush bags or Hippos in WC cisterns, or reduced flow rates at washbasin taps.

#### Overview

- In 2010 we began to formally collect and analyse data from pupils in relation to their usual patterns of using the toilets or urinals when at school. <sup>1</sup>
- Data was collected from pupils at seven primary schools and four secondary schools between January 2010 and April 2012. Pupils at the primary schools also collected data from their siblings.
- Data was collected from 609 school pupils, 457 of who were attending primary school when they answered the survey, and 152 of whom were at secondary school.
- Pupils filled out a form asking about their WC use as part of a questionnaire that also asked about bathing habits, washing up methods and whether they turned the tap off when brushing their teeth. The form was anonymous and pupils were not asked to share the results with the rest of the class.
- Approximately 65% of the respondents live in London, with the majority of the rest from south east England.

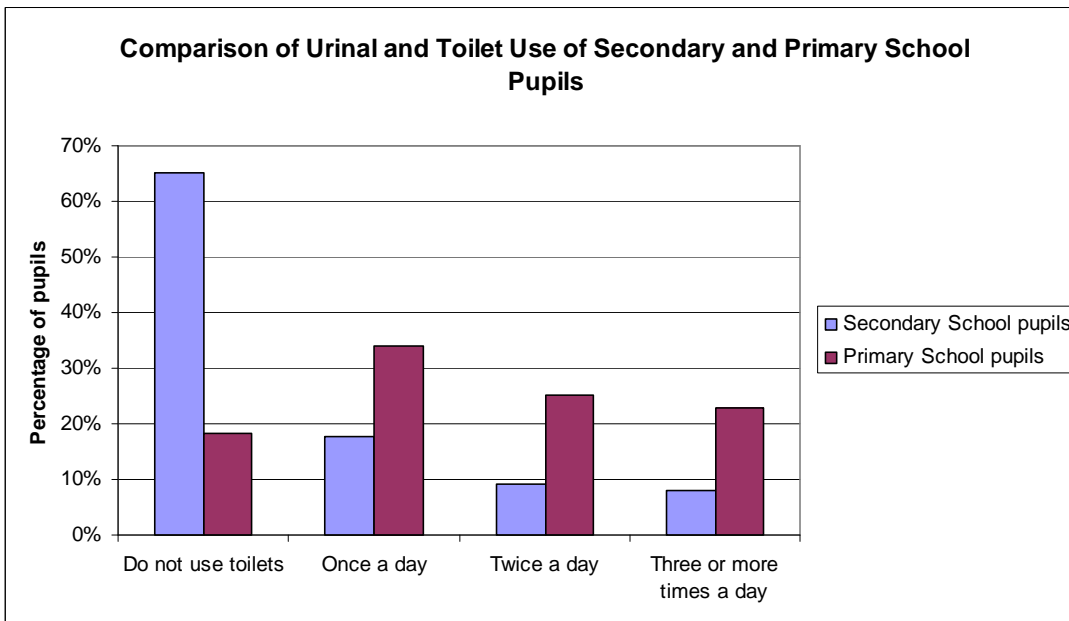
**WC and urinal use**



**The results – all schools**

- Over 75% of pupils use the toilets less than three times a day.
- Over 50% of students use the toilets either once or not at all.
- The average number of times pupils use the toilets or urinals at school is 1.3 times a day.<sup>2</sup>

**The results – secondary school v primary school pupils**

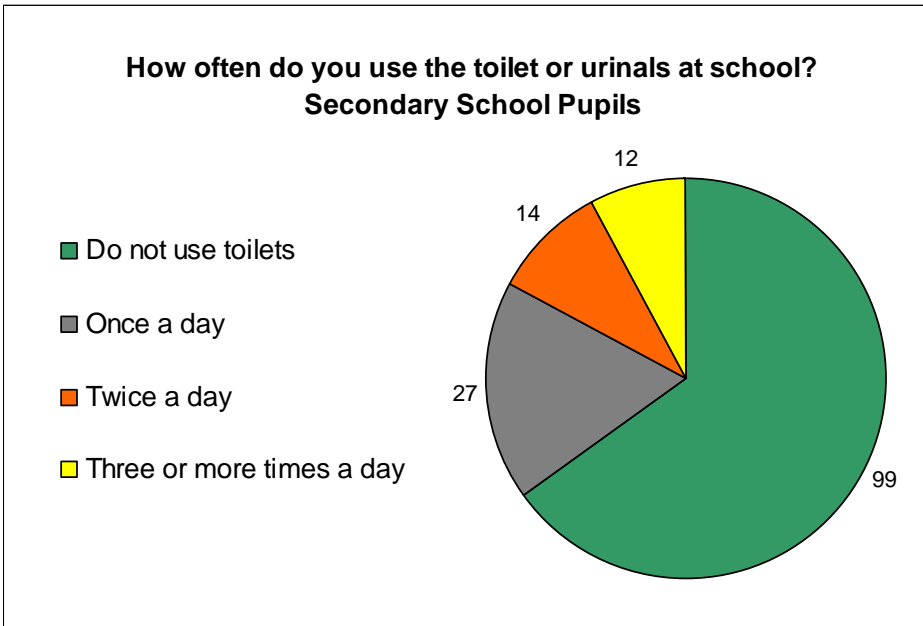


- Of the 152 secondary school pupils we asked, 65% of them do not use the toilets at all at school, compared to 18% of primary school pupils.<sup>3</sup>
- Secondary school pupils use the toilets or urinals an average of just 0.6 times a day compared to an average of 1.6 times a day for primary school pupils.
- Girls at secondary schools use the toilets just 0.5 times a day on average therefore savings from upgrading WCs or retrofitting flush reduction measures are overcalculated by a factor of six.

### Use of urinals

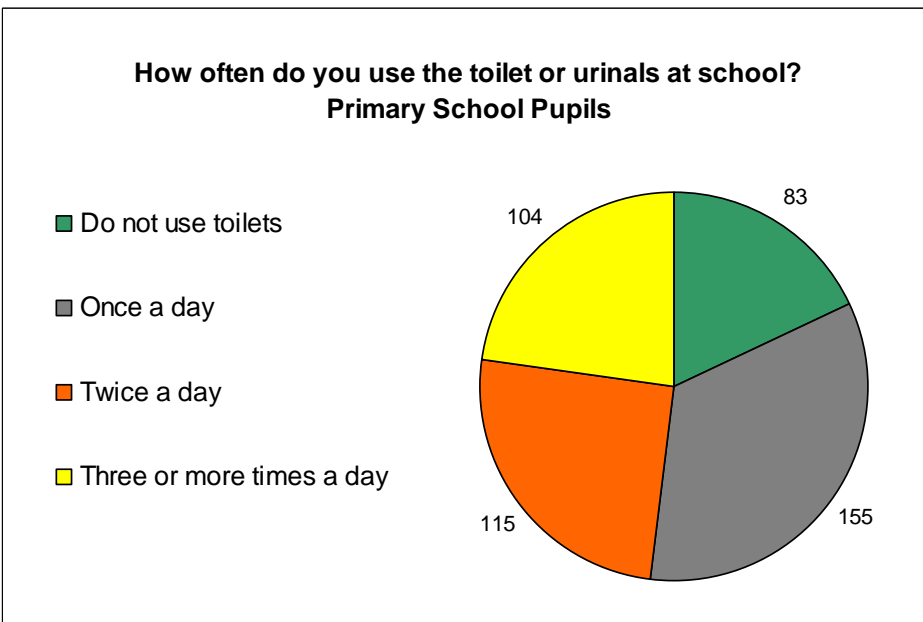
- All the schools where we collected data had urinals in the boys toilets
- Savings from urinals are achieved by fitting controls that only flush when the building is occupied. Therefore in schools where boys have access to urinals, the number of times they use them is not significant when calculating savings.
- The following pages of this report break down the data we collected in more detail.

### Comparison of toilet and urinal use between secondary and primary school pupils



Of the 152 secondary school pupils questioned, just 8% use the toilet three or more times a day compared to 65% who do not use the toilet at all.

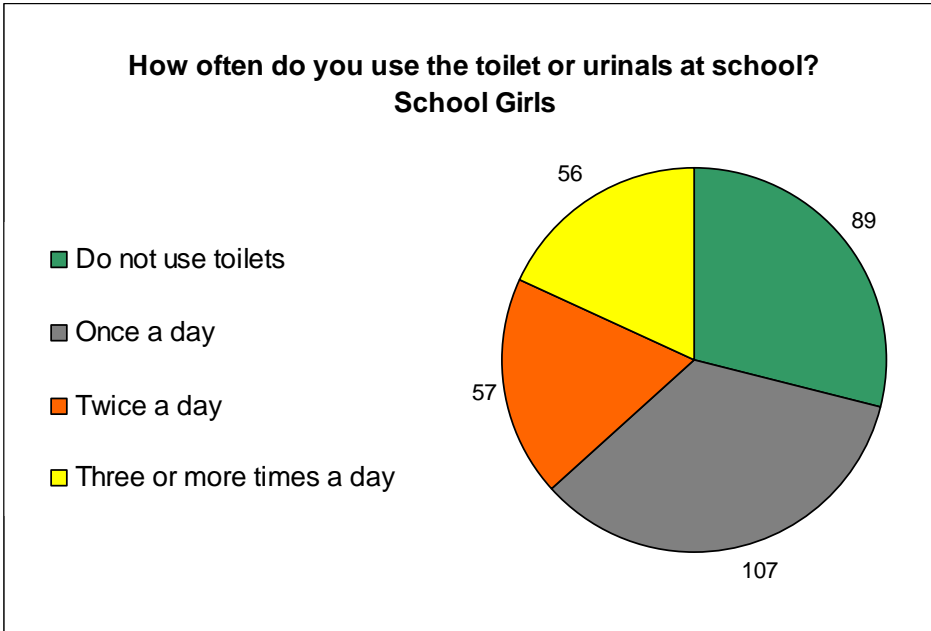
In our survey, the average number of times secondary school pupils use the toilets or urinals at school is 0.6 times a day.



Of the 457 primary school pupils questioned, 23 % use the toilet or urinal three or more times a day and 18% do not use the toilets at all.

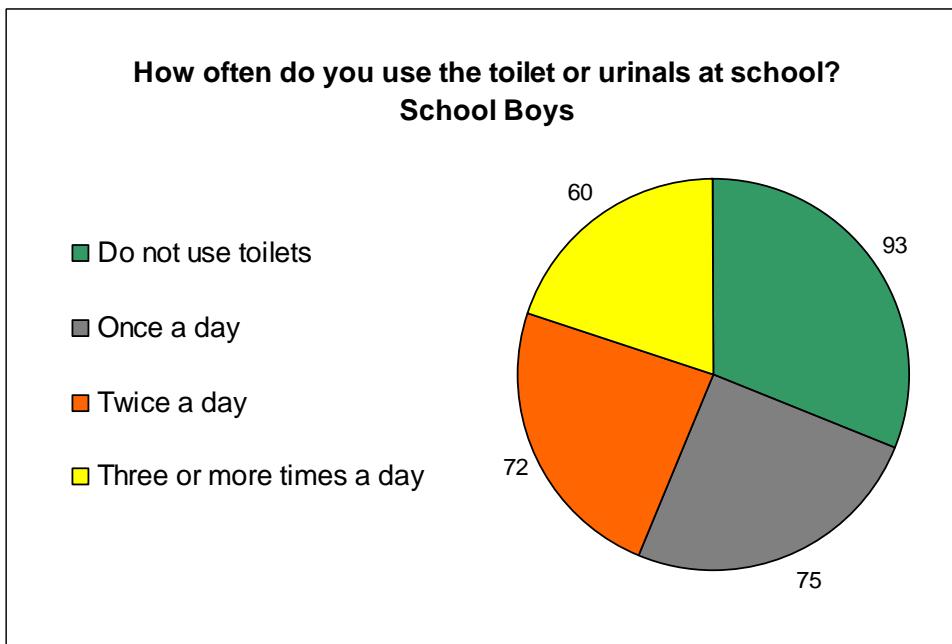
In our survey, the average number of times primary school pupils use the toilets or urinals at school is 1.6 times a day.

Comparison of toilet and urinal use between girls and boys



Of 309 girls questioned, 82% use the toilet less than three times a day.

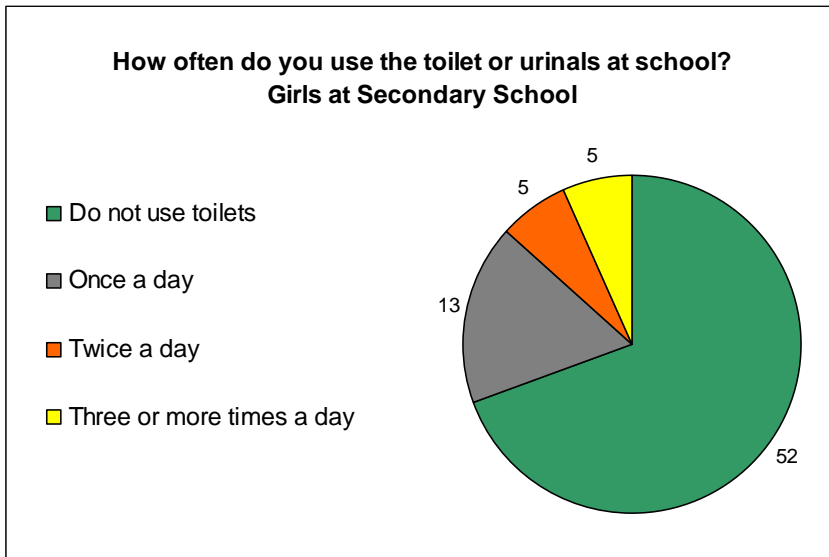
In our survey, the average number of times schoolgirls use the toilets at school is 1.3 times a day.



Of 300 boys questioned, 80% use the toilet less than three times a day.

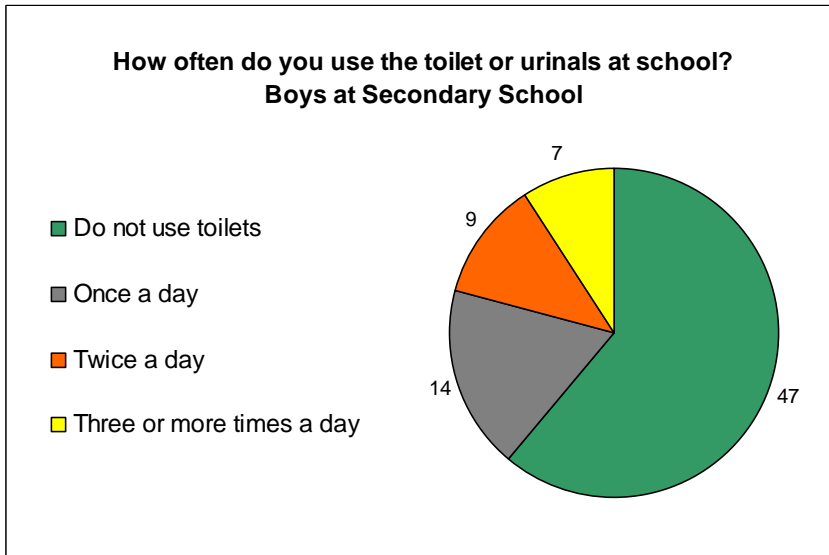
In our survey, the average number of times schoolboys use the toilets at school is 1.4 times a day.

**Comparison of toilet and urinal use between secondary school girl and boy pupils**



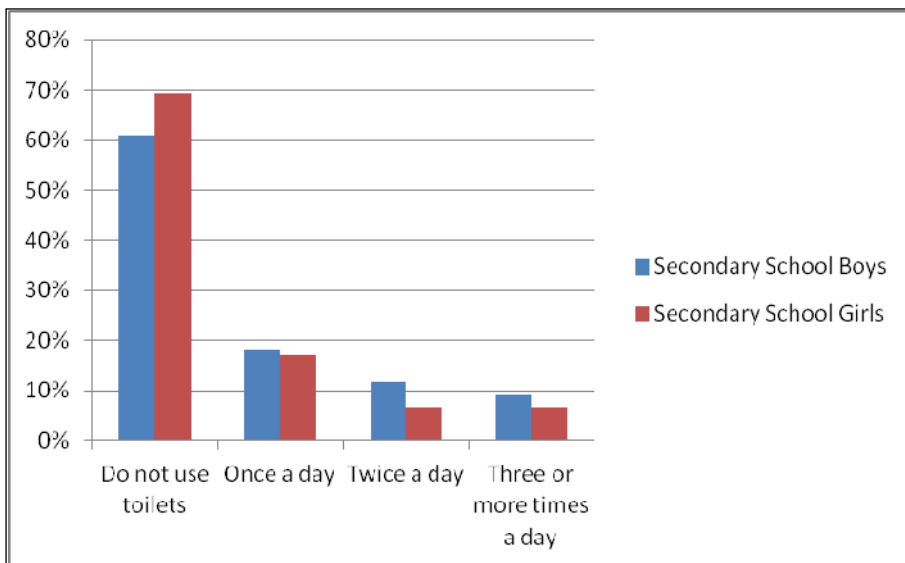
Of 78 secondary school girl pupils questioned, 67% do not use the toilets at all at school

In our survey, the average number of times girls at secondary school girls use the toilets at school is 0.5 times a day.



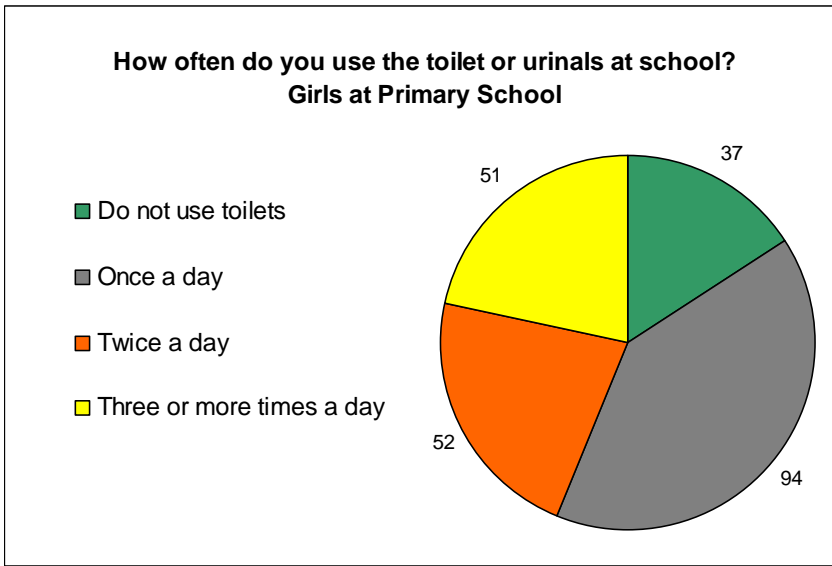
Of 77 secondary school boy pupils questioned, 61% do not use the toilets at all at school

In our survey, the average number of times boys at secondary school use the toilets at school is 0.7 times a day.



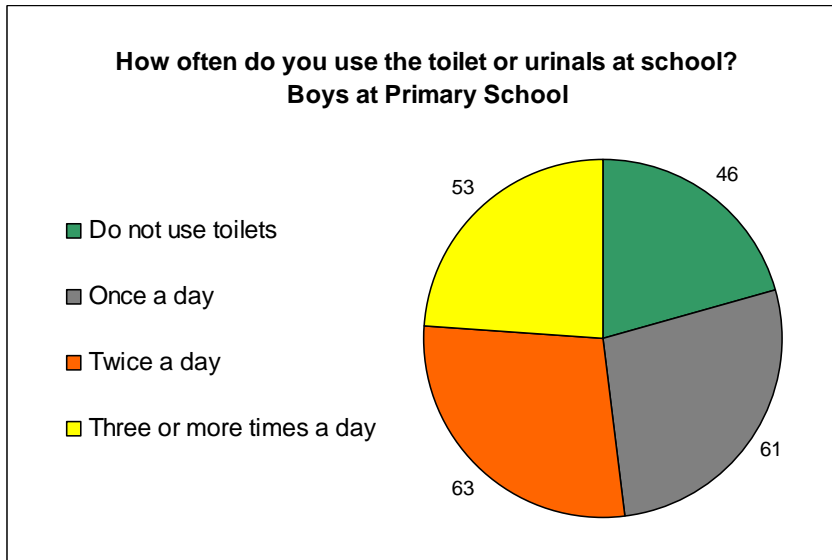


**Comparison of toilet and urinal use between primary school girl and boy pupils**



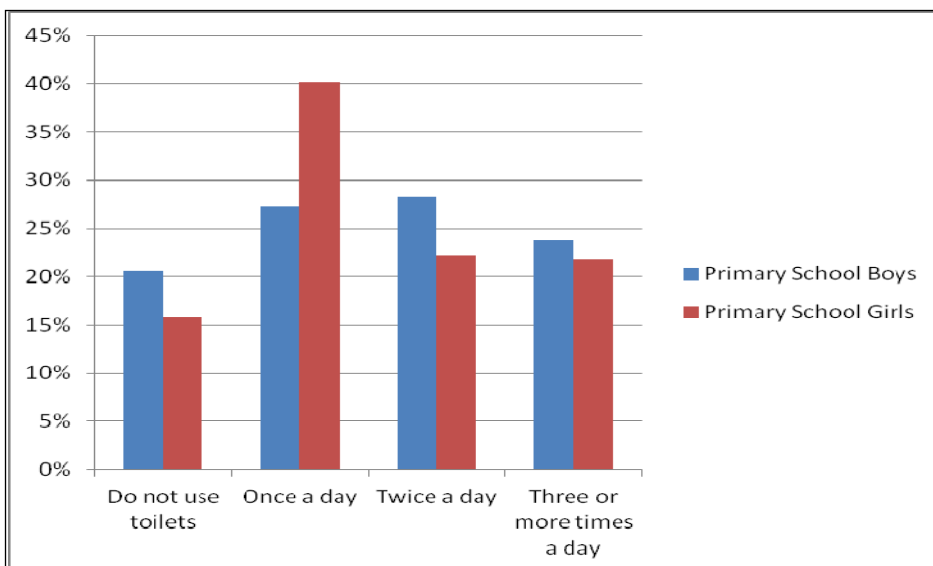
Of 234 primary school girl pupils questioned, 56% either do not use the toilet or use it just once a day.

In our survey, the average number of times girls at primary school use the toilets at school is 1.6 times a day.



Of 223 primary school boy pupils questioned, 48% either do not use the toilet or urinal or use it just once a day.

In our survey, the average number of times boys at primary school use the toilets at school is 1.6 times a day.



How often do you use the toilet or urinals at school?	Do not use toilets	Once a day	Twice a day	Three or more times a day	Totals	Average times use the toilet
Boys Secondary	47	14	9	7	77	0.71
Girls Secondary	52	13	5	5	75	0.52
Boys Primary	46	61	63	53	223	1.61
Girls Primary	37	94	52	51	234	1.55
All pupils	<b>182</b>	<b>182</b>	<b>129</b>	<b>116</b>	<b>609</b>	<b>1.34</b>
Secondary Schools	99	27	14	12	152	0.62
Primary Schools	83	155	115	104	457	1.58
Boys	93	75	72	60	300	1.38
Girls	89	107	57	56	309	1.30
All pupils	30%	30%	21%	19%		
Secondary School pupils	65%	18%	9%	8%		
Primary School pupils	18%	34%	25%	23%		
Boys	31%	25%	24%	20%		
Girls	29%	35%	18%	18%		
Secondary School Boys	61%	18%	12%	9%		
Secondary School Girls	69%	17%	7%	7%		
Primary School Boys	21%	27%	28%	24%		
Primary School Girls	16%	40%	22%	22%		

### Why are these findings important?

- When advising schools on whether to fit water efficiency measures in WC cisterns or to upgrade taps, the cost of the measure is offset against the water savings that will result. It is therefore imperative that savings are estimated accurately.

### Recommendations

- At ech<sub>2</sub>o we use this empirically collected data to calculate potential savings from WC upgrades in schools
- We would like to see all organisations that retrofit water saving devices in school toilets to state that savings are calculated on 3 uses of the toilet per day and that actual savings may be less as there is a risk that schools will lose confidence in the effectiveness of water saving devices in WCs if savings are less than stated.
- We would like to see more research done on this issue. <sup>4</sup>

### Summarising points

- This research shows that using the industry norm of 3 WC uses a day per pupil at school is flawed when calculating savings from reducing WC flush volumes
- Over 75% of pupils use the toilets less than three times a day.
- Over 50% of students use the toilets either once or not at all.
- The average number of times pupils use the toilets or urinals at school is 1.3 times a day.
- Girls at secondary schools use the toilets just 0.5 times a day on average therefore savings from upgrading WCs or retrofitting flush reduction measures are overcalculated by a factor of six.

### About ech<sub>2</sub>o data collection and analysis

- Since 2010 ech<sub>2</sub>o have been collecting data about how people use water at home, at school and in the office. We work with school pupils to collect data about themselves and their families, and also question housing association tenants, students, design professionals and members of the general public. We collect data across the whole range of different cultures and economic classes found in the UK today. We then robustly analyse that data to understand people's behaviour around water.

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<sup>1</sup> We do not ask girl pupils to differentiate between WC usage when they are menstruating and when they are not, (as when girls are having their period they may have to use the toilets more than usual). We are very clear it is about their normal pattern of WC use.

<sup>2</sup> In the earlier surveys we asked pupils to identify the total number of times they used the toilet with no upper limit. Out of 183 pupils, less than ten used the toilet/urinal four times and just four used the toilet/urinal five times. In later surveys we changed the question to three times or more. Therefore, when calculating average WC use per pupil per day we calculate that 25% of pupils who tick the "three times or more" column have used it four times a day. We consider this is a valid figure based on our earlier research.

<sup>3</sup> Secondary school pupils give two main reasons for not using the toilets at school. That the toilets are "dirty" (a perceived or real statement) and that they are not safe. In many new secondary schools the problem of bullying in toilets is addressed by providing single cubicle toilets accessed directly from the corridor, and we would expect in these schools that WC use would be greater than in our survey.

<sup>4</sup> There is a suggestion that secondary asking pupils about their use of WCs is not robust enough data collection as they would not want to say how many times they used the toilet. We do not necessarily agree with this suggestion but would welcome further research.

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ech<sub>2</sub>o consultants ltd  
27 Holywell Row  
London  
EC2A 4JB

020 7183 1908  
[info@ech2o.co.uk](mailto:info@ech2o.co.uk)

[www.ech2o.co.uk](http://www.ech2o.co.uk)

Company No: 06425345.  
Registered office: 5 Roseberry Gardens London N4 1JQ

**ech<sub>2</sub>o**

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