Sunshine factor explains internet use in Europe

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After many years of observing internet connectivity trends Tech4i2 recently had the bright idea, pun intended, of examining the relationship between sunshine and internet use in Europe.

It was relatively well known that in the days of fixed landline telephones the number of calls decreased in summer. A report last year highlighted that the quarterly gain in active users on Twitter also decreased in summer months.

Most maps of European internet use show high levels of users in countries such as Sweden (94% in 2012) and Finland (91%); with comparatively low numbers of users in Cyprus (61%) and Greece (56%). For several years Tech4i2 speculated whether a "Sunshine Hypothesis" might help to explain this north-south divide. This hypothesis is based on the very simple logic that people have better things to do on a sunny day than sit inside their homes or offices using the internet.

We gathered data to test the hypothesis and this admittedly simplistic explanation for the north-south digital divide in Europe. A variety of statistics (GDP, literacy, education, rurality, employment etc.) were collected for all EU28 Member States to investigate if alternative relationships might provide better explanations. These additional datasets also allowed the testing of models to examine whether multiple factors, in addition to sunshine, might explain internet use.

Regression analysis was used to find how much of the variation in internet use could be explained by different variables (we examined R-squared as an explanation of variance). Analysis was undertaken for three time periods – 2006, 2009 and 2012. The results were relatively consistent across all three time periods.

In all the analysis we included Gross Domestic Product (per capita) as an additional explanatory variable so that the relative prosperity or wealth of different countries would not distort results. In 2006 the average number of sunshine hours per annum and Gross Domestic Product explained more than half of the variation in internet use (R-square value 0.57) in Europe. In 2009 the figure rose to a 63 per cent explanation for internet use and in 2012 it increased further to 65 per cent. In statistical terms these figures are remarkably high.

Only one of the many variables examined offered a better explanation than sunshine for the varying rates of internet use in Europe. Average temperature (in each EU28 capital city) and GDP explained 71 per cent of variation in internet use in 2006. The figure was even higher in 2009 and 2012 – 75 per cent in both years.

This previously unreported finding has considerable significance for policymakers attempting to overcome the north-south digital divide. If the relationship is maintained, and it has over the six years studied between 2006 and 2012, policymakers are likely to find little success in increasing internet use in Southern Europe to the levels achieved in Northern Europe.

However, two factors might offer some reprieve for policymakers. Some countries exceed the level of internet use that might be expected in our model. Most notable amongst these are Malta and the Netherlands. Activities to promote internet use and further analysis of the reasons for relatively high internet use might help to draw out 'best practices' that others could adopt.

The second factor concerns the increase in mobile computing in recent years. Smart phones are becoming more ubiquitous and tablets offer greater internet access functionality. These new technologies might overcome the north-south sunshine divide by allowing users to sit in the sun and surf the internet.