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## Intelligence Quotient (IQ) and Browser Usage

**Measuring the Effects of Cognitive Ability on the  
Choice of Web Browser**

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### Introduction

Although observational findings linking resistance to change/upgrade software to scores on cognitive tests maybe distorted by a lot of factors, it has been suggested that individuals on the lower end of the IQ scale tend to keep using outdated versions of antique web browsers. Because cognitive scores are related to tech-savviness, we hypothesized that choice of web browser is related to cognitive ability of an individual. We used detailed data from a trial to calculate the IQ scores of people using a variety of different browsers. A Wechsler Adult Intelligence Scale (IV) test was given to over 100,000 people over a period of four weeks. The subjects mostly came to our website from search engines looking to take an IQ Test. All the subjects were from English speaking countries. A significant number of individuals with a low score on the cognitive test were found to be using Microsoft Internet Explorer (IE) versions 6.0 to 9.0. There was no significant difference in the IQ scores between individuals using Google Chrome, Mozilla Firefox and Apple's Safari; however, it was on an average higher than IE users. Individuals using Opera, Camino and IE with Chrome Frame scored a little higher on an average than others. These data support the hypothesis that the IQ score and the choice of web browser are related. Our data have important implications and identify reasons behind the continuous use of outdated browsers, that has been bugging the web developers and IT companies since the last decade.

In addition, the results were compared to a previous unreleased study of a similar nature undertaken in 2006. The average IQ score of the individuals using the then current version of IE was significantly higher than the individuals using the current version of IE now, implying that a lot of people with higher IQ are moving away from IE to other browsers.

### About AptiQuant

AptiQuant was established in 2006 in Vancouver, Canada by psychologist and business graduate, Leonard Howard. Over the past few years, AptiQuant has become a world leader in the field of online psychometric testing. The company designs, scientifically validates, and publishes a comprehensive range of psychometric tests for the recruitment, career guidance, career management, and staff development markets.

### Methods

#### Subjects

An online IQ assessment test was offered on our website. Most of the subjects came to the website either by organic searches from search engines, or advertisements put on various search engines for keywords targeting users who were looking for a free online IQ test. The test was offered only to visitors of a few English-speaking countries namely USA, Canada, UK, Australia and New Zealand. The subjects were notified that some personal information would be collected and stored for a research study, but they were not aware about the nature of the study. Since the test worked properly in all of the major browsers, it is assumed that the subjects took the test in the browsers they use routinely for browsing the Internet. Visitors under the age of 16 were redirected to another website, and their results are not included in the study.

#### Cognitive Assessment

The age-appropriate Wechsler Adult Intelligence Scale (IV) test was given. Mazes, an optional subtest, was omitted from the WISC-IV. Verbal IQ (VIQ), Performance IQ (PIQ) and Full Scale IQ (FSIQ) scores were calculated. IQ scores have a population mean of 100 and a standard deviation of 15.

#### Procedure

When a visitor came to the home page of the IQ test, they were asked for their gender and age. All visitors under 16 were redirected to another website, and their scores have not been included in the results of this study. After filling in the gender and age, the visitors were taken to the second page where they took the actual IQ test. The scores were stored in a database along with the user's age, gender, Browser, Operating System, and geographic location determined from their IP Address.

#### Statistics

For the final report preparation, only those browsers were considered that were used by more than 500 subjects. The scores of 101,326 individuals were compiled in the report. Two different types of analysis were done on the data collected:

1. The first one was to divide the subjects into different groups based on their browser, and then calculate an average IQ score for each group.
2. The second analysis was done to see how the choice of browser changes as we go from one end of the IQ scale to the other. The subjects were divided into 100 groups based on their percentile rank. For each group, the percentage usage of all the top 10 browsers was calculated.

Some interesting results were found, which are shared in the next section.

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### Results

#### Average IQ Score by Browser

Average IQ scores for each browser were calculated. Some interesting observations were made, as seen in Figure 1. There was a clear indication from the data that the subjects using any version of Internet Explorer ranked significantly lower on an average than others. Out of all the IE versions; subjects using IE 8 fared a little better. No significant difference in the IQ scores of subjects using Chrome, Firefox and Safari was noticed, however these subjects had, on an average, a higher IQ score than the IE users. Individuals using Opera, Camino and IE with Chrome Frame scored a little higher on an average than others. In addition, the results were compared to another unreleased study of a similar nature undertaken in year 2006. The comparison clearly suggests that more people on the higher side of IQ scale have moved away from Internet Explorer in the last 5 years.

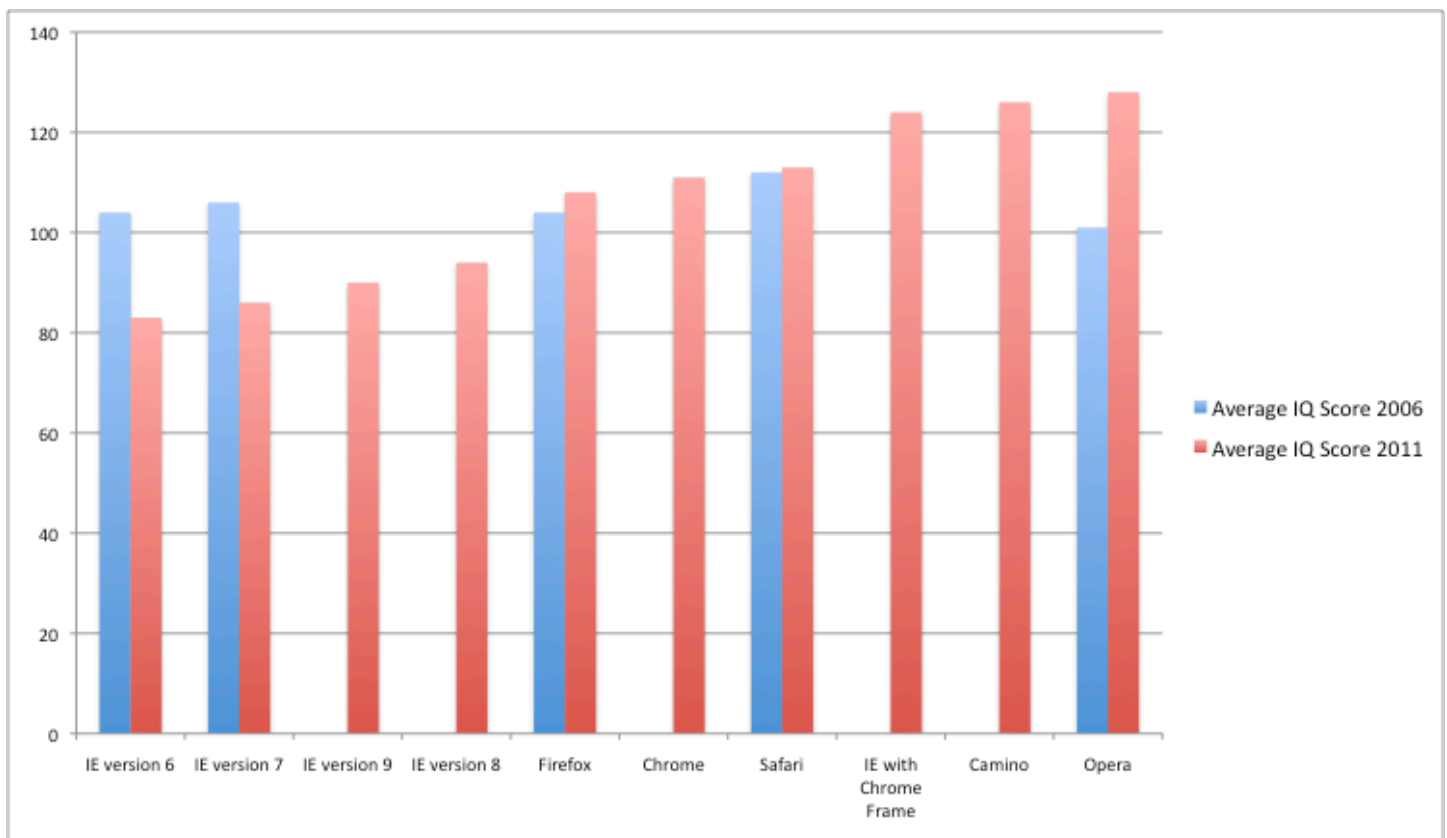


Figure 1: Average IQ score by browser.

#### Browser Percentage Usage by IQ Score Percentile

The subjects were divided into 100 groups based on their percentile rank. For each group, the percentage usage of all the top 10 browsers was calculated. The results are depicted in Figure 2.

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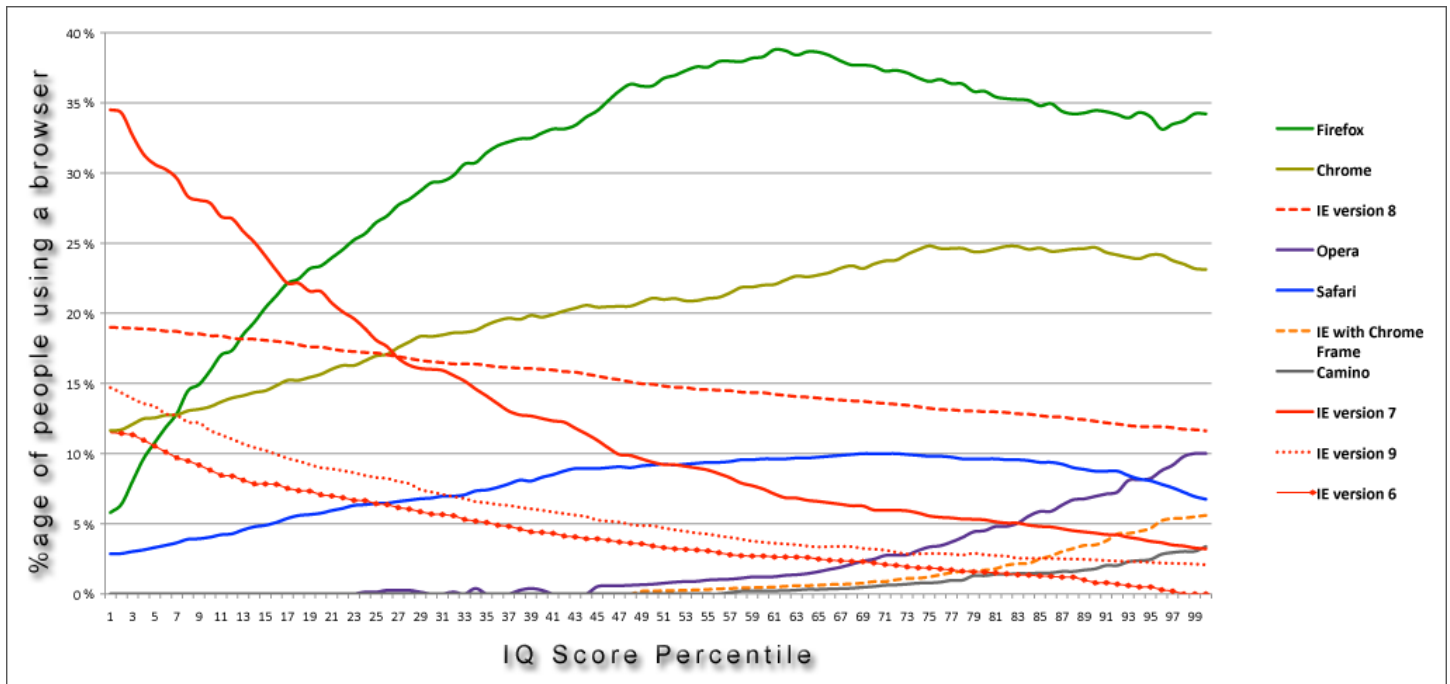


Figure 1: Browser percentage usage by percentile.

From the graph in Figure 2, one can see that in the 0 percentile group (the group with the lowest IQ score) about 34% of the subjects use IE version 7.0 and this usage comes down to less than 4% in subjects with a 99 percentile (the group with the highest IQ score). Similarly IE version 6.0 comes down from about 12% to 0% as we move from left to right on the IQ scale. In a sharp contrast Opera, IE with Chrome Frame and Camino go from 0% to 10%, 6% and 3% respectively, implying that individuals with a higher IQ score use them.

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### Conclusion

The study showed a substantial relationship between an individual's cognitive ability and their choice of web browser. From the test results, it is a clear indication that individuals on the lower side of the IQ scale tend to resist a change/upgrade of their browsers. This hypothesis can be extended to any software in general, however more research is needed for that, which is a potential future work as an extension to this report.

It is common knowledge, that Internet Explorer Versions to 6.0 to 8.0 are highly incompatible with modern web standards. In order to make websites work properly on these browsers, web developers have to spend a lot of unnecessary effort. This results in an extra financial strain on web projects, and has over the last decade cost millions of man-hours to IT companies. Now that we have a statistical pattern on the continuous usage of incompatible browsers, better steps can be taken to eradicate this nuisance.