COLOR BLINDNESS

Color Blindness also known, as color vision deficiency is a visual disorder where those who are colorblind, perceive and visualize a limited color spectrum than those with normal vision. Although the term, “colorblind” is misleading, many believe that if a person is color blind, they cannot see color but it is not true. Almost all that are color vision deficient can see color. Color blindness is caused when there is a malfunction in the eye. Inside the eye, there are three different photo pigments inside the cones - red, green and blue. When mixed together, the absorption of the three different types of cones creates our color vision. When one of the three cones does not work properly, the absorption of the person’s color vision changes.

The circle chart on the right explains the percentage of color blindness within gender. In relation to color blindness within gender, about 8% of males have some form of color blindness, whereas, women have about 5%. In most cases, genetics are a huge factor with the percentage of males because of the mother passing the recessive chromosome to the male child.

Within the three categories of color blindness, there are several different subcategories within them depending on the severity of the color blindness. The exploded circle chart on the right presents the percentage of each subcategory and the bottom of the chart provides a small description of each color deficient.

Achromatopsia . . . . . . . . . . . . . . . . . . . . 0%
Extremely rare form of color blindness were the individual can only see only black, white and limited shades of grey.

Protopanopia . . . . . . . . . . . . . . . . . . . . 1.01%
Severe form of color blindness were the red photo-pigment are missing. Individuals suffering from Protopanopia see red, dark.

Deuteranopia . . . . . . . . . . . . . . . . . . . . 1.27%
Different form of red-green colorblind, where the green photo-pigments are missing. Affects the green hue spectrum.

Deutanomaly . . . . . . . . . . . . . . . . . . . . . 4.63%
The most common form of colorblindness were the green photo pigments nearly absent. Affects the red-green hue spectrum.

Tritanopia . . . . . . . . . . . . . . . . . . . . . . . 0%
Very rare form of blue colorblind, where the blue photo-pigment is absent. Affects the blue hue spectrum.

Tritanomaly . . . . . . . . . . . . . . . . . . . . . . 0%
Rare form of color blindness where the blue-yellow photo pigments are altered. Affects the blue-yellow hue spectrum.

Tritanomaly . . . . . . . . . . . . . . . . . . . . . . . 4.08%
Mild form of red-green color blindness were the red photo-pigment are nearly absent. Affects the red hue spectrum.

The Ishihara color blind test was created by Shinobu Ishihara who is a Japanese ophthalmologist. Shinobu first invented the color test in a military medical school where he had to create a test to screen potential military men who were color deficient. The Ishihara test consist of 18 plates filled with different colored dots that are molded into hidden numbers or shapes. Some plates have different patterns were normal vision individuals can see them whereas there are some patterns that those who are color blind can only see. Today it is one of the widely used test to distinguish if the individual is red-green color blind. Below is a sample of Schelindas test where you can identify and see if you are color blind. Below each image has an answer.

Presented on the right, is a bar graph that shows numbers (in millions) of those who are colorblind in different countries. The bar graph shows eight countries were the high numbers of those who are colorblind is located in Britain. Studies shown that within ethnicities, those who are Caucasian are more likely to be color blind than those who are different race.

Color Blindness in Different Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of People Affected (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>9</td>
</tr>
<tr>
<td>China</td>
<td>8</td>
</tr>
<tr>
<td>France</td>
<td>4.2</td>
</tr>
<tr>
<td>Germany</td>
<td>7.8</td>
</tr>
<tr>
<td>Greece</td>
<td>3.8</td>
</tr>
<tr>
<td>India</td>
<td>1.3</td>
</tr>
<tr>
<td>Japan</td>
<td>1.7</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1.8</td>
</tr>
</tbody>
</table>

Sources
http://www.rightdiagnosis.com/deuteranopia/stats-country.htm
http://www.rightdiagnosis.com/deuteranopia/stats-country.htm
http://www.colblindor.com/article/a-quick-introduction-to-color-blindness/
http://www.colour-blindness.com/colour-blindness-tests/ishihara-colour-test-plates/

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