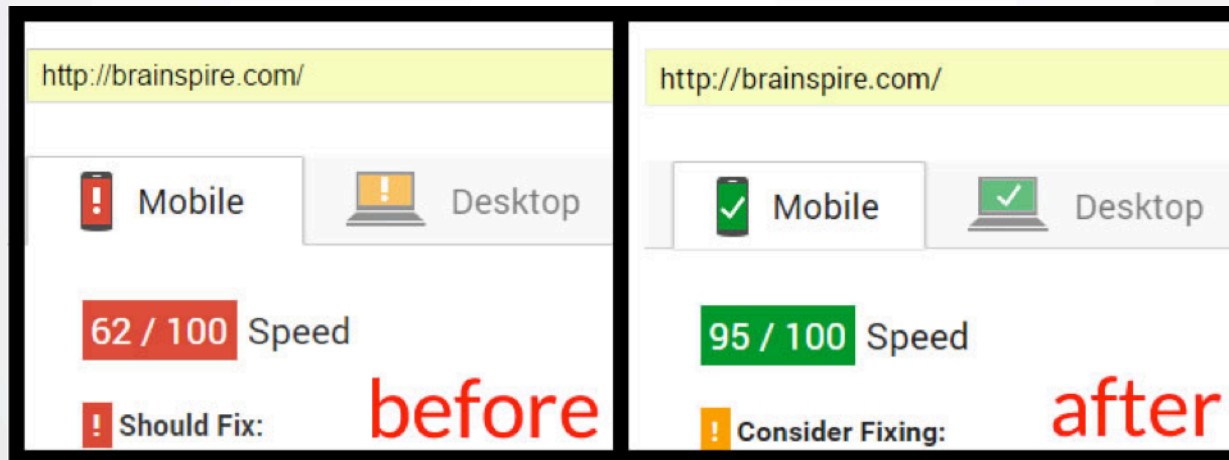


How to Increase Your WordPress Website's Google PageSpeed Score



The Situation

- ▶ You have stumbled upon the [Google PageSpeed Insights](#) tool and are mortified by the score your website has received. You are not alone, and there is hope! Google offers generic guides on how to resolve some of the issues found with your website, but depending on the platform your website it built on and your [web-development experience](#), there are vastly different ways of solving these issues.
- ▶ This will be most helpful for those who have a WordPress website and minimal coding know-how. It covers two of the biggest factors to increasing your page speed score:
 - Optimizing JavaScript and CSS
 - Shrinking images

The Situation

- ▶ Following the steps set forth in this article series, I was able to improve our Google PageSpeed Mobile Site Speed score from 62 to 95 and our Desktop Suggestion score from 72 to 85.

Why Should I Care About my Google PageSpeed Score?

- ▶ Google announced back in 2010 that your website's speed is part of the algorithm to determine your website's Google ranking. Google also recently announced that they will soon be taking into consideration mobile site speed in their rankings as well.
- ▶ If site speed matters to Google in their search engine rankings, then it should matter to you. Google's PageSpeed Insights tool gives you, well, *insights* into how to speed up your site.

Have a Low PageSpeed Score? You're in Good Company

- ▶ Google's PageSpeed Insights tool is a great place to start in determining potential website speed improvements, but keep in mind that it is not the only page speed analyzer and should not be considered the ultimate source of the truth!
- ▶ In fact, if you have run Google PageSpeed Insights on your site and received an abysmally low score - you are in good company! Check out the PageSpeed score for Twitter, Facebook, and Mashable. At the time of this writing, all 3 of these sites have a Mobile Speed score of 60 or lower.
- ▶ It is actually generally recognized among webmasters that Google PageSpeed is not the best measuring stick for actual page speed. It is important (and helpful!) to run tests on other website analyzers as well.^{[1](#),[2](#)}
- ▶ Here are some of the better website speed analyzers I've tried:
 - [GTMetrix](#)
 - [WebPageTest](#)
 - [Pingdom](#)
 - [ShowSlow](#)

Custom Software Solutions

A Few Important Notes Before We Start

- ▶ Most of this was A LOT of trial and error. I spent a lot of time testing my site to ensure it still worked after every change, and I re-ran PageSpeed Insights after every change to see what made a difference.
- ▶ My set-up (the closer your set-up is to this, then the more helpful this guide will probably be for you):
 - Using WordPress
 - Using [Revolution Slider](#)
 - Using Google Fonts
 - Using WPEngine as my host which restricts some plugins - I cannot use "W3 Total Cache" or "WP Rocket" which is widely recommended by the online community to resolve PageSpeed issues.

Guide to Optimizing JavaScript and CSS in a WordPress Website

- ▶ If you have gotten the following warnings from Google PageSpeed insights, we are here to help:
 - *Eliminate render-blocking JavaScript and CSS in above-the-fold content... This causes a delay in rendering your page.*
 - *Optimize CSS Delivery of the following...*
 - *Remove render-blocking JavaScript...*

The Two Biggest Factors in Reducing the Time it Takes to Load JavaScript Are:

1. Combining the scripts into as few files as possible.

- WordPress sites are especially susceptible to loading many scripts upon page load. This is because plugins and themes often each have their own scripts that need to be loaded in order to function. In a more traditional website, the developer would have more control over these scripts and manually combine them to reduce the overhead upon page load.

2. Deferring the loading of “non-critical” scripts.

- This often involves moving scripts to the bottom of the page. When a browser is loading your page, it typically loads things in parallel until it encounters a script. Nothing else can load while a script loads. Once the script is done loading, the website can continue rendering everything else. You can see how, especially if you have many scripts, this can really affect how quickly your page will load.

Custom Software Solutions

Steps to Resolve the “Render-Blocking JavaScript and CSS” PageSpeed Error

- ▶ Note: We are tackling both JavaScript and CSS at once because most of the plugins made for resolving these issues address both.

- ▶ **Step 1: Resolve any render-blocking plugin scripts by adjusting plugin settings, if possible.**
 - Start with analyzing the list of render-blocking scripts Google PageSpeed provides to you and determine if any of these scripts appear to be coming from a plugin. If you are able to identify any plugins from the list of scripts, go to each plugin's settings, one by one, and search for a setting that will defer the JavaScript or load it asynchronously. If you are unable to identify any plugins from the list of scripts, or if you do not have any of these plugin settings available to you, continue on to step 2.

Custom Software Solutions

Steps to Resolve the “Render-Blocking JavaScript and CSS” PageSpeed Error

► Step 1 Continued

- Revolution Slider settings changes:
 - In my setup, I noticed that my plugin "Revolution Slider" had several JavaScripts listed as render-blocking. I searched Revolution Slider settings for options to load the JavaScript asynchronously or defer it. These are the options I ended up using:
- In Slider Revolution "Global Settings":
 - Include RevSlider libraries globally: ON (my slider broke if I set this to OFF, but it might be worth trying in your setup)
 - Insert JavaScript Into Footer: ON
 - Defer JavaScript Loading: OFF (again, this broke my setup if I turned it on, but it might be worth trying)

Custom Software Solutions

Steps to Resolve the “Render-Blocking JavaScript and CSS” PageSpeed Error

► Step 1 Continued

Include RevSlider libraries globally:

On
 Off

ON - Add CSS and JS Files to all pages.

Off - CSS and JS Files will be only loaded on Pages where any rev_slider shortcode exists.

Pages to include RevSlider libraries:

Specify the page id's that the front end includes will be included in. Example: 2,3,5 also: homepage,3,4

Insert JavaScript Into Footer:

On
 Off

Putting the js to footer (instead of the head) is good for fixing some javascript conflicts.

Defer JavaScript Loading:

On
 Off

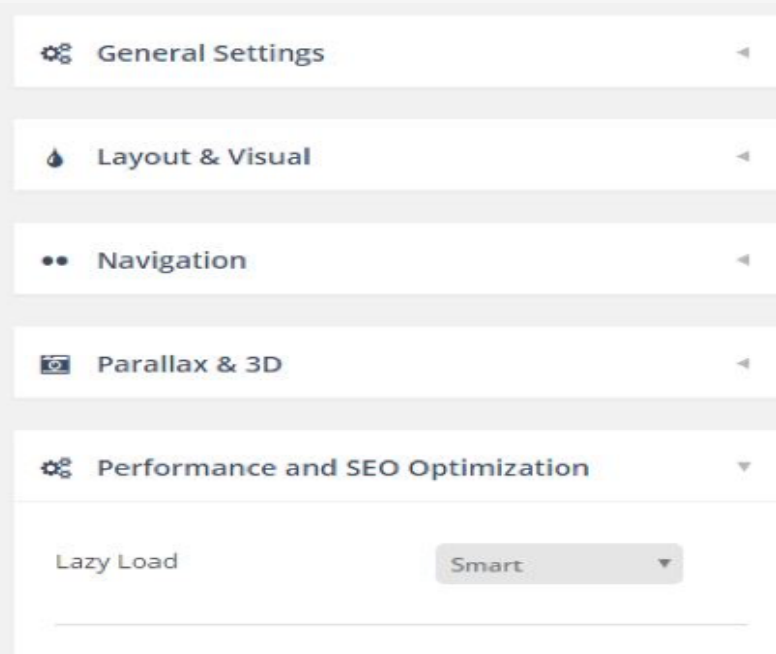
Defer the loading of the JavaScript libraries to maximize page loading speed.

Custom Software Solutions

Steps to Resolve the “Render-Blocking JavaScript and CSS” PageSpeed Error

► Step 1 Continued

- In each individual slider presentation settings, I set the following:
 - Under Performance and SEO Optimization panel:
 - Lazy Load: Smart

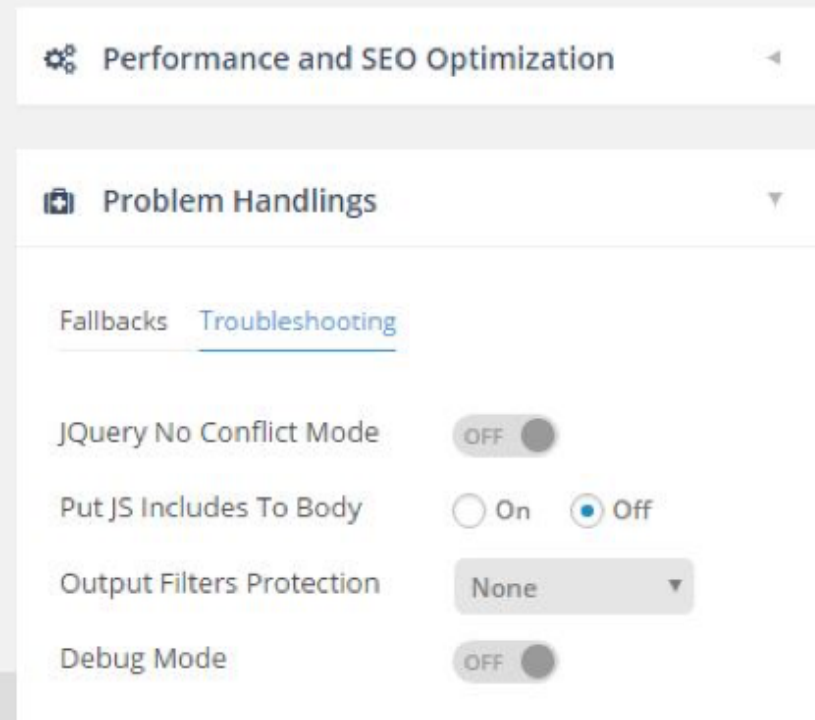


Custom Software Solutions

Steps to Resolve the “Render-Blocking JavaScript and CSS” PageSpeed Error

► Step 1 Continued

- Under Problem Handlings - Troubleshooting
 - JQuery No Conflict Mode: OFF
 - Put JS Includes To Body: OFF
 - Output Filters Protection: None
 - Debug Mode: OFF



Steps to Resolve the “Render-Blocking JavaScript and CSS” PageSpeed Error

► Step 1 Continued

- After changing individual plugin settings, be sure to clear your cache and test a lot! You don't want something to break on your site.
- Check PageSpeed insights. Making these changes to Slider Revolution helped reduce the number of render-blocking scripts our site had, but I still needed help from other plugins to clean up everything else.

Steps to Resolve the “Render-Blocking JavaScript and CSS” PageSpeed Error

► Step 2: **Combine JavaScript and CSS files into a single file (one for JS and one for CSS) and minify them.**

- I use a plugin that does this work for me! This plugin successfully combines all of my CSS scripts into a single file and minifies it, and it does the same for my JS files.
 - Install the plugin "[JS & CSS Script Optimizer](#)" and check the following settings:
 - Enable the plugin
 - Under the JavaScript settings, select the following
 - Pack JavaScripts: Enabled
 - JavaScripts Minifier: Minify by Steve Clay
 - Combine JavaScripts: Combine and Move all JavaScripts to the bottom
 - Ignore: “jquery.js”

Steps to Resolve the “Render-Blocking JavaScript and CSS” PageSpeed Error

► Step 2 Continued

JavaScript output options

Pack JavaScripts	<input checked="" type="checkbox"/> Compress (pack / minify) scripts
JavaScripts Minifier	<input type="radio"/> Dean Edwards Packer <input checked="" type="radio"/> Minify by Steve Clay
Ignore external JavaScript	<input type="checkbox"/> For self-hosted only
Combine JavaScripts	<input type="radio"/> Combine all scripts into the two files (in the header & footer) <input checked="" type="radio"/> Combine & Move all JavaScripts to the bottom <input type="radio"/> Do not combine JavaScripts
Ignore next JavaScripts	<input type="text" value="jquery.js"/> Comma separated handles or file names. For example: jquery, jquery-ui.js

Custom Software Solutions

Steps to Resolve the “Render-Blocking JavaScript and CSS” PageSpeed Error

► Step 2 Continued

- Under the style-sheet settings, select the following:
 - Enable CSS optimizer: Use plugin for CSS
 - Combine CSS: Combine all CSS scripts into the single file
 - Style-sheets packing: Minify CSS files

Style-sheets output options

Enable CSS optimizer	<input checked="" type="checkbox"/> Use plugin for CSS
Ignore external CSS	<input type="checkbox"/> For self-hosted only
Combine CSS	<input checked="" type="checkbox"/> Combine all CSS scripts into the single file
Style-sheets packing	<input checked="" type="checkbox"/> Minify CSS files (remove comments, tabs, spaces, newlines)
Ignore next CSS	<input type="text"/>

Comma separated handles or file names. For example: jquery-ui.custom.css

Steps to Resolve the “Render-Blocking JavaScript and CSS” PageSpeed Error

► Step 2 Continued

- Clear your cache and re-load your website to make sure nothing has broken.
- Run Google PageSpeed and see if anything has changed. In my results, this helped reduce the number of http calls, but PageSpeed was still hung up on the JS and CSS files being render blocking.

Steps to Resolve the “Render-Blocking JavaScript and CSS” PageSpeed Error

▶ Step 3: **Resolve the CSS file being render-blocking**

- Install the "[Autooptimize](#)" plugin and check the following settings:

- Enable Optimize HTML code
- Do NOT enable Optimize JavaScript code
- Enable Optimize CSS Code
 - "Inline and Defer CSS"

▶ I enabled this option; however, this takes a little bit of research to do properly.

▶ This option lets you put "above the fold" CSS in the header so it is loaded first before loading the rest of the CSS script. This allows the above-the-fold content styling to load first so it will be rendered as quickly as possible for the visitor.

Steps to Resolve the “Render-Blocking JavaScript and CSS” PageSpeed Error

► Step 3 Continued

- I followed this [great guide on how to use the Autooptimize Inline and Defer CSS Option](#).
- I highly recommend following this guide and enabling this option.
- After this is done, clear your cache and re-load your website to make sure nothing has broken. It is interesting to note that enabling the "Optimize JavaScript code" option in my Autooptimize plugin completely crashed my website, which is why I recommend NOT enabling that function if you have a set-up that is similar to ours.
- Run Google PageSpeed and see if anything has changed. In my results, this resolved the render-blocking CSS file on mobile page speed. Now all that is left is the render-blocking JS file.

Custom Software Solutions

Steps to Resolve the “Render-Blocking JavaScript and CSS” PageSpeed Error

▶ Step 4: **Resolve the JavaScript File Being Render-Blocking**

- To resolve the JavaScript file being render-blocking, install the plugin "[Scripts To Footer](#)." Just activate the plugin and that is it! You do not have to edit any settings. The plugin is automatically enabled when it is activated.
- Again, clear your cache and re-load your website to make sure nothing has broken.
- Finally, run Google PageSpeed Insights again. Hopefully your “render blocking JS and CSS” warnings are now gone! Following the steps above completely removed this warning for our website, and increased the page load speed.
- The next step to seeing large performance increases on your site and improving your Google PageSpeed score is to optimize your images – covered in the next section!

Guide to Optimizing Images in a WordPress Website

▶ “Optimize the following images to reduce their size...”

- This warning is fairly straightforward, thankfully! PageSpeed Insights finds the images on your page that are large and could be compressed, and lists them out for you. Compressing images involves making the image file size smaller, without affecting the quality of the picture to the naked eye. You could manually compress these images one by one with a desktop or online program, *or* you could let a plugin do it for you!

▶ The following plugins are widely used and well rated:

- [ShortPixel](#) – (free account) 100 images/month. No file size limit.
- [WP-Smushit](#) – (free account) 1 MB file size limit, bulk option is limited to 50 files at a time.
- [EWWW Image Optimizer](#)
- After optimizing images on our site with one of these plugins, this Google PageSpeed warning went away.

Additional Ways to Speed Up Your Website

- ▶ If you are looking for even more ways to speed up your website, two things that could make the biggest difference are:
 - Using a speedy website host
 - Using a Content Delivery Network (CDN)
- ▶ In-depth explanations of these two recommendations are beyond the scope of this article, but for more information check out:
 - <https://www.codeinwp.com/blog/best-wordpress-hosting/>
 - <http://www.wpbeginner.com/beginners-guide/why-you-need-a-cdn-for-your-wordpress-blog-infographic/>

Custom Software Solutions

In Summary

- ▶ While I hope this guide has been helpful to you, please bear in mind that there are many different setups in WordPress, and any one difference in setup can cause these steps to not work for you. The best results may come after much trial and error.
- ▶ Finally, if you are disappointed that you cannot seem to get your Google PageSpeed Insight score above a certain point, remember that there are many other benchmarks of page speed and performance. Run a test on your site using some of the other performance analysis tools listed earlier in this article and see how you rank.

Reference URLs In Order of Appearance

- <https://developers.google.com/speed/pagespeed/insights/>
- <http://brainspire.com/services/portals-and-websites/>
- <https://webmasters.googleblog.com/2010/04/using-site-speed-in-web-search-ranking.html>
- <http://www.thesempost.com/next-mobile-friendly-update-includes-page-speed-coming-in-months/>
- <https://wordpress.org/support/topic/render-blocking-javascript/page/2/>
- <https://wordpress.org/support/topic/eliminating-render-blocking-javascript-and-css-in-above-the-fold-content/>
- <https://gtmetrix.com/>
- <http://www.webpagetest.org/>
- <https://tools.pingdom.com/>
- <http://www.showslow.com/>
- <https://codecanyon.net/item/slider-revolution-responsive-wordpress-plugin/2751380>
- <https://wordpress.org/plugins/js-css-script-optimizer/>
- <https://wordpress.org/plugins/autooptimize/>
- <https://www.wpfaster.org/blog/how-to-use-autooptimize-inline-and-defer-css-option>
- <https://wordpress.org/plugins/scripts-to-footerphp/>
- <https://shortpixel.com/>
- <https://wordpress.org/plugins/wp-smushit/>
- <https://wordpress.org/plugins/ewww-image-optimizer/>

Your Trusted Partner in Software Solutions

Our Services

Custom Application Development

Data & Business Intelligence

Application Integration

Mobile Development

Portals & Websites

Brainspire Solutions

www.brainspire.com

info@brainspire.com