# Optimize website

## Why Optimize

* Amazon sees a 1% crease in revenue for every 100ms increase in load time
* Netflix saw a 43% decrease in their bandwidth bill after turning on GZip
* For more statistics see: <https://wpostats.com/>

More than profit for companies. The internet costs for individuals too:

* <https://whatdoesmysitecost.com>

## Create a data budget

The whole site can’t be more than 1MB. Where can we save?

Analyze Current State

### Google Speed Insights

* <https://developers.google.com/speed/pagespeed/insights/>

### Take the Google Course

* <https://support.google.com/webmasters/answer/6001102?hl=en&utm_source=wmx&utm_campaign=links>

### Utilize tools in the browser

* <https://developers.google.com/web/tools/chrome-devtools/>

### Get Extensions like the Web Developer Extension for Firefox

* <https://chrispederick.com/work/web-developer/>

### Get a developer browser like Firefox Developer Browser

<https://www.mozilla.org/en-US/firefox/58.0a2/whatsnew/#devtools>

## Optimize Images

### In Photoshop

Reduce size

Reduce quality

Use the correct format

### Try an image optimization service

* Online option

<https://tinypng.com/>

* Downloaded option

<https://imageoptim.com/mac>

### Set the src attribute

If you have an empty src attribute in your image tag, e.g. <img src="">, the browser looks for the file the code is on in the directory it’s in.

## Optimize Typography

Optimize web fonts by using only the ones needed and only fonts optimized for the web.

### Use the right fonts and sets

* <https://fonts.google.com/>

### Or do away with them all together - add web safe fonts.

* <https://www.cssfontstack.com/>

## Optimize CSS

One HTTP Request - No inline styles.

### One caveat - above the fold

Consider splitting your CSS into two parts: a short inline part that styles above-the-fold elements, and an external part that can be deferred.

Check it with this online tool:

* <https://varvy.com/tools/css-delivery/>

### Minify JavaScript and CSS

* <https://htmlcompressor.com/compressor/>

Note: HTML minification can sometimes increase download time.

## Server Side Optimization Tools

GZIP

Zips web assets

* <http://nginx.org/en/docs/http/ngx_http_gzip_module.html>,
* <https://betterexplained.com/articles/how-to-optimize-your-site-with-gzip-compression/>

HTTP/2 PUSH

Allows for developers to allow server to send needed resources prior to being requested.

More information:

* <https://developers.google.com/web/fundamentals/performance/http2/>
* <https://www.smashingmagazine.com/2017/04/guide-http2-server-push/>

### Caching

* <https://betterexplained.com/articles/how-to-optimize-your-site-with-http-caching/>

## Monitor Progress

### Tracking

Two options for monitoring site speed over time:

* <https://speedcurve.com/>
* <https://www.sitespeed.io/>

For Further Reading

* <https://www.crazyegg.com/blog/speed-up-your-website/>