

AUDIT YOUR THEME

PRESENTED BY ANDREW OLSON

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I'm a Hawkeye! Born, raised, & educated in Iowa.



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HS2 SOLUTIONS

Wilson



zipcar

AVIS

H&B BLOCK

spring

CAESARS
ENTERTAINMENT

Advance
Auto Parts



P&G

Allstate
You're in good hands.

Panera
BREAD



AGENDA

1. How To Analyze Your Theme
2. Helpful Tools
3. Refactor Pro Tips
4. Q&A

GROWN OVER TIME



A black and white photograph of a person from behind, walking up a wide set of stairs. The person is carrying two large suitcases, one in each hand. They are wearing a light-colored jacket and dark pants. The stairs are flanked by railings. In the background, there are power lines and a building. The overall mood is one of journey and achievement.

LAUNCH COMPLETE

STUCK WITH IT



BIG PROJECT

A photograph of four men standing on a rocky ledge in front of a large waterfall. They are all wearing green patterned shorts and are actively playing with water using buckets. The man on the far left is holding a pink bucket, the second man a green one, the third a green one, and the fourth a red one. They are all in various poses, some pouring water, others holding buckets up. The background is a massive, cascading waterfall that fills the upper half of the frame. The overall scene is dynamic and playful.

LOVE YOUR THEME

A close-up photograph of a red, heart-shaped container with a heart-shaped cutout, tilted and spilling out numerous white and pink heart-shaped confetti pieces onto a dark, textured surface. The scene is dimly lit, with the red container and the white/pink confetti providing the primary light sources.

A photograph of a baby sitting in a blue plastic tub, pouring water from a metal pot. The baby is seen from the back, with their right arm raised holding the pot. A stream of water is captured mid-air, creating a dynamic splash. The background is a soft-focus outdoor scene with green foliage and a hint of a blue structure. The text "NEW TO THIS" is overlaid in the center in a bold, white, sans-serif font.

NEW TO THIS

1. *Analyze Your Theme*

HOW TO ANALYZE YOUR THEME

Theme Questions

- Open your **.info.yml**.
- What type of theme?
- Sub-theme? Parent?
- Has the base theme been updated?
Is the theme actively maintained?

```
name: Bartik
type: theme
base theme: classy
description: 'A flexible, recolorable theme'
package: Core
# version: VERSION
# core: 8.x
libraries:
  - bartik/global-styling
ckeditor_stylesheets:
  - css/base/elements.css
  - css/components/captions.css
  - css/components/table.css
  - css/components/text-formatted.css
regions:
  header: Header
  primary_menu: 'Primary menu'
  secondary_menu: 'Secondary menu'
  page_top: 'Page top'
  page_bottom: 'Page bottom'
```

```
name: nysubtheme
description: "Custom sub-theme, inherits from the Zurb Foundation base theme"
core: 8.x
type: theme
base theme: zurb_foundation

libraries:
  - centura_base/global

regions:
  meta_header: 'Meta Header'
  header: Header
  ...
  right_off_canvas: 'Right off canvas'

# This section is used by the contrib module, Component Libraries.
# Reference .twig files by using the Twig namespace: @components
component-libraries:
  atoms:
    paths:
      - source/_patterns/00-atoms
  molecules:
    paths:
      - source/_patterns/01-molecules
  organisms:
    paths:
      - source/_patterns/02-organisms
  templates:
    paths:
      - source/_patterns/03-templates
```

HOW TO ANALYZE YOUR THEME

Theme Questions

- Inspect your **libraries.yml**.
 - Loading CSS and JS appropriately?
 - Are you using a FE Framework?
 - What is your level of JavaScript complexity?
 - Are you using a CDN (Content Delivery Network)?
 - Are you hosting Webfonts or are they external?

```
global:
  version: VERSION
  css:
    component:
      css/base.css: {}
      css/components/blocks/banner/banner.css: {}
      css/components/blocks/branding/branding.css: {}
      ...
    layout:
      css/layout/grid-2.css: {}
      css/layout/grid-3.css: {}
      css/layout/grid-4.css: {}
      css/layout/layout.css: {}
  js:
    js/components/navigation/menu-main/menu-main.js: {}
recipe-collections:
  css:
    theme:
      css/components/blocks/recipe-collections/recipe-collections.css: {}
two-columns:
  css:
    layout:
      css/layout/layout-2-col.css: {}
webfonts:
  css:
    theme:
      'https://fonts.googleapis.com/css?family=Open+Sans': { type: external,
```

HOW TO ANALYZE YOUR THEME

Theme Questions

- Review your **.theme**.
 - Review your hooks.
 - How many template overrides?

```
/**
 * Implements hook_preprocess_HOOK() for HTML document templates.
 *
 * Adds body classes if certain regions have content.
 */
function unami_preprocess_html(&$variables) {
  // Add a sidebar class if the sidebar has content in it.
  if (!empty($variables['page']['sidebar'])) {
    $variables['attributes']['class'][] = 'two-columns';
    $variables['#attached']['library'][] = 'unami/two-columns';
  }
  else {
    $variables['attributes']['class'][] = 'one-column';
  }
}
```

HOW TO ANALYZE YOUR THEME

Theme Questions

- Inspect your **breakpoints.yml**.
 - What are your screen sizes?
- Did you implement Responsive Images?

```
umami.mobile:  
  label: mobile  
  mediaQuery: ''  
  weight: 0  
  multipliers:  
    - 1x  
    - 2x  
umami.narrow:  
  label: narrow  
  mediaQuery: 'all and (min-width: 768px)'  
  weight: 1  
  multipliers:  
    - 1x  
    - 2x  
umami.wide:  
  label: wide  
  mediaQuery: 'all and (min-width: 960px)'  
  weight: 2  
  multipliers:  
    - 1x  
    - 2x
```

HOW TO ANALYZE YOUR THEME

Theme Questions

- Does your site use automation?
 - Gulp, Webpack, Grunt, Yarn.
- Does your site use SASS or LESS?
- Does your site use a Pattern Library?
 - Internal or External?

HOW TO ANALYZE YOUR THEME

Theme Questions

- How many templates?
- How are your templates organized?
- How many content types?
- Does the site use modules inserting CSS or JS?
 - [Asset Injector](#) (formerly CSS Injector and JS Injector in D7)

HOW TO ANALYZE YOUR THEME

Project Questions

- Does your site have Analytics?
 - What is your browser support?
 - What are your top 20 most requested URLs?
 - How much mobile traffic is your site receiving?
 - What is in your 404 report?

HOW TO ANALYZE YOUR THEME

Project Questions

- Is the original developer available for questions?
 - Ask them to navigate the site with specific tasks.
 - Listen, don't lead.
 - Lastly, review your findings.

2. *Helpful Tools*

PARKER

ANALYZE CSS

LINT

WHAT IS PARKER?

Parker is a stylesheet analysis tool. It runs metrics on your stylesheets and will report on their complexity.

HELPFUL TOOLS

Parker

- Install with npm.
- Measure local or remote CSS files.
- Outputs JSON.

HELPFUL TOOLS

Let's See These Tools In Action!

- Analyze and Compare 2 Sites
 - Drupalcorn (Omega Subtheme)
 - Drupal.org (Blue Cheese Theme... custom theme?)



HELPFUL TOOLS

Parker: [DrupalCorn.org](https://drupalcorn.org)



- **Step 1:** Download aggregated CSS files for each Home Page to local directory.
- **Step 2:** Run Parker and output results as JSON.

```
"total-stylesheets": 5,  
"total-stylesheet-size": 49676,  
"total-rules": 677,  
"total-selectors": 1199,  
"total-identifiers": 2735,  
"total-declarations": 1283,
```

CSS 101

```
h1 {color: #0000FF; font-size: 18px;}
```

CSS 101

CSS RULE

```
h1 {color: #0000FF; font-size: 18px;}
```

CSS 101



CSS 101

DECLARATION

```
h1 {color: #0000FF; font-size: 18px;}
```

PROPERTY

VALUE

HELPFUL TOOLS

Parker: DrupalCorn.org



```
"selectors-per-rule": 1.7710487444608567,  
"identifiers-per-selector": 2.28023352793995,  
"specificity-per-selector": 21.20350291909925,  
"top-selector-specificity": 121,  
"top-selector-specificity-selector": "#permissions tr.odd .form-item",  
"total-id-selectors": 76,
```

HELPFUL TOOLS

Selector Per Rule Example

Before: Lots of Selectors!

```
input[type="text"]  
input[type="email"],  
input[type="password"],  
textarea {  
  border: 1px solid #ccc;  
  background-color: #fff;  
  color: #333;  
  padding: 4px;  
}
```

After: Written into 1 Class

```
.c-input-text {  
  border: 1px solid #ccc;  
  background-color: #fff;  
  color: #333;  
  padding: 4px;  
}
```

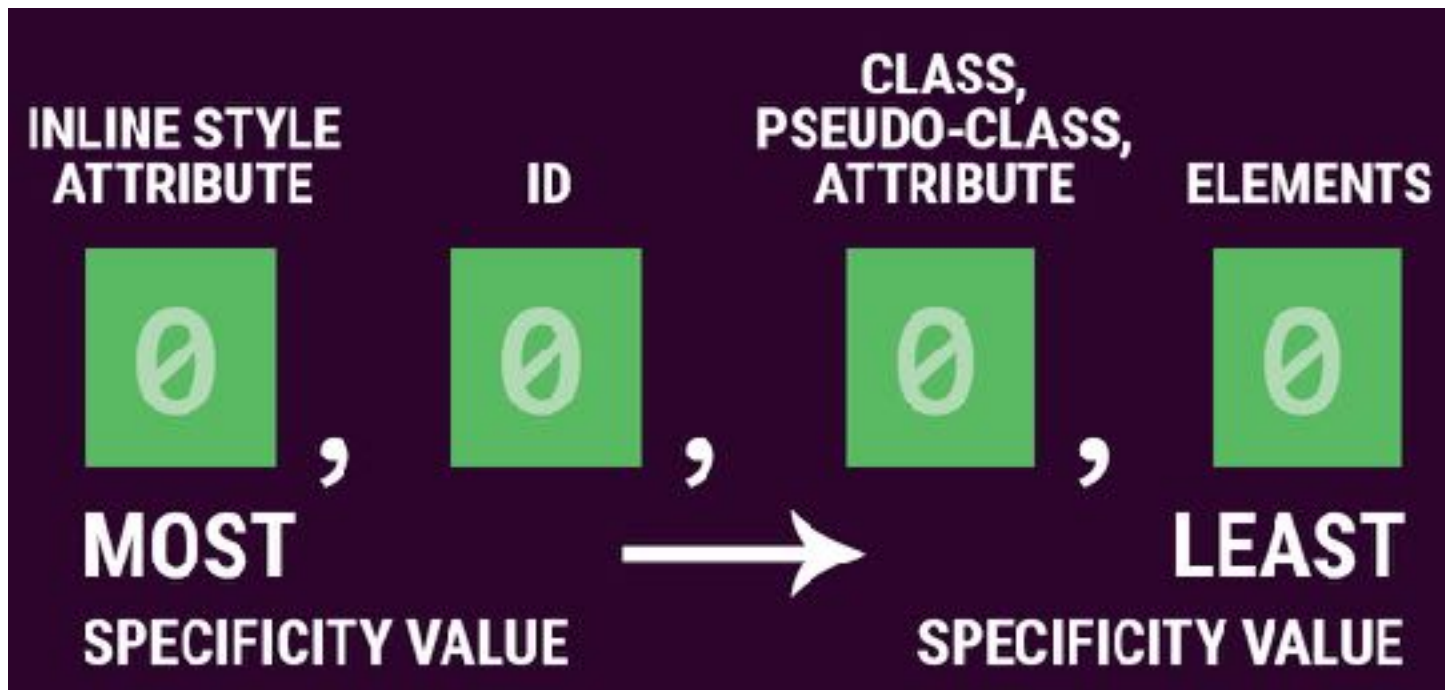
HELPFUL TOOLS

Parker: DrupalCorn.org



```
"selectors-per-rule": 1.7710487444608567,  
"identifiers-per-selector": 2.28023352793995,  
"specificity-per-selector": 21.20350291909925,  
"top-selector-specificity": 121,  
"top-selector-specificity-selector": "#permissions tr.odd .form-item",  
"total-id-selectors": 76,
```

Specificity 101



Specificity 101



Specificity 101



Specificity 101



HELPFUL TOOLS

Specificity 101

- The universal selector (*) has no specificity value (0,0,0,0)
- Pseudo-*elements* get 0,0,0,1. (e.g. `::first-line`)
- The **!important** value appended a CSS property value is an automatic win.

HELPFUL TOOLS

Parker: DrupalCorn.org



```
"selectors-per-rule": 1.7710487444608567,  
"identifiers-per-selector": 2.28023352793995,  
"specificity-per-selector": 21.20350291909925,  
"top-selector-specificity": 121,  
"top-selector-specificity-selector": "#permissions tr.odd .form-item",  
"total-id-selectors": 76,
```

HELPFUL TOOLS

Parker: [DrupalCorn.org](https://drupalcorn.org)



```
"total-important-keywords": 18,  
"total-media-queries": 6,  
"media-queries": [  
  "(-webkit-min-device-pixel-ratio:0)",  
  "all and (min-width:740px) and (min-device-width:740px)",  
  "(max-device-width:800px) and (min-width:740px) and (orientation:landscape)",  
  "all and (min-width:980px) and (min-device-width:980px)",  
  "all and (max-device-width:1024px) and (min-width:1024px) and (orientation:landscape)",  
  "all and (min-width:1220px)"  
]
```

HELPFUL TOOLS

Parker: [DrupalCorn.org](https://drupalcorn.org)



```
"total-unique-colours": 61,  
"unique-colours": [  
  "#FFFFFF",  
  "#000000",  
  "#EEEEEE",  
  "#DDDDDD",  
  "#CCCCCC",  
  "#BBBBBB",  
  "#999999",  
  "...",  
  "#F2F7FB"  
],
```

HELPFUL TOOLS

Parker: [Drupal.org](https://drupal.org)



```
"total-stylesheets": 17,  
"total-stylesheet-size": 204397,  
"total-rules": 1901,  
"total-selectors": 2974,  
"total-identifiers": 8794,  
"total-declarations": 4167,
```

HELPFUL TOOLS

Parker: [Drupal.org](https://drupal.org)



```
"selectors-per-rule": 1.5644397685428721,  
"identifiers-per-selector": 2.988231338264963,  
"specificity-per-selector": 49.89744451916611,  
"top-selector-specificity": 311,  
"top-selector-specificity-selector":  
  "#crm-container.crm-public #crm-submit-buttons input#_qf_Main_upload-bottom",  
"total-id-selectors": 879,
```

HELPFUL TOOLS

Parker: [Drupal.org](https://drupal.org)



```
"total-important-keywords": 19,  
"total-media-queries": 20,  
"media-queries": [  
  "(min-width:26.25em)",  
  "(max-width:26.25em)",  
  "(min-width:65.625em)",  
  "all and (min-width:380px) and (max-width:534px)",  
  "all and (min-width:535px) and (max-width:699px)",  
  "all and (min-width:700px) and (max-width:793px)",  
  "all and (min-width:794px)",  
  "all and (max-width:760px)",  
  "all and (min-width:760px)",  
  "(min-width:47.5em)",  
  "(min-width:0) and (max-width:26.25em)",  
  "(max-width:65.625em)",  
  "(max-width:47.5em)",  
  "all and (min-width:451px)",  
  "all and (min-width:694px)",  
  "(min-width:26.25em) and (max-width:47.5em)",  
  "all and (min-width:540px)",  
  "all and (min-width:480px)",  
  "all and (min-width:600px)",  
  "screen and (prefers-reduced-motion:reduce)"  
]
```

HELPFUL TOOLS

Parker: [Drupal.org](https://drupal.org)



```
"total-unique-colours": 128,  
"unique-colours": [  
  "#FFFFFF",  
  "#000000",  
  "#EEEEEE",  
  "#DDDDDD",  
  "#CCCCCC",  
  "#BBBBBB",  
  "#999999",  
  "...",  
  "#05629B"  
],
```

HELPFUL TOOLS

Parker

- Pros
 - Excellent for 1 compiled CSS file or 1 directory containing all aggregated CSS files.
 - Measure file size of CSS.
 - Identify all color values and media queries.
 - Find **!important** declarations
- Cons
 - Does not traverse deeper folder structure to find all CSS files.
 - Not a full picture of the site if following D8 recommended approach (dynamic loading of CSS/JS).
 - Last updated July 2016.

WHAT IS ANALYZE CSS?

Analyze CSS checks for redundancy and validation errors to keep your CSS simple. Test, weigh, and analyze your CSS selectors to reduce complexity and optimize performance.

HELPFUL TOOLS

Analyze CSS

- Install with npm.
- Measure local or remote CSS files.
- Outputs JSON.

HELPFUL TOOLS

Analyze CSS: DrupalCorn.org



```
"generator": "analyze-css v0.12.6",  
"metrics":  
{  
  "base64Length": 0,  
  "redundantBodySelectors": 1,  
  "redundantChildNodesSelectors": 58,  
  "colors": 63,  
  "comments": 0,  
  "commentsLength": 0,  
  "complexSelectors": 87,  
  "duplicatedSelectors": 26,  
  "duplicatedProperties": 4,  
  "emptyRules": 0,  
  "expressions": 0,  
  "oldIEFixes": 15,  
  "imports": 0,  
  "importants": 18,  
  "mediaQueries": 10,
```

HELPFUL TOOLS

Analyze CSS: DrupalCorn.org



```
"offenders":
{
  "qualifiedSelectors": ["html.js input.form-autocomplete @ 1:237", "
  "oldPropertyPrefixes": [".form-textarea-wrapper textarea { -moz-box
  "duplicatedProperties": [".element-invisible {clip: rect(1px,1px,1p
  "important": [".element-invisible {position: absolute !important}
  "multiClassesSelectors": [".element-focusable.element-invisible @ 1
  "oldIEFixes": ["* html .clearfix @ 1:2934", "button, input[type=\"r
  "redundantChildNodesSelectors": ["ul.menu li @ 2:54", "ul li.expand
  "redundantBodySelectors": ["body div.tabledrag-changed-warning @ 4:
  "complexSelectors": ["form .field-multiple-table td.field-multiple-
  "propertyResets": ["html: \"font\" resets \"font-size\" property se
  "mediaQueries": ["@media (-webkit-min-device-pixel-ratio:0) (2 rule
  "colors": ["#ffffff (31 times)", "#ddddd (21 times)", "#cccccc (14
  "duplicatedSelectors": ["table (3 times)", ".item-list .pager (3 ti
}
```

HELPFUL TOOLS

Analyze CSS: Drupal.org



```
"generator": "analyze-css v0.12.6",
"metrics":
{
  "base64Length": 0,
  "redundantBodySelectors": 3,
  "redundantChildNodesSelectors": 182,
  "colors": 142,
  "comments": 27,
  "commentsLength": 108,
  "complexSelectors": 415,
  "duplicatedSelectors": 64,
  "duplicatedProperties": 10,
  "emptyRules": 3,
  "expressions": 0,
  "oldIEFixes": 55,
  "imports": 1,
  "importants": 19,
  "mediaQueries": 119,
```

Analyze CSS: Drupal.org



```
    "offenders":  
    {  
      "qualifiedSelectors": ["html.js input.form-autocomplete @ 1:237", "html.js inp  
      "oldPropertyPrefixes": [".form-textarea-wrapper textarea { -moz-box-sizing: bo  
      "duplicatedProperties": [".element-invisible {clip: rect(1px,1px,1px,1px)} @ 1  
      "important": [".element-invisible {position: absolute !important} @ 1:2588",  
      "multiClassesSelectors": [".element-focusable.element-invisible @ 1:2699", ".e  
      "oldIEFixes": ["* html .clearfix @ 1:2934", ".prism-previewer {-ms-filter: \"p  
      "redundantChildNodesSelectors": ["ul.menu li @ 3:54", "ul li.expanded @ 3:85",  
      "redundantBodySelectors": ["body div.tabledrag-changed-warning @ 7:2081", "bod  
      "complexSelectors": ["#aggregator .feed-source .feed-image img @ 11:52", "#ag  
      "emptyRules": ["#cboxLoadedContent @ 43:1992", ".cboxSlideshow_on #cboxSlidest  
      "imports": ["url(https://fonts.googleapis.com/css?family=Ubuntu:700,400,300) @  
      "mediaQueries": ["@media (min-width:26.25em) (1 rules) @ 53:1387", "@media (ma  
      "propertyResets": [".node .field-name-field-project-images: \"margin\" resets  
      "colors": ["#4e4e4e (70 times)", "#0678be (41 times)", "#7cbc48 (34 times)",  
      "duplicatedSelectors": ["table (3 times)", "#aggregator .feed-item (3 times)",  
    }  
  }
```

HELPFUL TOOLS

Analyze CSS

- Pros
 - Additional metrics compared to Parker.
 - Lists “offenders” to seek and solve.
 - Updated and maintained!
- Cons
 - Cannot analyze multiple CSS files or a directory of CSS files.
 - Not a full picture of the site if following D8 recommended approach (dynamic loading of CSS/JS).

WHAT IS LINT?

A linter or lint refers to tools that analyze source code to flag programming errors, bugs, stylistic errors, and suspicious constructs.

HELPFUL TOOLS

Lint

- Lint your JavaScript and CSS preprocessing.
- Install as part of your Automation.
- Catches mistakes, saves your bacon, and makes you write better code.

HELPFUL TOOLS

Lint

- Configure to never allow **!important** in your CSS.
- [gulp-sass-lint](#) or [sass-lint](#)
- [gulp-jshint](#) or [gulp-eslint](#)
- [BEM Lint](#) can enforce naming conventions!

3. *Refactor Pro Tips*

REFACTOR PRO TIPS

Organize CSS

- Atomic Design
- SMACSS structure
 - Base, Layout, Module, State, Theme
- BEM (Block, Element, Modifier)
 - Avoids inheritance and provides some sort of scope by using unique CSS classes per element (like `.my-component__list-item`).
 - Reduces style conflicts by keeping CSS specificity to a minimum level.
 - Readable and easy to understand.
 - Bloat, but at the same time helps controls specificity!

REFACTOR PRO TIPS

SASS

- Variables (for colors, breakpoints, fonts, etc.)
- Use Mixins and Functions when possible
 - Media Queries, buttons, positioning.
- Useful nesting for selectors.
- Do not overuse @extend – leads to bloat!
- Use an [AutoPrefixer](#) to reduce size.

REFACTOR PRO TIPS

Image Sizes

- Optimize Images
 - compressor.io
 - [ImageOptim](https://imageoptim.com)

REFACTOR PRO TIPS

Cache Busting

- Grunt
 - [grunt-cache-bust](#)
- Gulp
 - [gulp-cache-bust](#)
 - [gulp-buster](#)
- SASS Variable
 - `$cssVersion = "3.4.2";`
`background: url(../images/bg_x.png?v=$cssVersion)`

REFACTOR PRO TIPS

JavaScript

- Include JavaScript as Libraries
 - Only load when you need it!
- Use Drupal Behaviors
 - Pass data into JavaScript.
 - Reusable functions.
- Write ES6

REFACTOR PRO TIPS

Analyze Your Speed

- [Pingdom](#)
- [PageSpeed Insights](#)

REFACTOR PRO TIPS

Mobile Performance

- Implement [Responsive Images](#)
- Remove Tap Delay
- Skeleton Screens
- Responsive Touch Feedback (Implementing Material Design)
- Progress Bars
- Navigation

REFACTOR PRO TIPS


A11Y Review

- Chrome's built in [Lighthouse](#)
- [Axe](#) Browser Extension

REFACTOR PRO TIPS

Visual Regression Testing

- [Backstop JS](#)
- [Backstop Generator Module](#)

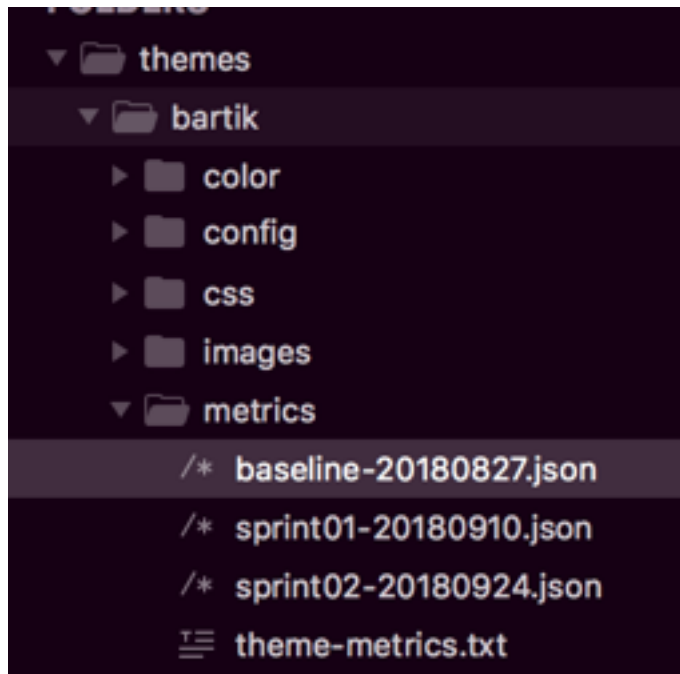


MEASURE OVER TIME

FINAL ADVICE

Establish Metrics

- Create a “metrics” directory in your Theme.
- Baseline:
 - File size of compiled CSS.
 - Output JSON from Parker or Analyze CSS
 - Home Page load time.
- Sprint-by-Sprint:
 - Measure size of CSS.
 - Diff your JSON export.
 - Check Home Page load time.



FINAL ADVICE

Establish Consistency

- Write SASS using BEM and Atomic Design.
- Use Drupal Behaviors + write ES6.
- Lint Your SASS and JavaScript.
- Compile to 1 CSS file.
- Use a CSS Analyzer.



QUESTIONS?

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REFERENCES

- [Parker](#) by Katie Fenn
- [Improving Your CSS with Parker](#) by Harry Roberts
- [Analyze CSS](#) by Maciej Brencz
- [Specifics on CSS Specificity](#) by Chris Coyer
- [BEM 101](#) by Robin Rendle
- [BEM Naming](#) by @floatdrop and @iamstarkov
- [Why BEM?](#) by decaf.de
- [Scalable and Modular Architecture for CSS \(SMACSS\)](#) by Jonathan Snook
- [Strategies for Cache-Busting CSS](#) by Chris Coyer
- [Designing for Mobile Performance](#) by Mustafa Kurtuldu
- [Using Responsive Images in Drupal 8](#) by Rory Douglas