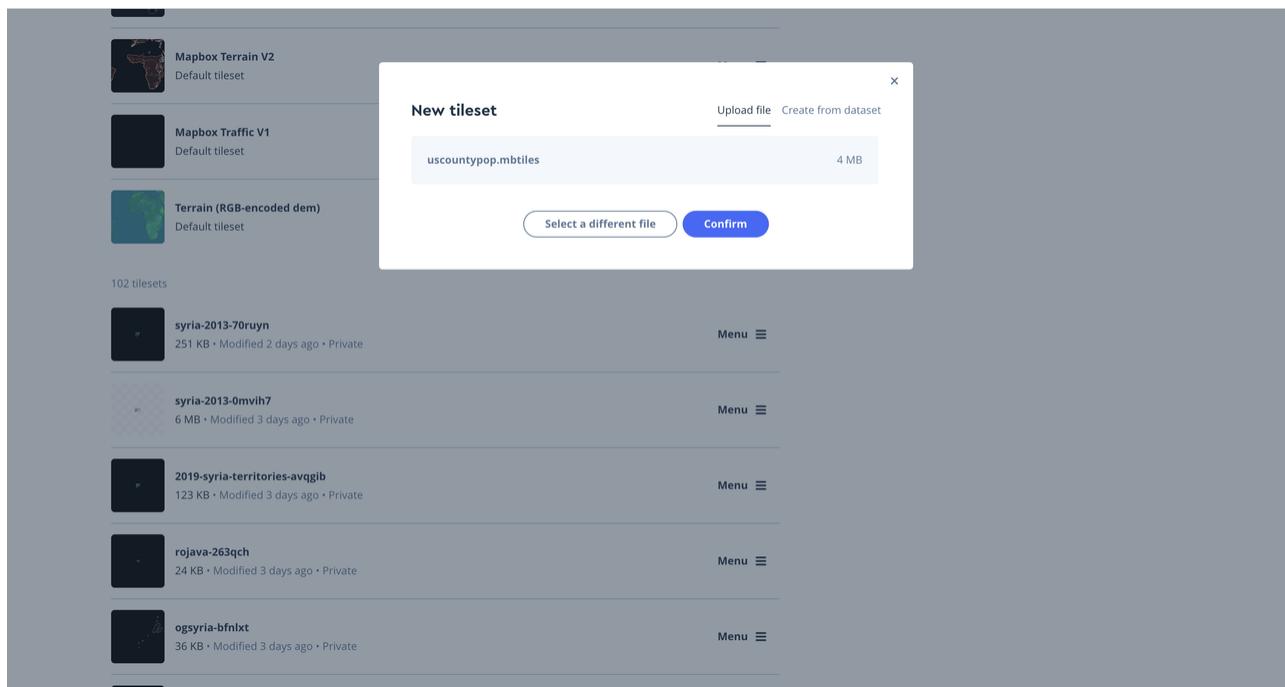


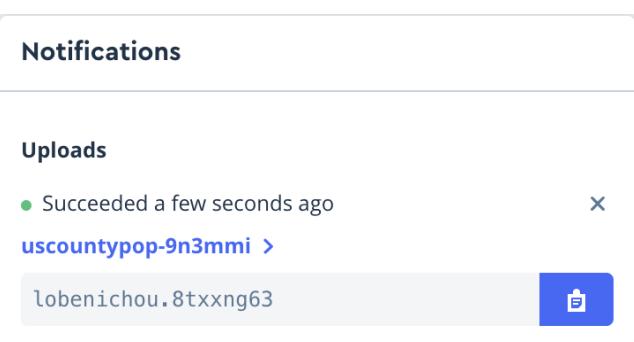
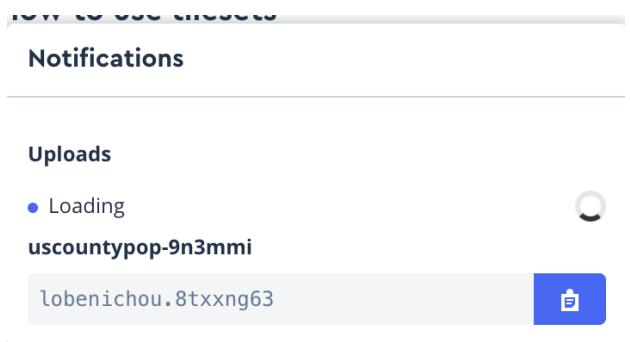
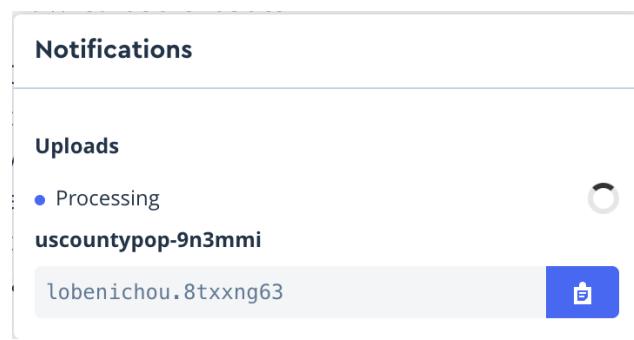
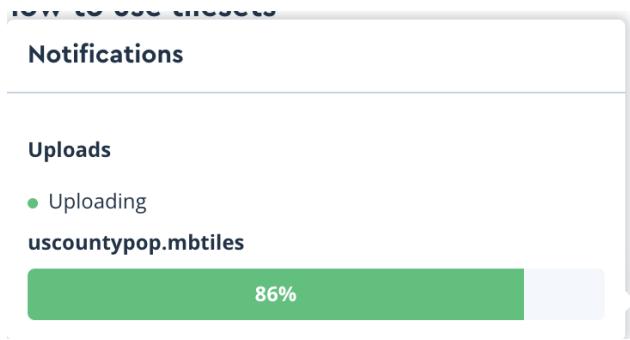
NICAR Studio session: step-by-step

This is the step-by-step guide to the Mapbox NICAR session 2019.

Upload a tileset

- Go to the “[Tilesset](#)” tab from the Studio dashboard
- Drag and drop your file or click on “New Tileset”
- Pick your file
- Wait for the upload to complete.





Let's check out our tileset.

It is important to understand your data and to know the type of values that it contains. For example, if you're going to style based on `pop_densit`, you want to make sure that the values are numbers and not string.

Modified an hour ago

Preview

Layer details

| Layer | Type | Properties |
|-----------------------|--------|----------------------|
| us_county_pop_density | vector | z0 – z7 4 properties |
| GEOID | String | |
| NAME | String | |
| pop_densit | Number | 0 – 69468.4 |
| population | String | |

[Changelog](#) [Developer documentation](#) [Studio manual](#) [Contact](#)

[Terms + Privacy](#) © Mapbox

Details

- Format**: pbf
- Type**: vector
- Size**: 4 MB

Zoom extent: z0 – z7
Data will be visible above zoom 7, but may appear simplified. [Learn how to adjust zoom extent](#)

Bounds: -179.1,17.9,179.8,71.4

Adding to a style

First open your style in the style editor. Next, you can either create a new layer with this tileset as the source, or you can change an existing layer's data source to this tileset.

Add a tilset to a style

- Go to the “[Style](#)” tab
- Click on “New Style”
- Pick a style. For our exercise, let’s pick “Light”
- Click “Create”

mapbox | Studio

Styles

60 styles

- Mojo-syria-timeline
- Mojo-syria-locator
- light-tanzania
- cali-building
- parisfoot
- new-voices

New style

Pick a template or upload an existing style.

Start blank

Upload

Upload a Mapbox GL Style in JSON format.

Outdoors General basemap tailored to hiking, biking, and sport. **Create**

Dark Subtle dark backdrop for data visualizations. **Create**

Light Subtle light backdrop for data visualizations. **Create**

Satellite A beautiful global satellite and aerial imagery layer. **Create**

Share & use Menu

1

Light

Add layer

83 layers

- country-label
- state-label
- settlement-label
- settlement-subdivision-label
- airport-label
- poi-label
- water-point-label
- water-line-label
- natural-point-label
- natural-line-label
- waterway-label
- road-label
- Admin boundaries 5 layers
- Bridges 19 layers
- Roads 20 layers
- Tunnels 13 layers
- building
- building-outline
- aeroway-line
- aeroway-polygon
- land-structure-line
- land-structure-polygon
- hillshade
- water
- waterway
- water-shadow
- landuse

Search places

Map position

Debug

Style reference

Compatibility

History

Light

Fonts

Images

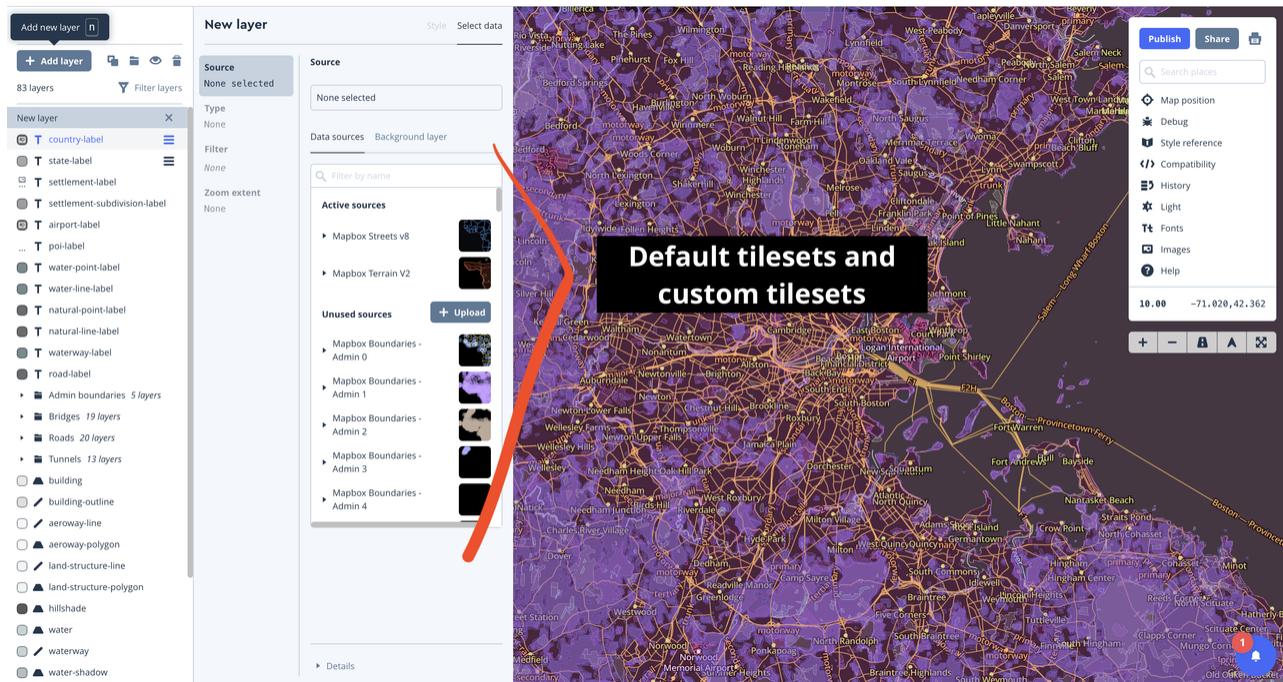
Help

10.00 -71.020,42.362

+ - 🔍 ↗

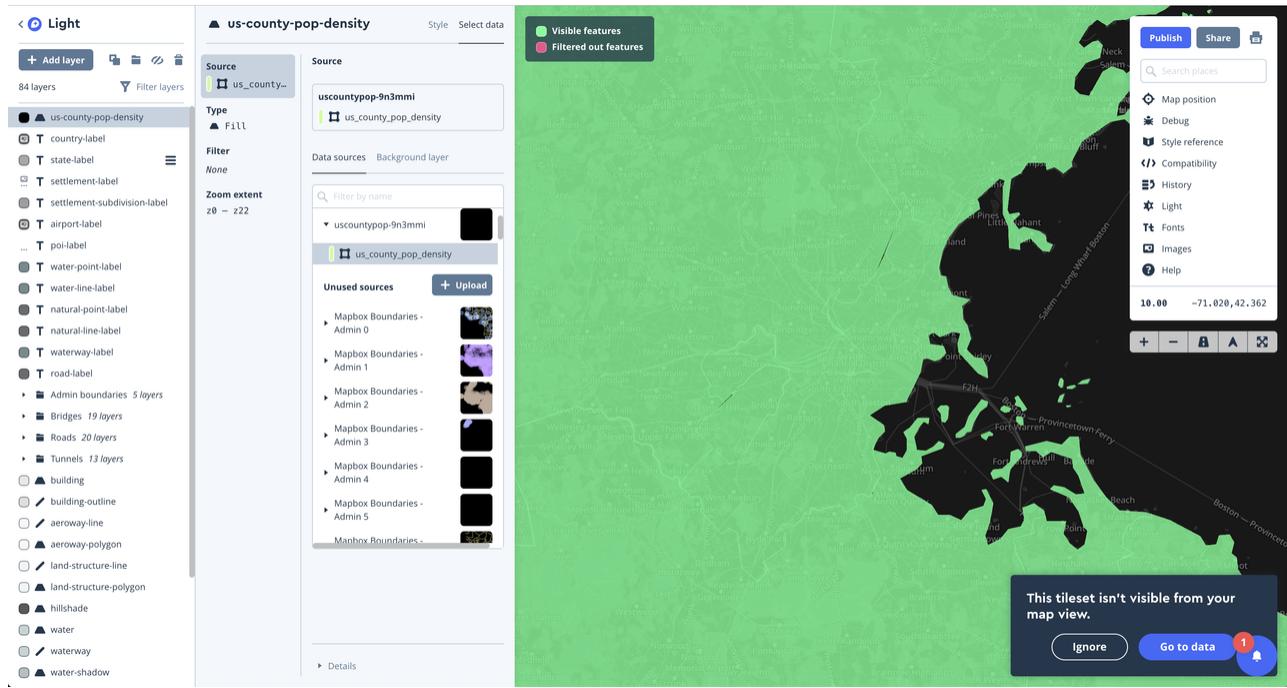


- Now, click on "Add Layer"



- Find your tileset in the list under "Unused sources"

- Once you selected, your data should appear on the right.



This is where you can choose the “type” of geometry you want to display and style.

▲ us-county-pop-density

Style Select data

Source

us_county...

Type

▲ Fill

Filter

None

Zoom extent

z0 – z22

Type

This tileset contains mostly **polygon** features.

Fill

▲ A filled polygon with an optional ✓ stroked border.

Fill extrusion

An extruded (3D) polygon.

Line

A stroked line.

Circle

A filled circle.

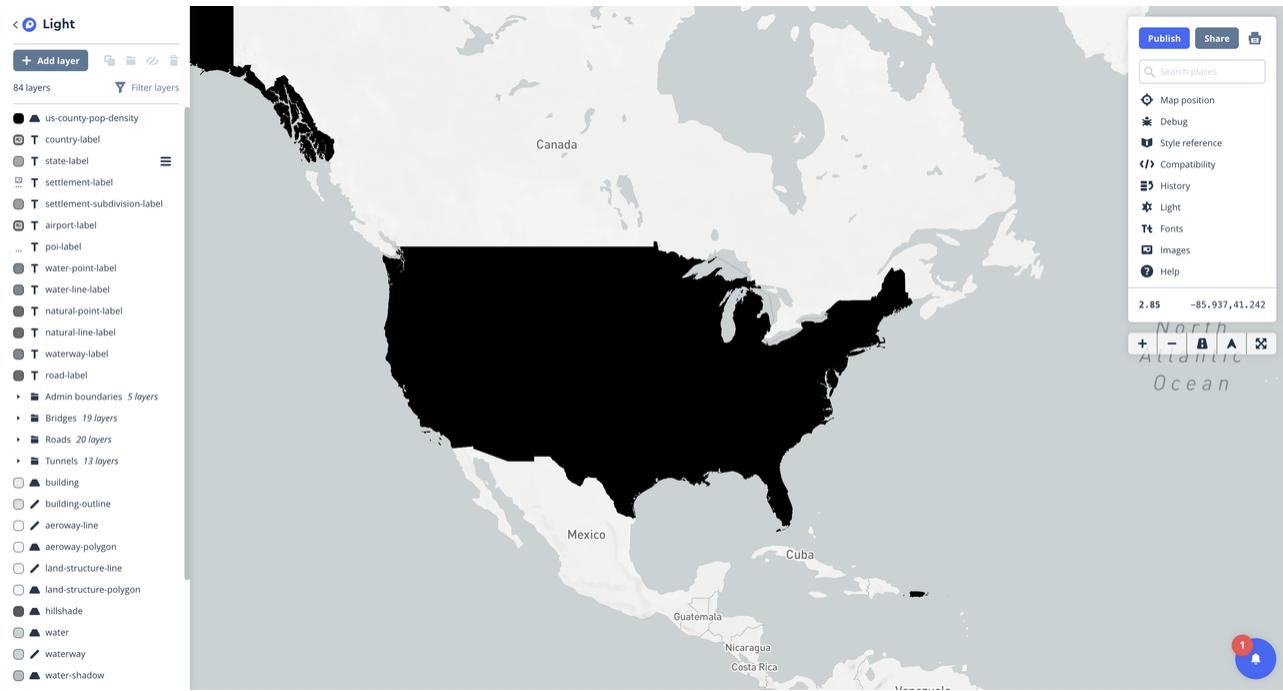
Symbol

An icon or a text label.

Heatmap

A heatmap.

For now, let's leave it as "Fill" since we're going to style the color based on the data in our tileset.



Styling your data:

It's important to know what the values you want to style are. While we skipped this step, I highly recommend looking at a histogram of the values in your dataset and/or automatically create a ramp in QGIS to get a preview of the data. If you're familiar with the command line, you can use [VisiData's](#) quick frequency function to check out the distribution of your dataset.

- Click on the layer you've just added
- Click on "Color"
- Click on "Style across data range"

< ⚙ Light

+ Add layer **Filter layers**

84 layers **Filter layers**

- us-county-pop-density**
- country-label
- state-label
- settlement-label
- settlement-subdivision-label
- airport-label
- poi-label
- water-point-label
- water-line-label
- natural-point-label
- natural-line-label
- waterway-label
- road-label
- Admin boundaries 5 layers
- Bridges 19 layers
- Roads 20 layers
- Tunnels 13 layers
- building
- building-outline
- aeroway-line
- aeroway-polygon
- land-structure-line
- land-structure-polygon
- hillshade
- water
- waterway
- water-shadow

us-county-pop-density

Style **Select data**

Color **Pattern** **None**

Opacity 1

Antialias True

1px stroke **Translate** 0, 0

Translate anchor **Style across zoom range**

Style across data range

Style with data conditions

Use a formula

Reset value to default

Apply existing value

Choose a numeric data field.

Filter by data field

- pop_densit #** Number.
- GEOID
- String.
- NAME
- String.
- population
- String.

Details **✖**

Next, let's pick how we want to style the change from one value to another:

- Click on "Rate of change"
- Choose "Step"

us-county-pop-density

Style Select data

Color



Pattern

None

Opacity

1

Antialias

True

1px stroke



Translate

0, 0

Translate anchor



Fill color Data range



Rate of change

Interpolates linearly between less than and just greater than each stop.

linear

exponential

cubic-bezier

step

Done

pop_densit 0

Edit

hsl(0, 0%, 0%)

pop_densit 69468.4

Edit

#000000

Add another stop

Style across zoom range

Style with data conditions

Reset value to default

A “step” rate of change will allow us to create buckets. For instance, from 1-4, the color should be blue. 4-6, it should red etc.

Let's add some steps:

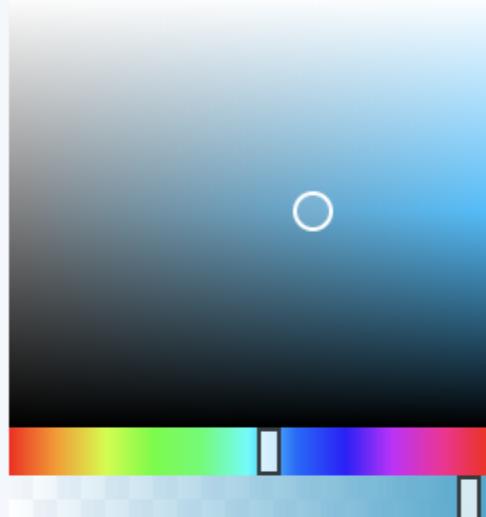
- Click on “Add another step”
- Input a value
- Pick a color
- Click “Done”

pop_densit ?

4



Fill color



HSL

RGB



h 195



s 63



l 50

a 100

2fa8d0



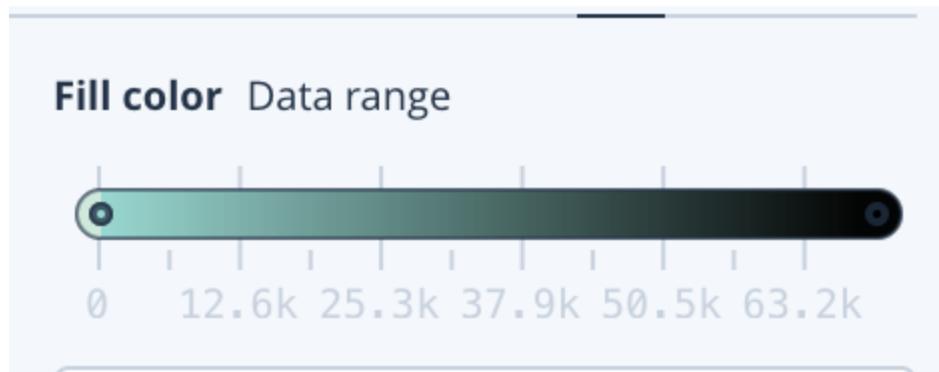
↺ Reset value to default

💾 Apply existing value

>Delete stop

✓ Done

Notice as you add steps that the gauge at the top changes. This is a visual helper to see the distribution of the data and the fill color associated to it:



Below is a pre-styled JSON code that you can input by click on the `</>` icon at the bottom of the dashboard:

```
[  
  "step",  
  ["get", "pop_densit"],  
  "#f7fcf0",  
  1,  
  "hsl(108, 50%, 91%)",  
  20,  
  "hsl(169, 44%, 76%)",  
  88,  
  "hsl(194, 60%, 57%)",  
  500,  
  "hsl(200, 63%, 46%)",  
  2000,  
  "hsl(205, 92%, 28%)"]
```

]

< ⚡ Light

+ Add layer Filter layers

84 layers

- ... us-county-pop-density
- T country-label
- T state-label
- T settlement-label
- T settlement-subdivision-label
- T airport-label
- ... T poi-label
- T water-point-label
- T water-line-label
- T natural-point-label
- T natural-line-label
- T waterway-label
- T road-label
- ▶ Admin boundaries 5 layers
- ▶ Bridges 19 layers
- ▶ Roads 20 layers
- ▶ Tunnels 13 layers
- building
- building-outline
- aeroway-line
- aeroway-polygon
- land-structure-line
- land-structure-polygon
- hillshade
- water
- waterway
- water-shadow

us-county-pop-density

Style Select data

Color



Fill color Data range



Pattern

None

Opacity

1

Antialias

True

1px stroke



Translate

0, 0

Translate anchor



pop_densit 0

Edit

hsl(155, 43%, 85%)

pop_densit 2

Edit

hsl(174, 53%, 69%)

pop_densit 4

Edit

hsl(195, 63%, 50%)

pop_densit 69468.4

Edit

#000000

+ Add another stop

Style across zoom range

Style with data conditions

Petroleum Dataset v. 1.2 - PRIO

Reset value to default

Apply existing value

▶ Details



This is the equivalent of what we're attempting to do but in a JSON format. This is useful if you want to layer apply those styles in Mapbox GL JS using expressions.

▲ us-county-pop-density

Style Select data

Color



Pattern

None

Opacity

1

Antialias

True

1px stroke



Translate

0, 0

Translate anchor



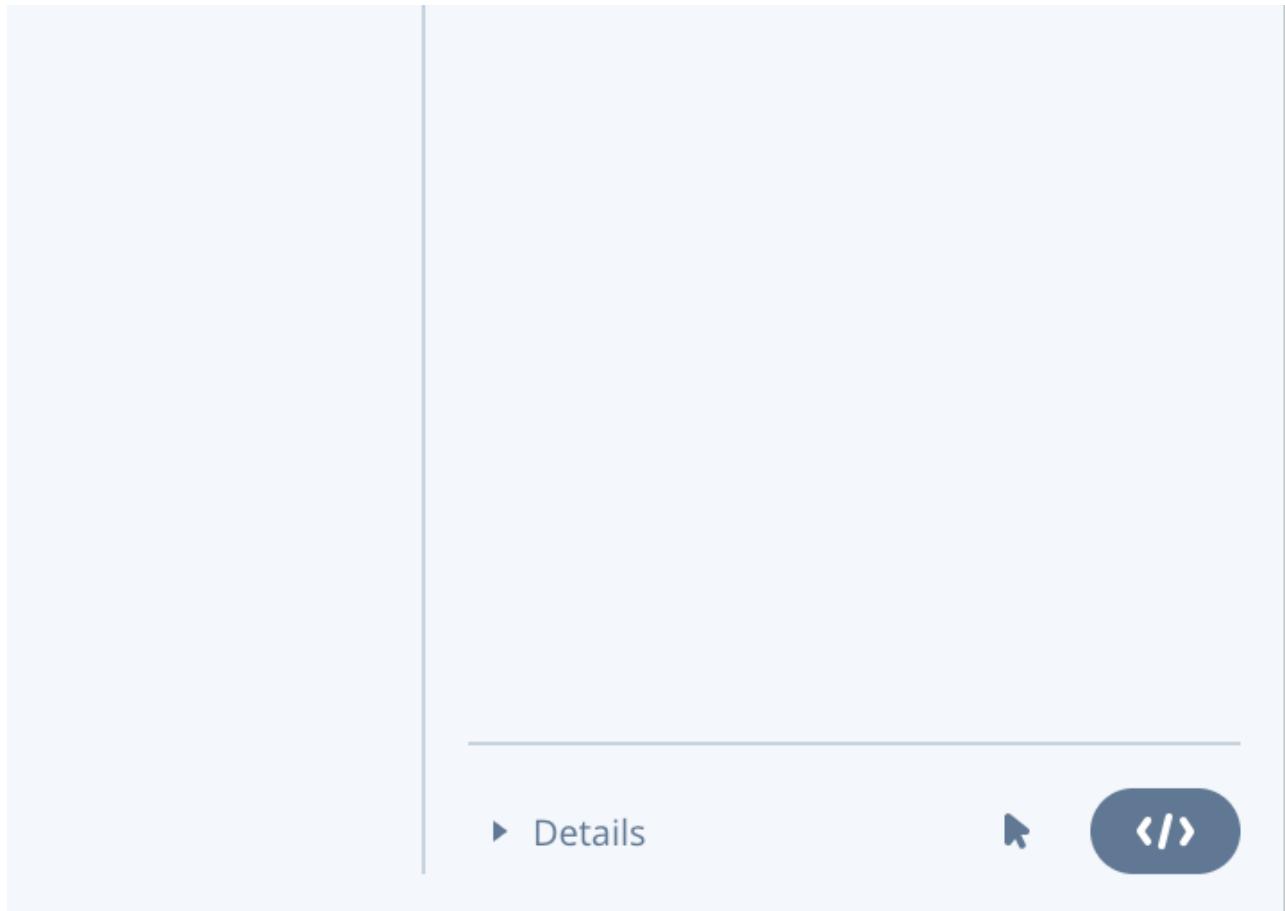
Fill color JSON

[Format](#)

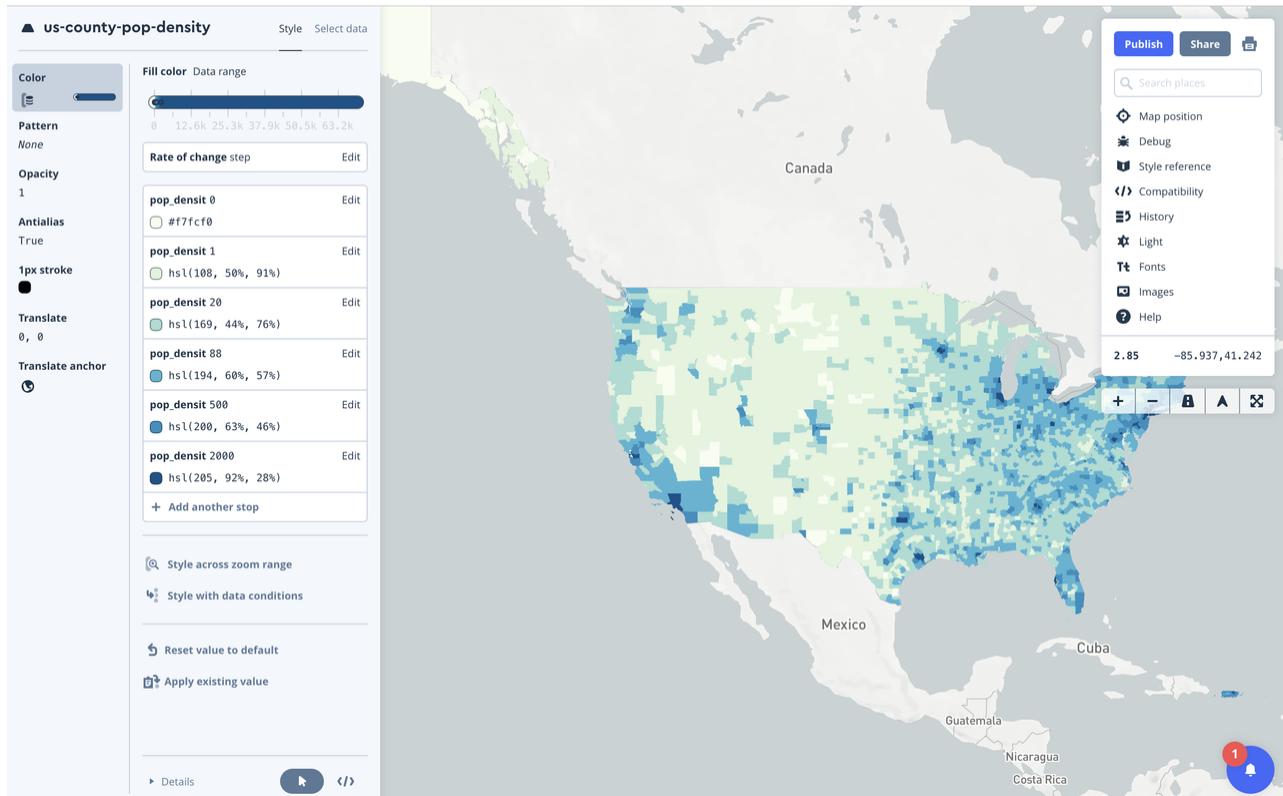
[Read documentation](#)

```
1 [  
2   "step",  
3   ["get", "pop_densit"],  
4   "#f7fcf0",  
5   1,  
6   "hsl(108, 50%, 91%)",  
7   20,  
8   "hsl(169, 44%, 76%)",  
9   88,  
10  "hsl(194, 60%, 57%)",  
11  500,  
12  "hsl(200, 63%, 46%)",  
13  2000,  
14  "hsl(205, 92%, 28%)"  
15 ]
```

Valid input



Once the JSON is validated, you should see this:



Now, you can add lines around the counties to accentuate the shapes and even mask the other countries to focus on the US.

So let's duplicate the layer:

◀ ● Li

Duplicate 1 layer d

+ Add layer

84 layers Filter layers

- ... ▲ us-county-pop-density
- T country-label
- T state-label
- ... T settlement-label
- T settlement-subdivision-label
- T airport-label
- ... T poi-label
- T water-point-label
- T water-line-label
- T natural-point-label
- T natural-line-label
- T waterway-label
- T road-label
- ▶ ■ Admin boundaries *5 layers*
- ▶ ■ Bridges *19 layers*
- ▶ ■ Roads *20 layers*
- ▶ ■ Tunnels *13 layers*
- ▲ building
- ✓ building-outline
- ✓ aeroway-line
- ▲ aeroway-polygon
- ✓ land-structure-line
- ▲ land-structure-polygon
- ▲ hillshade
- ▲ water
- ✓ waterway
- ▲ water-shadow

▲ us-county-pop-density

Style Select data

Color

Pattern

Opacity

Antialias

1px stroke

Translate

Translate anchor

● Fill color Data range



Rate of change step Edit

| |
|--|
| □ pop_densit 0 Edit |
| □ pop_densit 1 Edit |
| □ pop_densit 20 Edit |
| □ pop_densit 88 Edit |
| □ pop_densit 500 Edit |
| □ pop_densit 2000 Edit |
| + Add another stop |

@ Style across zoom range

↳ Style with data conditions

↺ Reset value to default

⤵ Apply existing value

▶ Details ◀ ⤵

Then:

- Click on the copy of your layer. It should be the name of your layer + “copy”
- Click on “Select Data”

< Light

+ Add layer

85 layers

- ... us-county-pop-density copy
- ... us-county-pop-density
- T country-label
- T state-label
- T settlement-label
- T settlement-subdivision-label
- T airport-label
- ... poi-label
- T water-point-label
- T water-line-label
- T natural-point-label
- T natural-line-label
- T waterway-label
- T road-label
- ▶ Admin boundaries 5 layers
- ▶ Bridges 19 layers
- ▶ Roads 20 layers
- ▶ Tunnels 13 layers
- building
- building-outline
- aeroway-line
- aeroway-polygon
- land-structure-line
- land-structure-polygon
- hillshade
- water
- waterway

us-county-pop-density copy Style Select data

Color

Pattern None

Opacity 1

Antialias True

1px stroke

Translate 0, 0

Translate anchor

Fill color Data range Toggle data panel []

0 12.6k 25.3k 37.9k 50.5k 63.2k

Rate of change step Edit

pop_densit 0 Edit #f7fcf0

pop_densit 1 Edit hsl(108, 50%, 91%)

pop_densit 20 Edit hsl(169, 44%, 76%)

pop_densit 88 Edit hsl(194, 60%, 57%)

pop_densit 500 Edit hsl(200, 63%, 46%)

pop_densit 2000 Edit hsl(205, 92%, 28%)

+ Add another stop

Style across zoom range

Style with data conditions

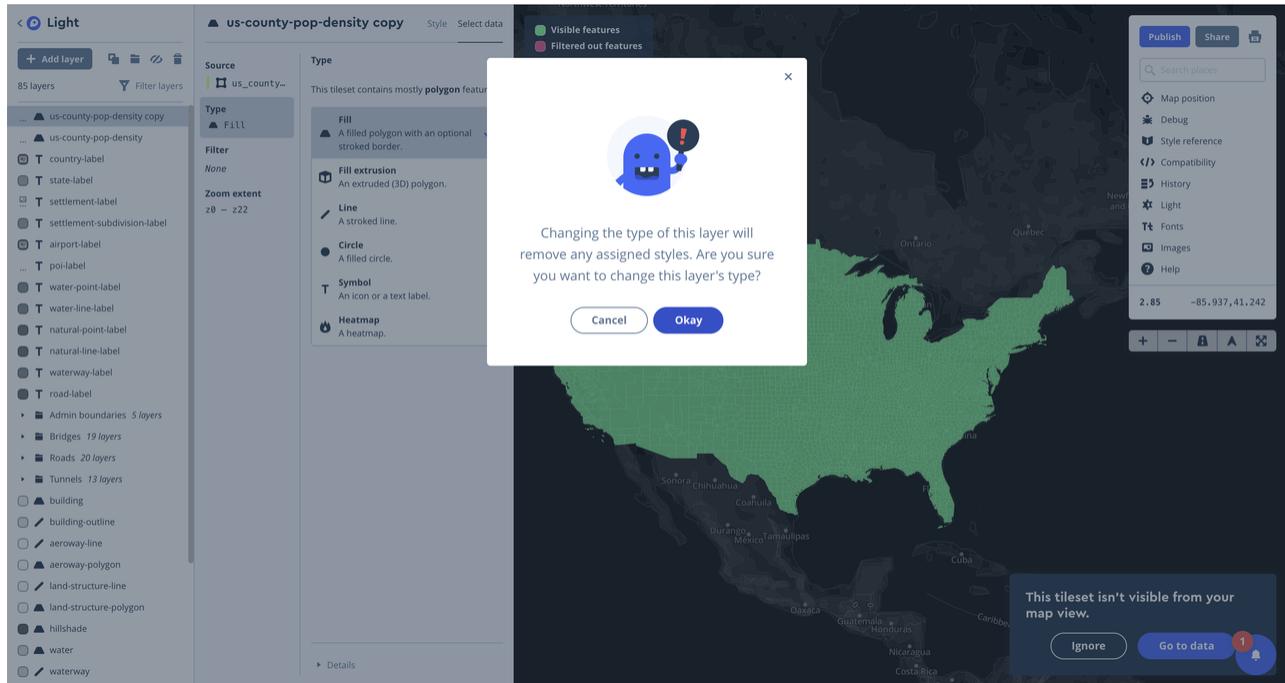
Reset value to default

Apply existing value

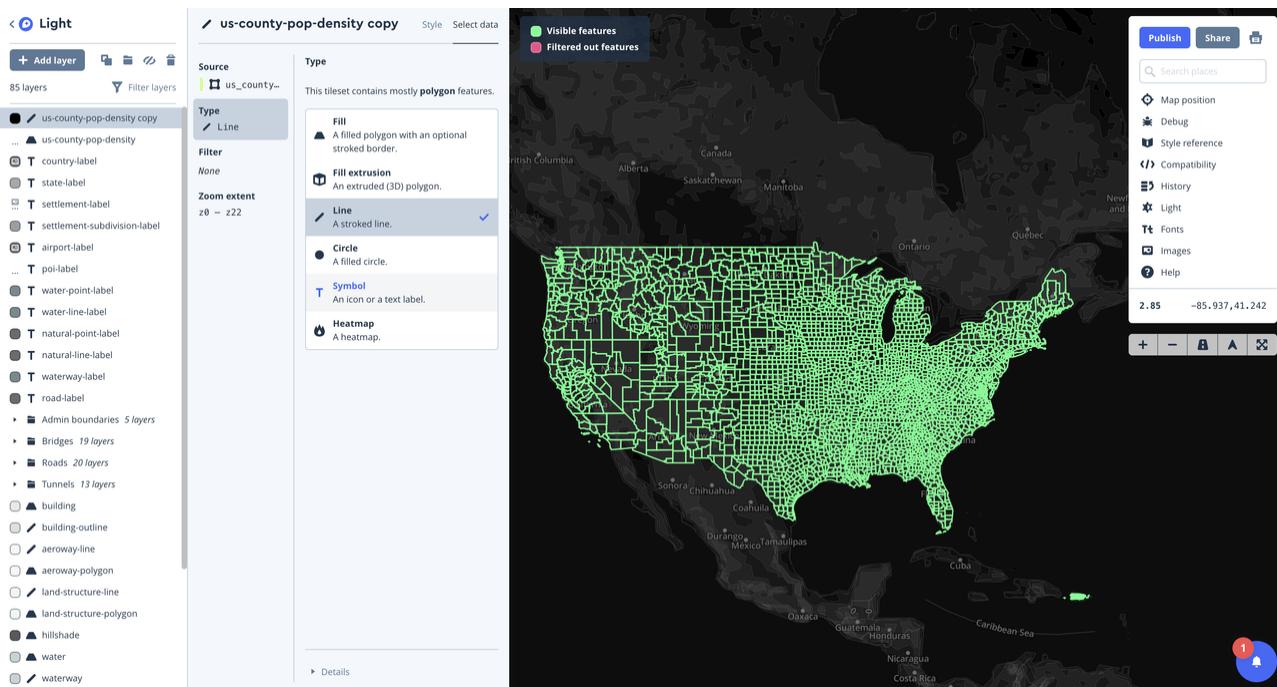
▶ Details

- Select “Line” as a type

- Click “Ok”



You should see your data change from “Fill” to “Line”:



Next:

- Click on “Style”
- And style the line however you want. There is a lot of options

/ us-county-pop-density copy

Style Select data

Color



Pattern

None

Opacity

1

Width

1 px

Cap



Join



Round limit

1.05

Miter limit

2

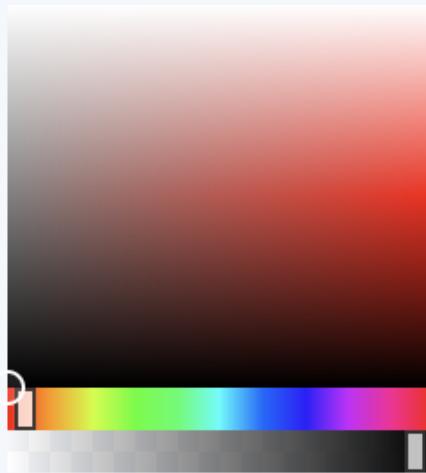
Dash Array

None

Gap width

0 px

Line color



HSL

RGB



h 0



s 0



l 0



a 100



000000

Style across zoom range

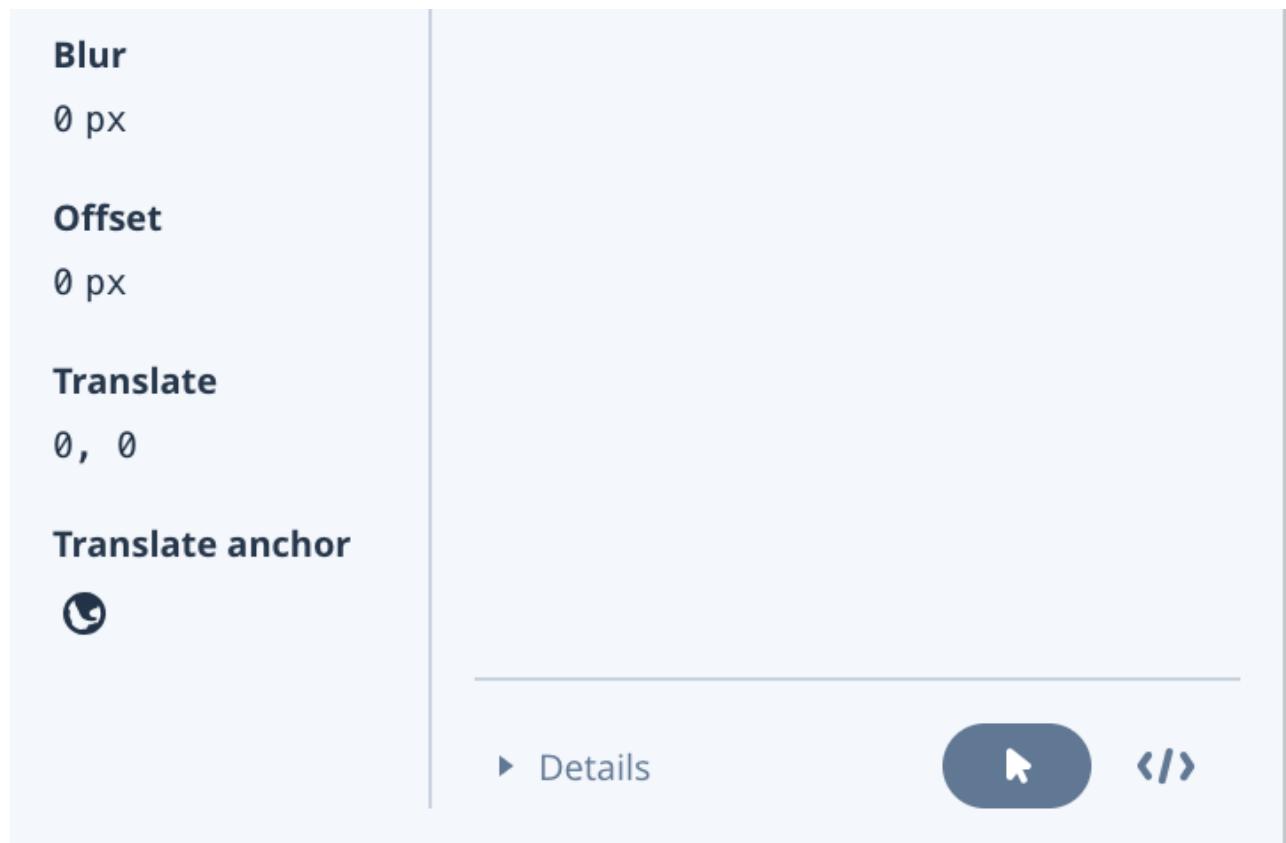
Style across data range

Style with data conditions

Use a formula

Reset value to default

Apply existing value



Filter and Mask

Filter

For this, we're going to darken countries around the US. To start, add a layer and choose "Mapbox Boundaries - Admin 0" and select `boundaries_admin_0`.

Before we style this layer, we're going to filter out the United States. The `Id` here is the country code. We want to filter out `us`.

- Click "Filter"
- Click on `Id`
- Type in "US"
- It may show that there is not matching data, but don't worry, it exists. Just click "Use US" at the bottom
- You should see the US filtered out of the tileset.

< Light

+ Add layer



85 layers

Filter layers

-  boundaries-admin-0
- ...  us-county-pop-density
-  country-label
-  state-label
-  settlement-label
-  settlement-subdivision-label
-  airport-label
- ...  poi-label
-  water-point-label
-  water-line-label
-  natural-point-label
-  natural-line-label
-  waterway-label
-  road-label
- ▶  Admin boundaries *5 layers*
- ▶  Bridges *19 layers*
- ▶  Roads *20 layers*
- ▶  Tunnels *13 layers*
-  building
-  building-outline
-  aeroway-line
-  aeroway-polygon
-  land-structure-line
-  land-structure-polygon
-  hillshade
-  water
-  waterway

▲ boundaries-admin-0

Style Select data

Source

 boundaries-admin-0

Type

 Fill

Filter

None

Zoom extent

z0 – z22

Source

Mapbox Boundaries - Admin 0

 boundaries_admin_0

Data sources Background layer

Filter by name

▶ Mapbox Boundaries - Admin 0



 boundaries_admin_0

 points_admin_0



▶ Mapbox Streets v8



▶ Mapbox Terrain V2



▶ uscountypop-9n3mmi



Unused sources

+ Upload

▶ Mapbox Boundaries - Admin 1



▶ Mapbox Boundaries - Admin 2



▶ Mapbox Boundaries - Admin 3



▶ Details

▲ boundaries-admin-0

Style Select data

Source
boundarie...

Type
Fill

Filter
None

Zoom extent
z0 – z22

Filter

Features with properties matching the conditions below will appear on the map.

No filter set

+ Create filter

Reset value to default

Choose a data field to filter.

Filter by data field

id String.

worldview String.

geometry-type Feature's geometry type. One of 'Point', 'LineString', or 'Polygon'.

▲ boundaries-admin-0

Style Select data

Source boundaries-admin-0

Type Fill

Filter

id

Zoom extent z0 – z22

Filter

Data field id

is none

Delete condition Done

+ Add another condition

Features with properties matching the conditions below will appear on the map.

Set values for id

Filter id values

BB
CC
EE
GG
CD
DE
GH
BD
EG
GI
AD
BE
CF

Visible features
Filtered out features

→ ↗ <https://studio.mapbox.com/styles/lobenichou/cjt0ymhm40fc41fnru0z6qtfj/edit/>

Apps Gmail Narratives SCRUM resources for jour... code snippets Style spec Expression tool filters pitches upload limits

Light

Add layer Filter layers

- ✓ boundaries-admin-0
 - us-county-pop-density
 - country-label
 - state-label
 - settlement-label
 - settlement-subdivision-label
 - airport-label
 - poi-label
 - water-point-label
 - water-line-label
 - natural-point-label
 - natural-line-label
 - waterway-label
 - road-label
- Admin boundaries 5 layers
- Bridges 19 layers
- Roads 20 layers
- Tunnels 13 layers
- building
- building-outline
- aeroway-line

boundaries-admin-0 Style Select data

Source boundaries-admin-0

Type Fill

Filter id

Zoom extent z0 - z22

Filter Features with properties matching the conditions below will appear on the map.

Data field id

is none

Delete condition Done

+ Add another condition

Set values for id

US

No matching values of type string.

+ Use US

< Light

+ Add layer Filter layers

85 layers

- ✓ boundaries-admin-0
 - us-county-pop-density
 - country-label
 - state-label
 - settlement-label
 - settlement-subdivision-label
 - airport-label
 - poi-label
 - water-point-label
 - water-line-label
 - natural-point-label
 - natural-line-label
 - waterway-label
 - road-label
- Admin boundaries 5 layers
- Bridges 19 layers
- Roads 20 layers
- Tunnels 13 layers
- building
- building-outline
- aeroway-line
- aeroway-polygon
- land-structure-line

boundaries-admin-0 Style Select data

Source boundaries-admin-0

Type Fill

Filter id

exists is ✓ is not

US

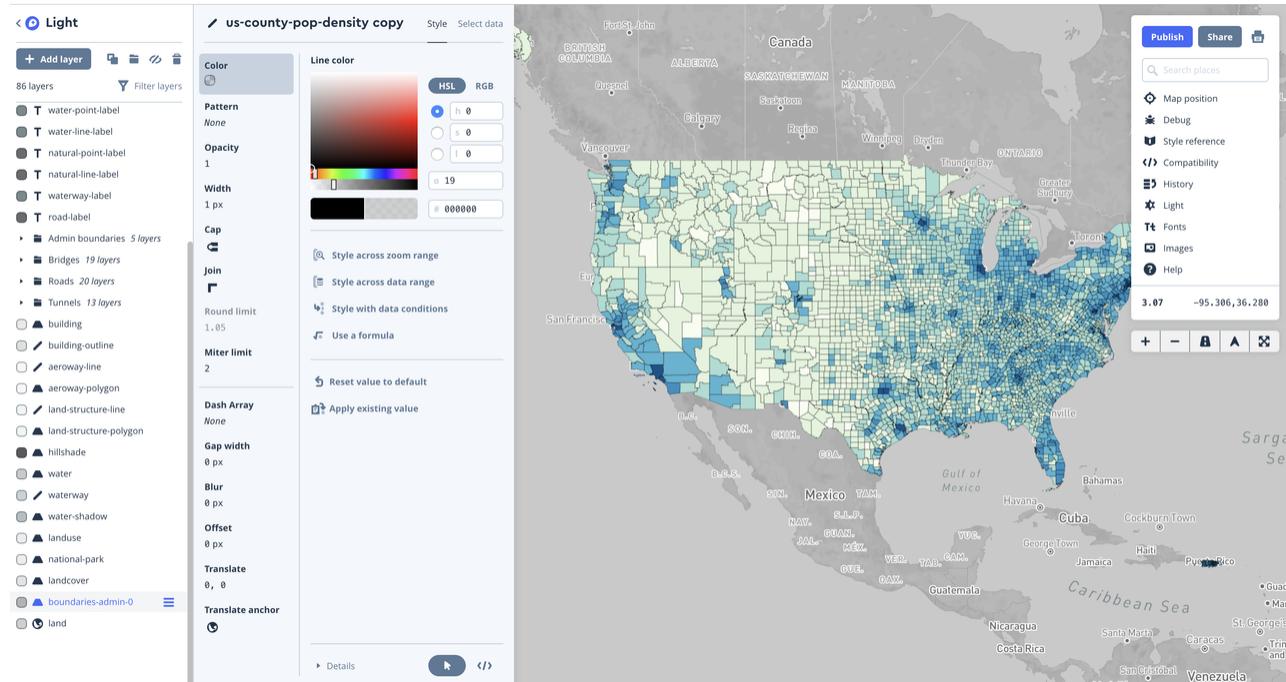
Delete condition Done

+ Add another condition

Visible features Filtered out features

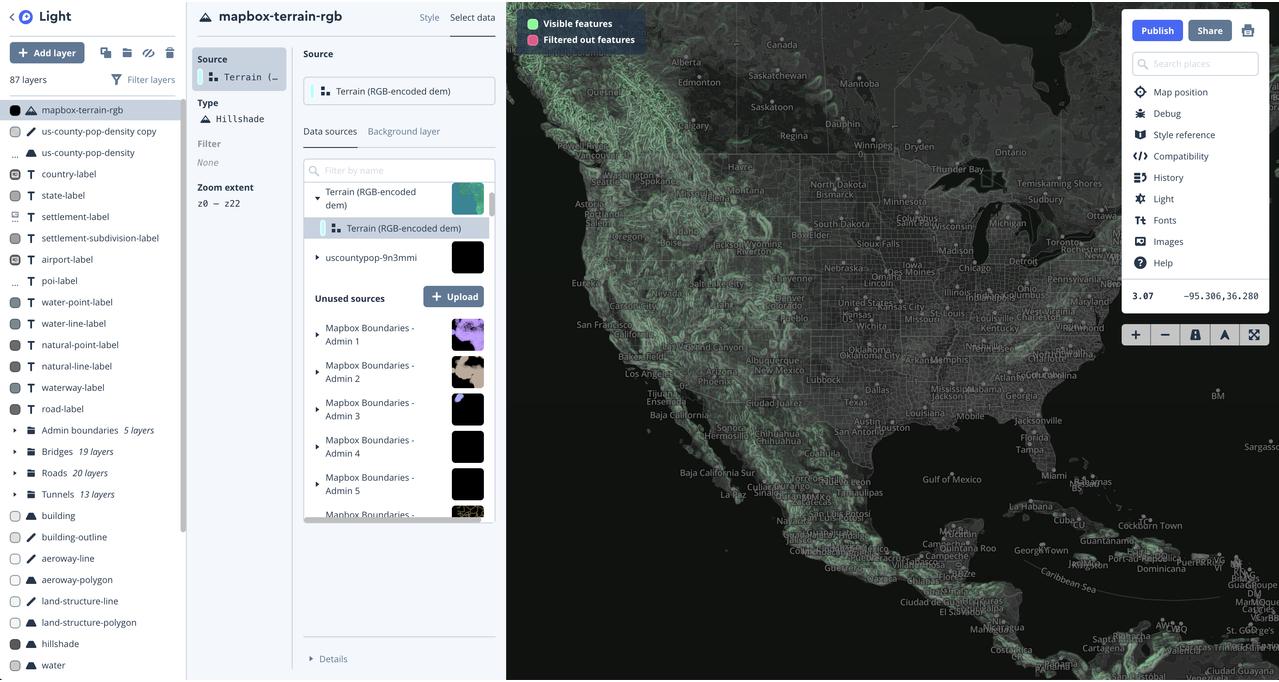
Mask

Now, you can move what I like to call the “mask” layer up and down the layer stack to create the desired effect. In the example below, I’ve moved the new boundaries layer above the “Land” layer and just greyed out everything to make the US pop. Try it out!



Optional: Terrain

If you want to add Terrain and give your map a 3D feel, add the Mapbox Terrain RGB.



You can then modify:

- The shadow color
- The highlight color
- The ascent color
- The intensity
- The illumination direction

