

Hexbin Mapbox in Python

How to make a map with Hexagonal Binning of data in Python with Plotly.

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Simple Count Hexbin

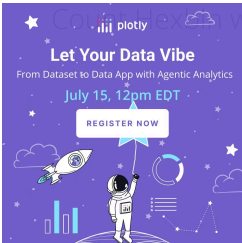
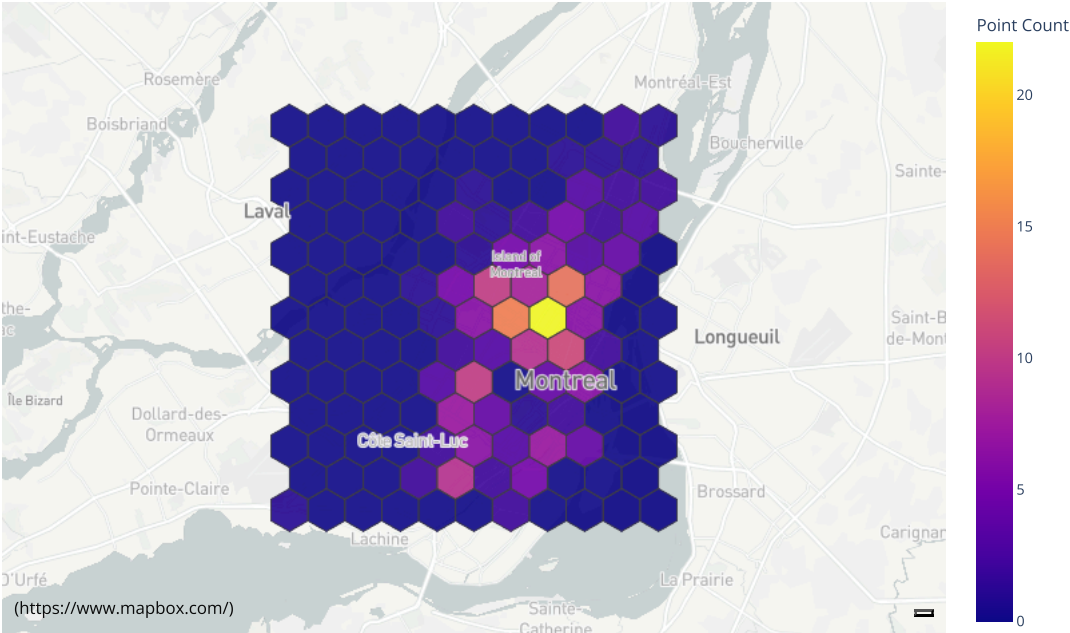
This page details the use of a [figure factory \(/python/figure-factories/\)](#). For more examples with Choropleth maps, see [this page \(/python/choropleth-maps/\)](#).

In order to use mapbox styles that require a mapbox token, set the token with plotly.express. You can also use styles that do not require a mapbox token. See more information on [this page \(/python/mapbox-layers/\)](#).

```
import plotly.figure_factory as ff
import plotly.express as px

px.set_mapbox_access_token(open(".mapbox_token").read())
df = px.data.carshare()

fig = ff.create_hexbin_mapbox(
    data_frame=df, lat="centroid_lat", lon="centroid_lon",
    nx_hexagon=10, opacity=0.9, labels={"color": "Point Count"},
)
fig.update_layout(margin=dict(b=0, t=0, l=0, r=0))
fig.show()
```



with Minimum Count and Opacity

```
import plotly.figure_factory as ff
import plotly.express as px

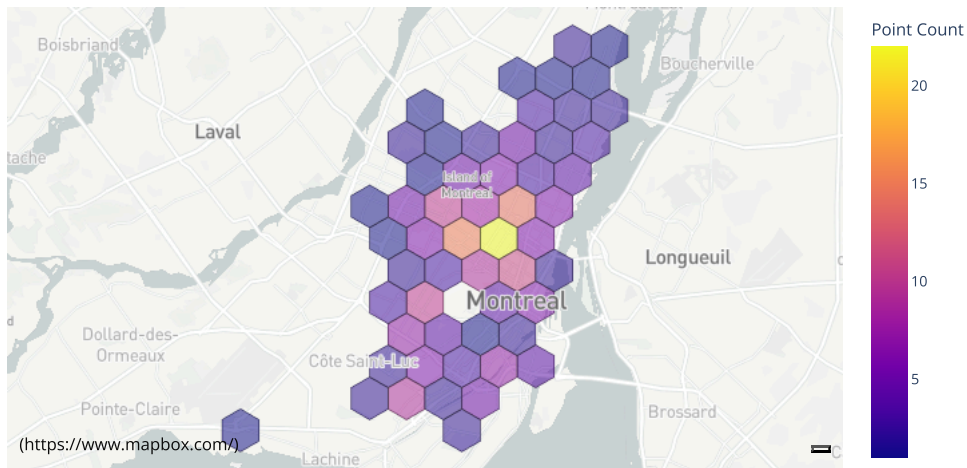
px.set_mapbox_access_token(open(".mapbox_token").read())
df = px.data.carshare()

fig = ff.create_hexbin_mapbox(
    data_frame=df, lat="centroid_lat", lon="centroid_lon",
    nx_hexagon=10, opacity=0.5, labels={"color": "Point Count"},
    min_count=1,
)
fig.show()
```

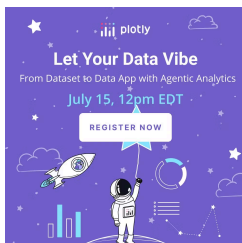
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Display the Underlying Data



```
import plotly.figure_factory as ff
import plotly.express as px

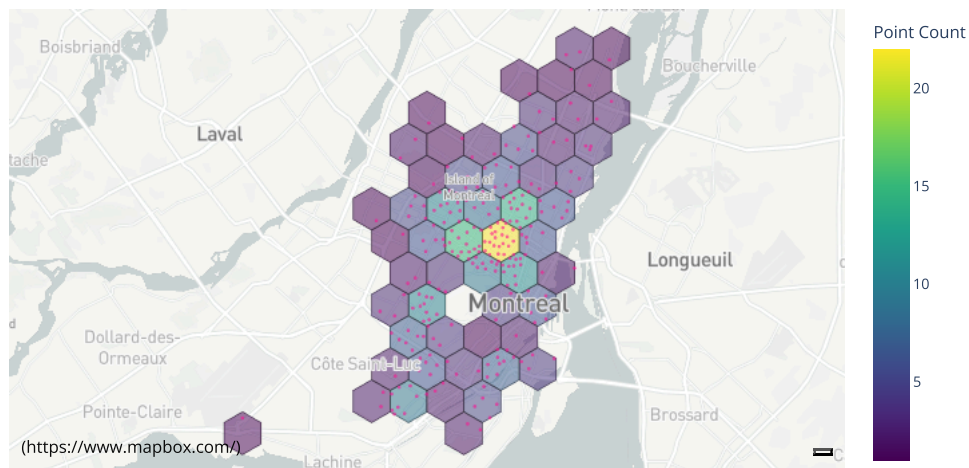
px.set_mapbox_access_token(open(".mapbox_token").read())
df = px.data.carshare()

fig = ff.create_hexbin_mapbox(
    data_frame=df, lat="centroid_lat", lon="centroid_lon",
    nx_hexagon=10, opacity=0.5, labels={"color": "Point Count"},
    min_count=1, color_continuous_scale="Viridis",
    show_original_data=True,
    original_data_marker=dict(size=4, opacity=0.6, color="deeppink")
)
fig.show()
```

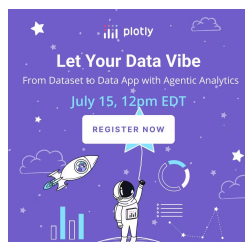
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Compute the Mean Value per Hexbin



```
import plotly.figure_factory as ff
import plotly.express as px
import numpy as np

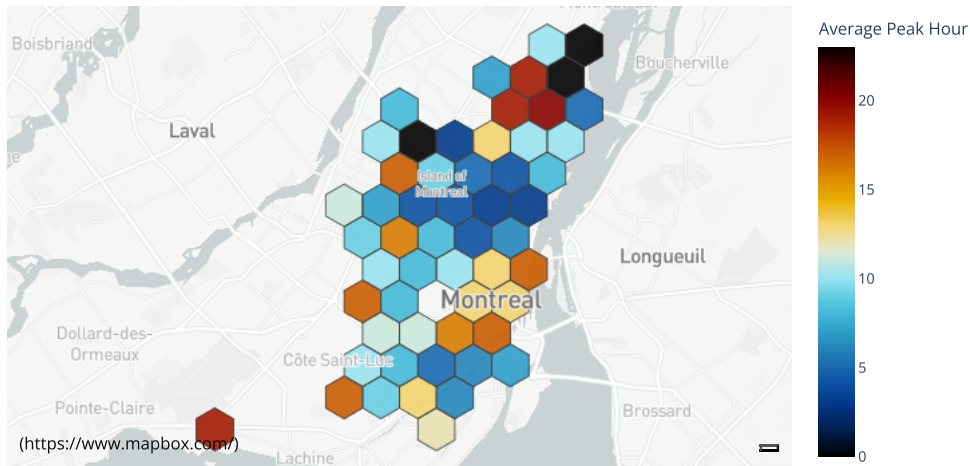
px.set_mapbox_access_token(open(".mapbox_token").read())
df = px.data.carshare()

fig = ff.create_hexbin_mapbox(
    data_frame=df, lat="centroid_lat", lon="centroid_lon",
    nx_hexagon=10, opacity=0.9, labels={"color": "Average Peak Hour"},
    color="peak_hour", agg_func=np.mean, color_continuous_scale="Icefire", range_color=[0,23]
)
fig.show()
```

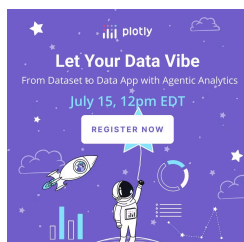
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Compute the Sum Value per Hexbin



```
import plotly.figure_factory as ff
import plotly.express as px
import numpy as np

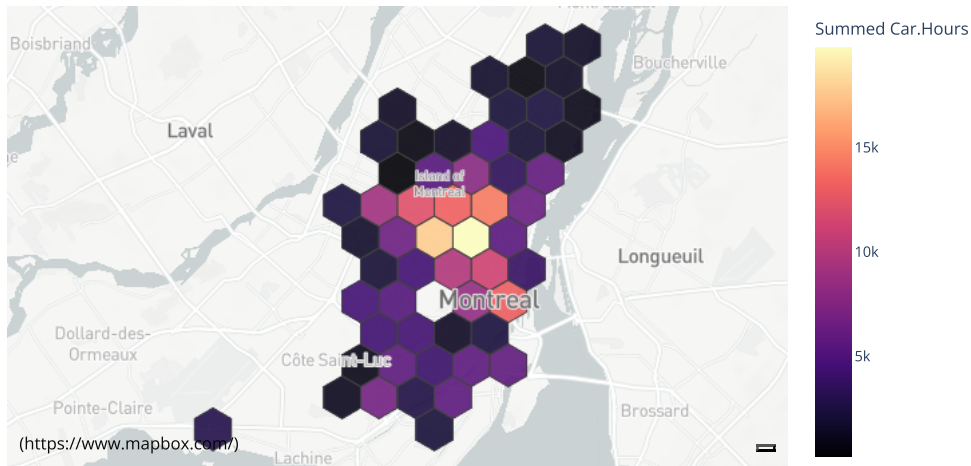
px.set_mapbox_access_token(open(".mapbox_token").read())
df = px.data.carshare()

fig = ff.create_hexbin_mapbox(
    data_frame=df, lat="centroid_lat", lon="centroid_lon",
    nx_hexagon=10, opacity=0.9, labels={"color": "Summed Car.Hours"},
    color="car_hours", agg_func=np.sum, color_continuous_scale="Magma"
)
fig.show()
```

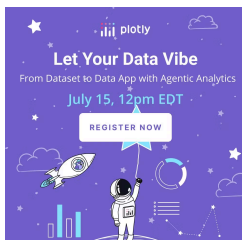
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Hexbin with Animation



```

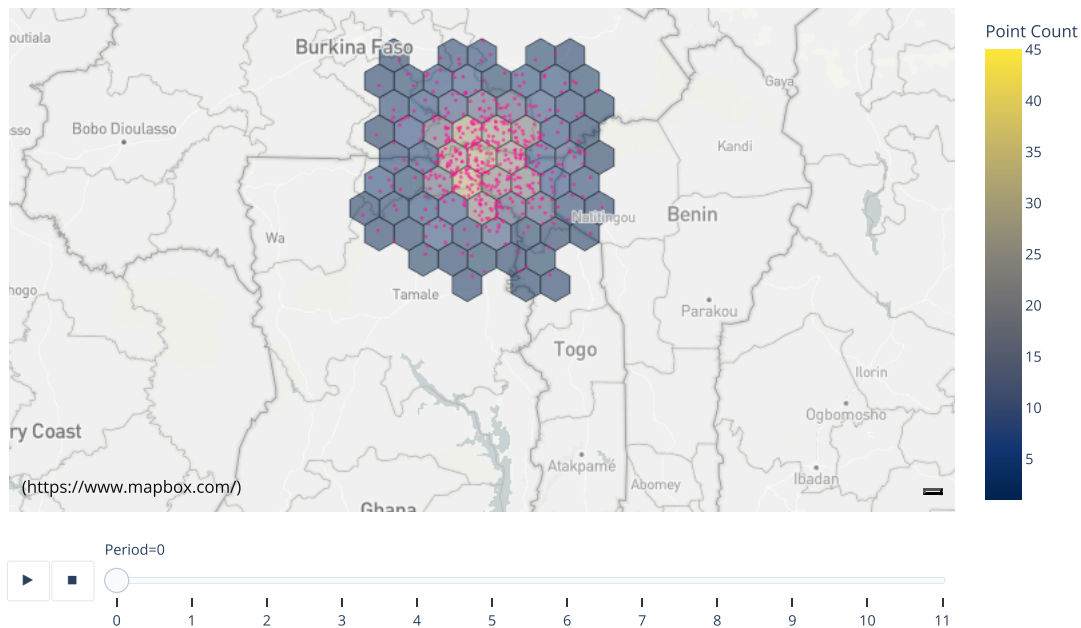
import plotly.figure_factory as ff
import plotly.express as px
import numpy as np

px.set_mapbox_access_token(open(".mapbox_token").read())
np.random.seed(0)

N = 500
n_frames = 12
lat = np.concatenate([
    np.random.randn(N) * 0.5 + np.cos(i / n_frames * 2 * np.pi) + 10
    for i in range(n_frames)
])
lon = np.concatenate([
    np.random.randn(N) * 0.5 + np.sin(i / n_frames * 2 * np.pi)
    for i in range(n_frames)
])
frame = np.concatenate([
    np.ones(N, int) * i for i in range(n_frames)
])

fig = ff.create_hexbin_mapbox(
    lat=lat, lon=lon, nx_hexagon=15, animation_frame=frame,
    color_continuous_scale="Cividis", labels={"color": "Point Count", "frame": "Period"},
    opacity=0.5, min_count=1,
    show_original_data=True, original_data_marker=dict(opacity=0.6, size=4, color="deeppink")
)
fig.update_layout(margin=dict(b=0, t=0, l=0, r=0))
fig.layout.sliders[0].pad.t=20
fig.layout.updatemenus[0].pad.t=40
fig.show()

```

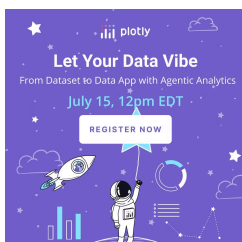


Reference

For more info on Plotly maps, see: <https://plotly.com/python/maps> (<https://plotly.com/python/maps>).

For more info on using colorscales with Plotly see: <https://plotly.com/python/heatmap-and-contour-colorscales/> (<https://plotly.com/python/heatmap-and-contour-colorscales/>).

For more info on `ff.create_annotated_heatmap()`, see the [full function reference](https://plotly.com/python-api-reference/generated/plotly.figure_factory.create_hexbin_mapbox.html#plotly.figure_factory.create_hexbin_mapbox) (https://plotly.com/python-api-reference/generated/plotly.figure_factory.create_hexbin_mapbox.html#plotly.figure_factory.create_hexbin_mapbox).



What About Dash?

Dash (<https://dash.plot.ly/>) is an open-source framework for building analytical applications, with no Javascript required, and it is tightly integrated with the Plotly graphing library.

Learn about how to install Dash at <https://dash.plot.ly/installation> (<https://dash.plot.ly/installation>).

Everywhere in this page that you see `fig.show()`, you can display the same figure in a Dash application by passing it to the `figure` argument of the `Graph` component (<https://dash.plot.ly/dash-core-components/graph>) from the built-in `dash_core_components` package like this:

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```
import plotly.graph_objects as go # or plotly.express as px
fig = go.Figure() # or any Plotly Express function e.g. px.bar(...)
# fig.add_trace( ... )
# fig.update_layout( ... )

from dash import Dash, dcc, html

app = Dash()
app.layout = html.Div([
    dcc.Graph(figure=fig)
])

app.run(debug=True, use_reloader=False) # Turn off reloader if inside Jupyter
```



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pop

lifeExp

gdpPerCap

country	pop	continent	lifeExp	gdpPerCap
Afghanistan	31889923	Asia	43.828	974.5883384
Albania	3600523	Europe	76.423	5937.829525999999
Algeria	33333216	Africa	72.381	6223.367465
Angola	12420476	Africa	42.731	4707.231267
Argentina	40301927	Americas	75.32	12779.37964
Australia	20434176	Oceania	81.235	34435.367439999995
Austria	8199783	Europe	79.829	36326.4927
Bahrain	706573	Asia	75.635	29796.04834
Bangladesh	150448339	Asia	64.062	1761.253792
Belgium	10391226	Europe	79.441	33962.04968
Benin	8878314	Africa	56.728	1441.284873
Bolivia	9119152	Americas	65.554	3821.137884



(https://dash.plotly.com/tutorial?utm_medium=graphing_libraries&utm_content=python_footer)

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