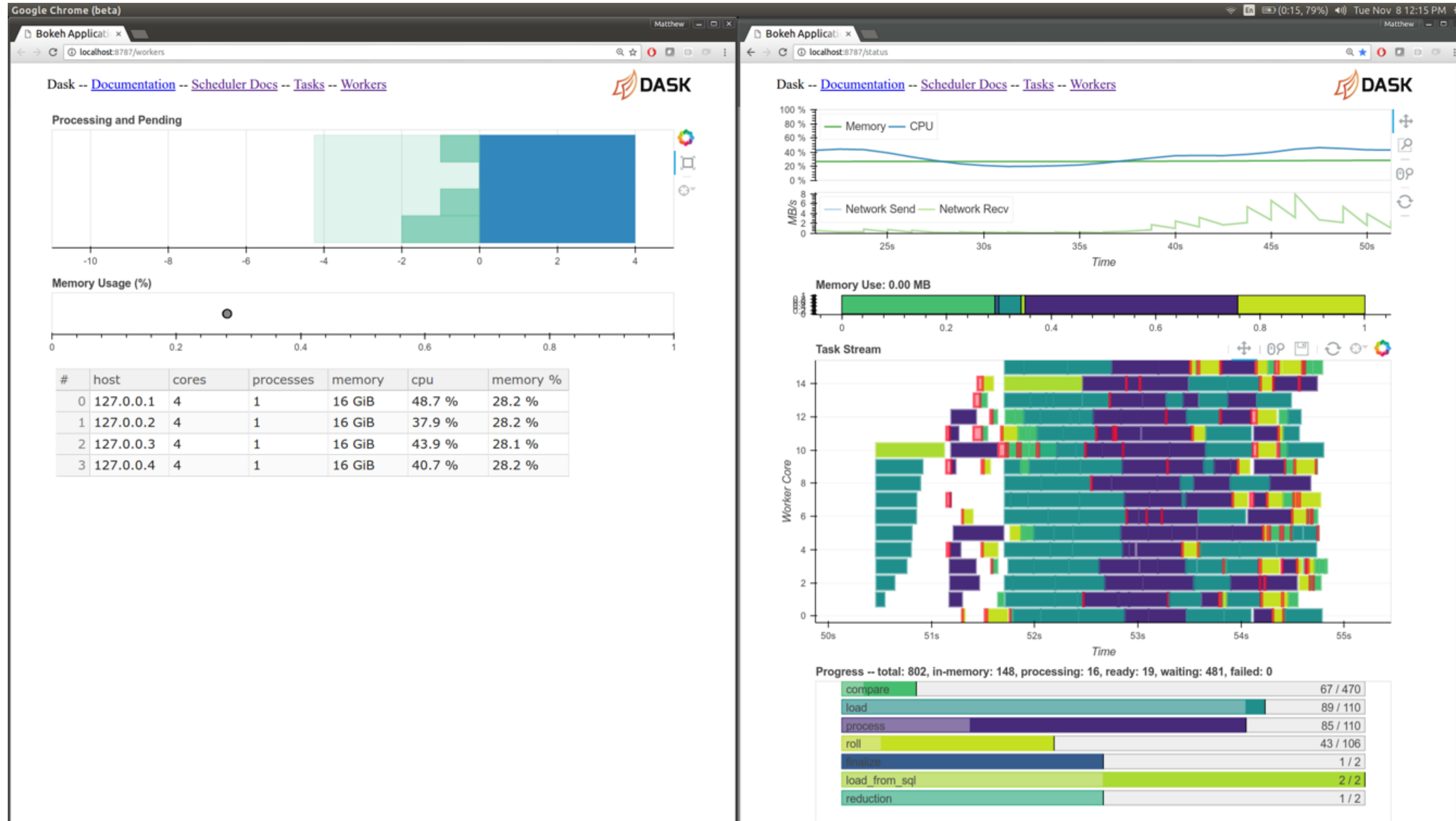




INTERACTIVE DATA VISUALIZATION WITH BOKEH

Introducing the Bokeh Server







Basic App Outline

 outline.py

```
from bokeh.io import curdoc

# Create plots and widgets

# Add callbacks

# Arrange plots and widgets in layouts

curdoc().add_root(layout)
```



Running Bokeh Applications

Run single module apps at the shell or Windows command prompt:

```
bokeh serve --show myapp.py
```

“Directory” style apps run similarly:

```
bokeh serve --show myappdir/
```



INTERACTIVE DATA VISUALIZATION WITH BOKEH

Let's practice!



INTERACTIVE DATA VISUALIZATION WITH BOKEH

Connecting Sliders to Plots



A slider example

 slider.py

```
from bokeh.io import curdoc
from bokeh.layouts import column
from bokeh.models import ColumnDataSource, Slider
from bokeh.plotting import figure
from numpy.random import random

N = 300
source = ColumnDataSource(data={'x': random(N), 'y': random(N)})

# Create plots and widgets
plot = figure()
plot.circle(x='x', y='y', source=source)

slider = Slider(start=100, end=1000, value=N,
                step=10, title='Number of points')
```



A slider example

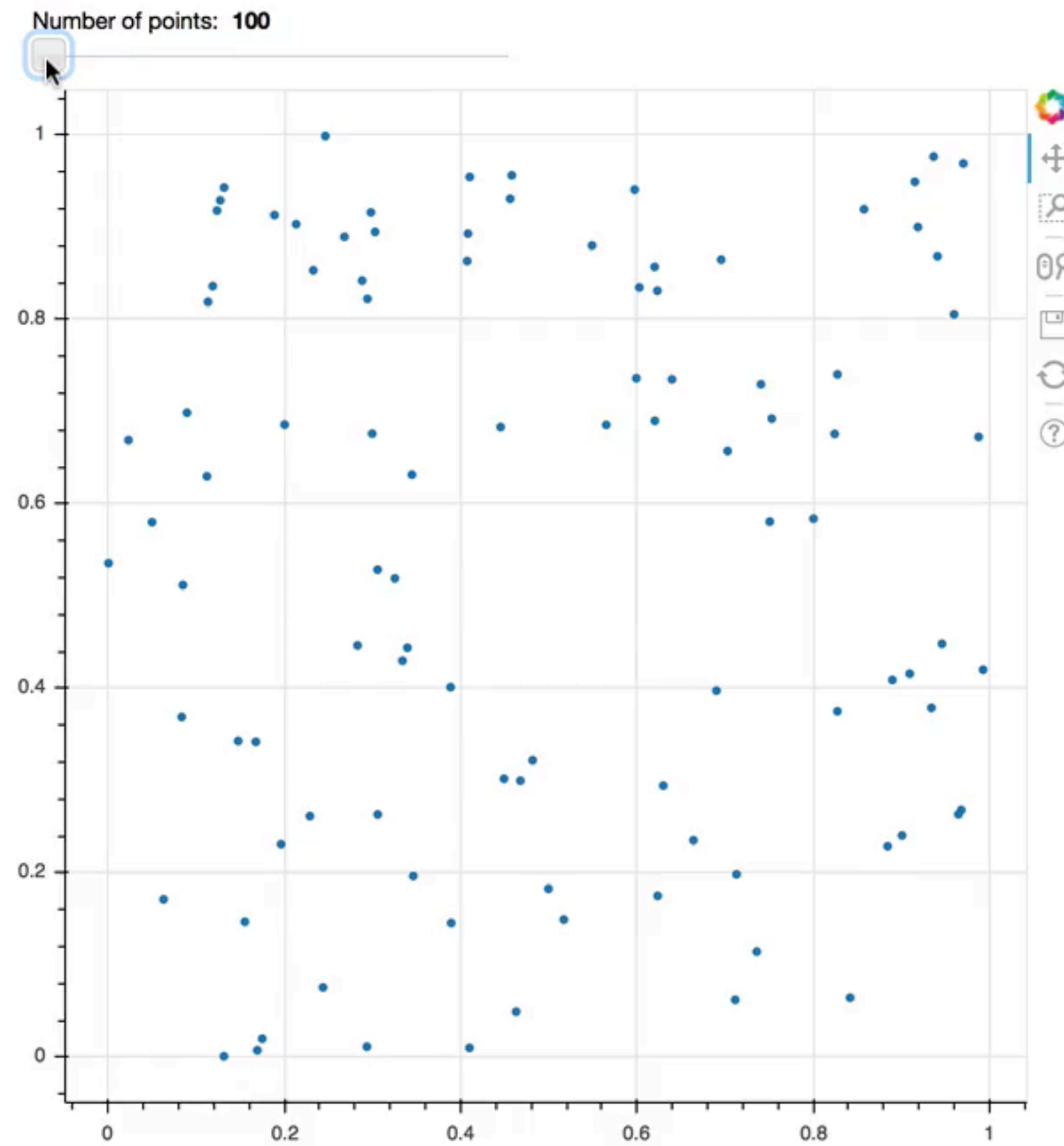
? slider.py

```
# (continued)

# Add callback to widgets
def callback(attr, old, new):
    N = slider.value
    source.data={'x': random(N), 'y': random(N)}
slider.on_change('value', callback)

# Arrange plots and widgets in layouts
layout = column(slider, plot)

curdoc().add_root(layout)
```





INTERACTIVE DATA VISUALIZATION WITH BOKEH

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INTERACTIVE DATA VISUALIZATION WITH BOKEH

Updating Plots from Dropdown Menus



A Select example

? select.py

```
from bokeh.io import curdoc
from bokeh.layouts import column
from bokeh.models import ColumnDataSource, Select
from bokeh.plotting import figure
from numpy.random import random, normal, lognormal

N = 1000
source = ColumnDataSource(data={'x': random(N), 'y': random(N)})

# Create plots and widgets
plot = figure()
plot.circle(x='x', y='y', source=source)

menu = Select(options=['uniform', 'normal', 'lognormal'],
               value='uniform', title='Distribution')
```



A Select example

? select.py

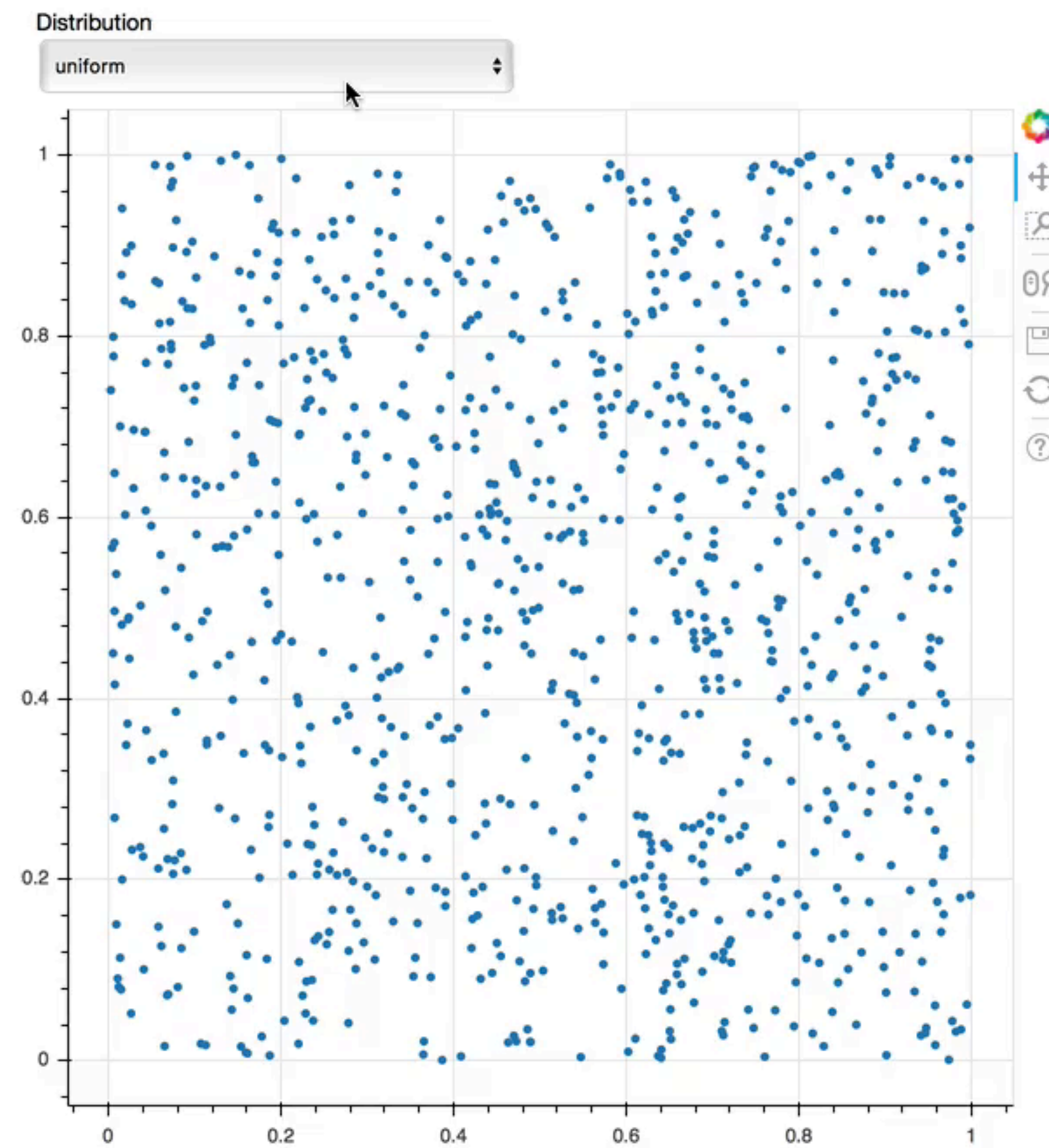
```
# (continued)

# Add callback to widgets
def callback(attr, old, new):
    if menu.value == 'uniform': f = random
    elif menu.value == 'normal': f = normal
    else: f = lognormal
    source.data={'x': f(size=N), 'y': f(size=N)}
menu.on_change('value', callback)

# Arrange plots and widgets in layouts
layout = column(menu, plot)

curdoc().add_root(layout)
```

A Select example





INTERACTIVE DATA VISUALIZATION WITH BOKEH

Let's practice!



INTERACTIVE DATA VISUALIZATION WITH BOKEH

Buttons



Button callbacks

 select.py

```
from bokeh.models import Button

button = Button(label='press me')

def update():

    # Do something interesting

button.on_click(update)
```



Button types

? select.py

```
from bokeh.models import CheckboxGroup, RadioGroup, Toggle

toggle = Toggle(label='Some on/off', button_type='success')

checkbox = CheckboxGroup(labels=['foo', 'bar', 'baz'])

radio = RadioGroup(labels=['2000', '2010', '2020'])

def callback(active):
    # Active tells which button is active
```



Button types

Plain button

Toggle

☐

Radio Group

- ☐ foo
- ☐ bar
- ☐ baz

Checkbox Group

- ☐ 2000
- ☐ 2010
- ☐ 2020



INTERACTIVE DATA VISUALIZATION WITH BOKEH

Let's practice!



INTERACTIVE DATA VISUALIZATION WITH BOKEH

Hosting Applications

Bokeh Application Hosting



<https://anaconda.org>