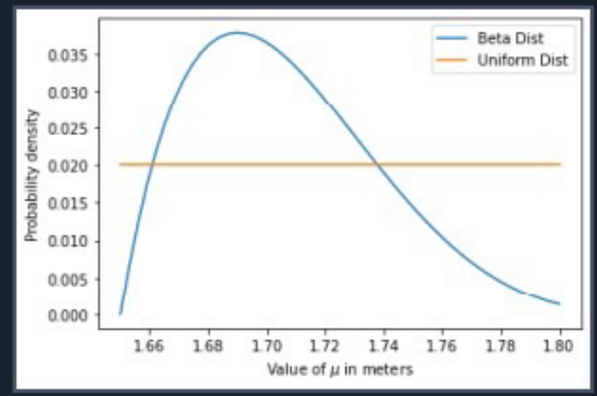
File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\Edmon

C:\Users\Edmon\untitled0.py

untitled0.py* ×

```
# -*- coding: utf-8 -*-
"""
Created on Sat Mar  9 21:12:05 2024

@author: JHON MICKO ALMOSA
"""

import scipy.stats as sts
import numpy as np
import matplotlib.pyplot as plt

mu = np.linspace(1.65, 1.8, num = 50)
test = np.linspace(0, 2)
uniform_dist = sts.uniform.pdf(mu) + 1 #sneaky advanced note: I'm using the uniform distribution for clarity,
                                       #but we can also make the beta distribution look completely flat by tweaking al
uniform_dist = uniform_dist/uniform_dist.sum() #Normalizing the distribution to make the probability densities sum into
beta_dist = sts.beta.pdf(mu, 2, 5, loc = 1.65, scale = 0.2)
beta_dist = beta_dist/beta_dist.sum()
plt.plot(mu, beta_dist, label = 'Beta Dist')
plt.plot(mu, uniform_dist, label = 'Uniform Dist')
plt.xlabel("Value of $\mu$ in meters")
plt.ylabel("Probability density")
plt.legend()
```



Help | Variable Explorer | Plots | Files

Console 1/A ×

```
In [1]: runfile('C:/Users/Edmon/untitled0.py', wdir='C:/
Users/Edmon')
```

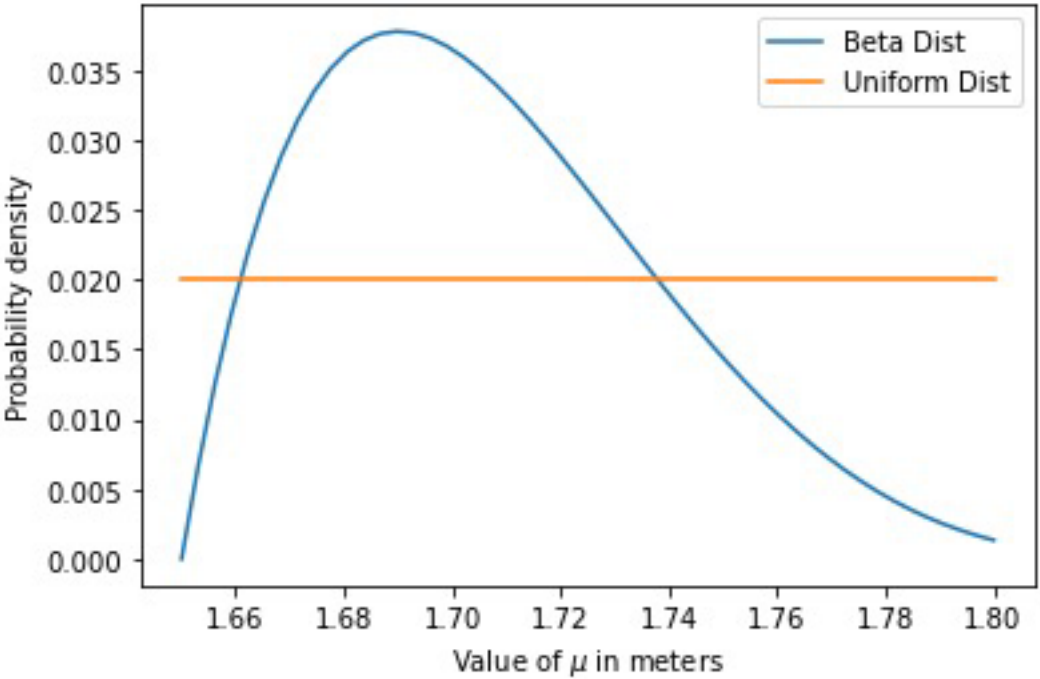
Warning

Figures now render in the Plots pane by default. To make them also appear inline in the Console, uncheck "Mute Inline Plotting" under the Plots pane options menu.

```
In [2]:
```

IPython Console | History

LSP Python: ready | conda: base (Python 3.9.13) | Line 23, Col 14 | UTF-8 | CRLF | RW | Mem 89%


Beta Dist
Uniform Dist
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
Probability density
1.66
1.68
1.70
1.72
1.74
1.76
1.78
1.80
Value of μ in meters

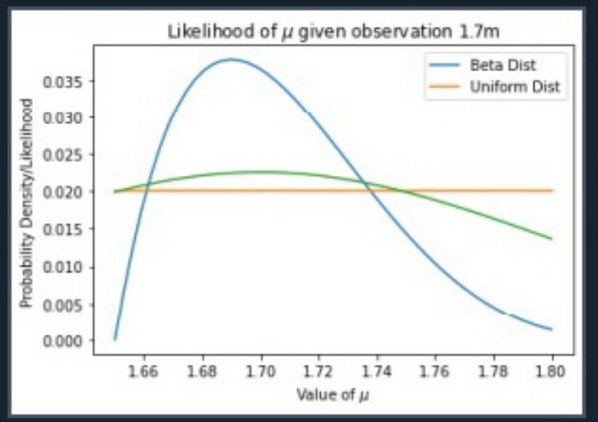
File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\Edmon

C:\Users\Edmon\untitled1.py

untitled0.py* × untitled1.py* ×

```python
# -*- coding: utf-8 -*-
"""
Created on Sat Mar  9 21:20:36 2024

@author: JHON MICKO ALMOSA
"""

import scipy.stats as sts
import numpy as np
import matplotlib.pyplot as plt

mu = np.linspace(1.65, 1.8, num = 50)
test = np.linspace(0, 2)
uniform_dist = sts.uniform.pdf(mu) + 1 #sneaky advanced note: I'm using the uniform distribution for clarity,
                                       #but we can also make the beta distribution look completely flat by tweaking
uniform_dist = uniform_dist/uniform_dist.sum() #Normalizing the distribution to make the probability densities sum in
beta_dist = sts.beta.pdf(mu, 2, 5, loc = 1.65, scale = 0.2)
beta_dist = beta_dist/beta_dist.sum()
plt.plot(mu, beta_dist, label = 'Beta Dist')
plt.plot(mu, uniform_dist, label = 'Uniform Dist')
plt.xlabel("Value of $\mu$ in meters")
plt.ylabel("Probability density")
plt.legend()


def likelihood_func(datum, mu):
 likelihood_out = sts.norm.pdf(datum, mu, scale = 0.1)
 return likelihood_out/likelihood_out.sum()

likelihood_out = likelihood_func(1.7, mu)

plt.plot(mu, likelihood_out)
plt.title("Likelihood of $\mu$ given observation 1.7m")
plt.ylabel("Probability Density/Likelihood")
plt.xlabel("Value of $\mu$")
```



Help Variable Explorer Plots Files

Console 1/A ×

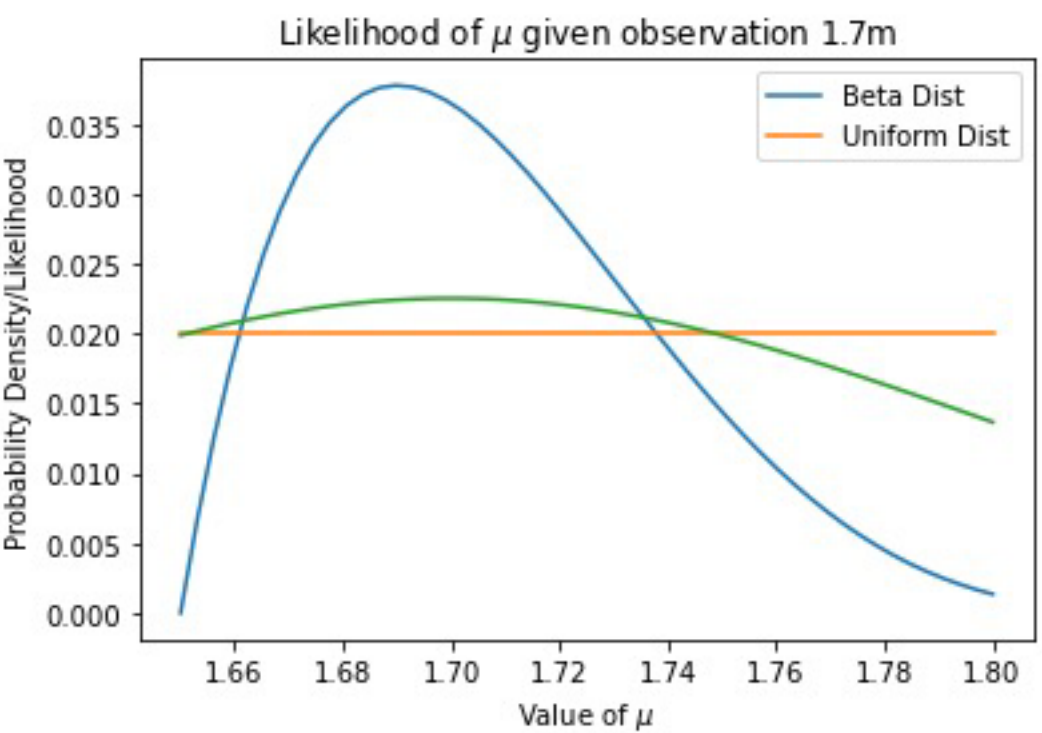
Warning

Figures now render in the Plots pane by default. To make them also appear inline in the Console, uncheck "Mute Inline Plotting" under the Plots pane options menu.

```
In [2]: runfile('C:/Users/Edmon/untitled1.py', wdir='C:/Users/Edmon')

In [3]:
```

IPython Console History

LSP Python: ready conda: base (Python 3.9.13) Line 37, Col 1 UTF-8 CRLF RW Mem 76%


Likelihood of μ given observation 1.7m
Beta Dist
Uniform Dist
Probability Density/Likelihood
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
1.66
1.68
1.70
1.72
1.74
1.76
1.78
1.80
Value of μ

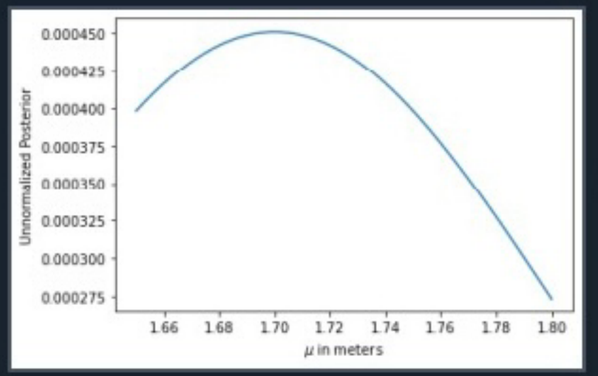
File Edit Search Source Run Debug Consoles Projects Tools View Help

C:\Users\Edmon

C:\Users\Edmon\untitled1.py

untitled0.py* × untitled1.py* ×

```
# -*- coding: utf-8 -*-
"""
Created on Sat Mar  9 21:20:36 2024

@author: JHON MICKO ALMOSA
"""

import scipy.stats as sts
import numpy as np
import matplotlib.pyplot as plt

mu = np.linspace(1.65, 1.8, num = 50)
test = np.linspace(0, 2)
uniform_dist = sts.uniform.pdf(mu) + 1 #sneaky advanced note: I'm using the uniform distribution for clarity,
                                       #but we can also make the beta distribution look completely flat by tweaking
uniform_dist = uniform_dist/uniform_dist.sum() #Normalizing the distribution to make the probability densities sum in
beta_dist = sts.beta.pdf(mu, 2, 5, loc = 1.65, scale = 0.2)
beta_dist = beta_dist/beta_dist.sum()
plt.plot(mu, beta_dist, label = 'Beta Dist')
plt.plot(mu, uniform_dist, label = 'Uniform Dist')
plt.xlabel("Value of $\mu$ in meters")
plt.ylabel("Probability density")
plt.legend()


def likelihood_func(datum, mu):
 likelihood_out = sts.norm.pdf(datum, mu, scale = 0.1)
 return likelihood_out/likelihood_out.sum()

likelihood_out = likelihood_func(1.7, mu)

plt.plot(mu, likelihood_out)
plt.title("Likelihood of $\mu$ given observation 1.7m")
plt.ylabel("Probability Density/Likelihood")
plt.xlabel("Value of $\mu$")
```



Help Variable Explorer Plots Files

Console 1/A ×

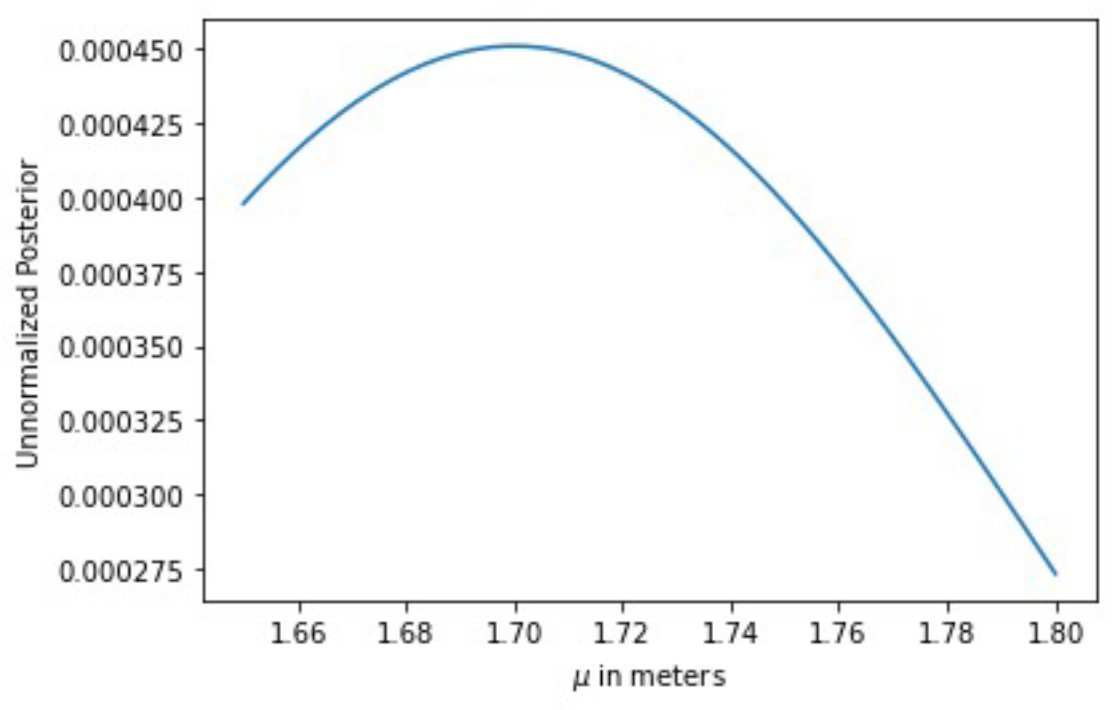
Warning

Figures now render in the Plots pane by default. To make them also appear inline in the Console, uncheck "Mute Inline Plotting" under the Plots pane options menu.

```
In [2]: runfile('C:/Users/Edmon/untitled1.py', wdir='C:/Users/Edmon')

In [3]: runfile('C:/Users/Edmon/untitled1.py', wdir='C:/Users/Edmon')

In [4]:
```

IPython Console History

LSP Python: ready conda: base (Python 3.9.13) Line 45, Col 11 UTF-8 CRLF RW Mem 81%


0.000450
0.000425
0.000400
0.000375
0.000350
0.000325
0.000300
0.000275
Unnormalized Posterior
1.66
1.68
1.70
1.72
1.74
1.76
1.78
1.80
μ in meters