

Spyder (Python 3.11)

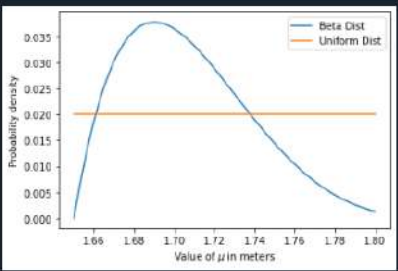
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C:\Users\acer\Downloads\pcpedrosa_prior.py

pcpedrosa_prior.py x pcpedrosa_likelihood.py x pcpedrosa_posterior.py x

```
1  -*- coding: utf-8 -*-
2  """
3  Created on Sat Mar 9 19:42:51 2024
4
5  @author: pcpedrosa
6  """
7  import scipy.stats as sts
8  import numpy as np
9  import matplotlib.pyplot as plt
10
11  mu = np.linspace(1.65, 1.8, num=50)
12  test = np.linspace(0, 2)
13  uniform_dist = sts.uniform.pdf(mu) + 1
14  uniform_dist = uniform_dist / uniform_dist.sum()
15  beta_dist = sts.beta.pdf(mu, 2, 5, loc=1.65, scale=0.2)
16  beta_dist = beta_dist / beta_dist.sum()
17  plt.plot(mu, beta_dist, label='Beta Dist')
18  plt.plot(mu, uniform_dist, label='Uniform Dist')
19  plt.xlabel("Value of  $\mu$  in meters")
20  plt.ylabel("Probability density")
21  plt.legend()
22
23
```

85 %



Heb Variable Explorer Plots Files

Console 3/4 x

```
runfile('C:/Users/acer/Downloads/aepenida_posterior.py', wdir='C:/Users/acer/Downloads')
runfile('C:/Users/acer/Downloads/aepenida_posterior.py', wdir='C:/Users/acer/Downloads')
runfile('C:/Users/acer/Downloads/aepenida_posterior.py', wdir='C:/Users/acer/Downloads')
runfile('C:/Users/acer/Downloads/pcpedrosa_prior.py', wdir='C:/Users/acer/Downloads')
In [54]:
```

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Spyder (Python 3.11)

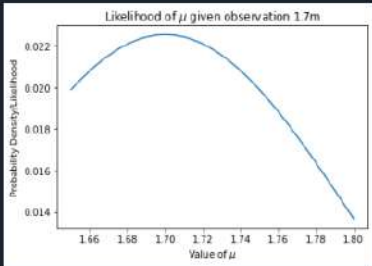
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C:\Users\acer\Downloads\pcpedrosa_likelihood.py

pcpedrosa_prior.py x pcpedrosa_likelihood.py x pcpedrosa_posterior.py x

```
1  -*- coding: utf-8 -*-
2  """
3  Created on Sat Mar 9 19:52:27 2024
4
5  @author: pcpedrosa
6  """
7  import scipy.stats as sts
8  import numpy as np
9  import matplotlib.pyplot as plt
10
11  mu = np.linspace(1.65, 1.8, num=50)
12  test = np.linspace(0, 2)
13  uniform_dist = sts.uniform.pdf(mu) + 1
14  uniform_dist = uniform_dist / uniform_dist.sum()
15  beta_dist = sts.beta.pdf(mu, 2, 5, loc=1.65, scale=0.2)
16  beta_dist = beta_dist / beta_dist.sum()
17
18
19  def likelihood_func(datum, mu):
20      likelihood_out = sts.norm.pdf(datum, mu, scale=0.1)
21      return likelihood_out / likelihood_out.sum()
22
23  likelihood_out = likelihood_func(1.7, mu)
24
25  plt.plot(mu, likelihood_out)
26  plt.title("Likelihood of %\mu$ given observation 1.7m")
27  plt.ylabel("Probability Density/Likelihood")
28  plt.xlabel("Value of %\mu$")
29  plt.show()
30
31
32
```

Likelihood of μ given observation 1.7m



Heb Variable Explorer Plots Files

Console 3/4 x

```
In [50]: runfile('C:/Users/acer/Downloads/pcpedrosa_posterior.py', wdir='C:/Users/acer/Downloads')
In [51]: runfile('C:/Users/acer/Downloads/pcpedrosa_posterior.py', wdir='C:/Users/acer/Downloads')
In [52]: runfile('C:/Users/acer/Downloads/pcpedrosa_posterior.py', wdir='C:/Users/acer/Downloads')
In [53]: runfile('C:/Users/acer/Downloads/pcpedrosa_prior.py', wdir='C:/Users/acer/Downloads')
In [54]: runfile('C:/Users/acer/Downloads/pcpedrosa_likelihood.py', wdir='C:/Users/acer/Downloads')
In [55]:
```

IPython Console History

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Spyder (Python 3.11)

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C:\Users\acer\Downloads\pcpedrosa_posterior.py

pcpedrosa_prior.py x pcpedrosa_likelihood.py x pcpedrosa_posterior.py x

```
1  -*- coding: utf-8 -*-
2  """
3  Created on Sat Mar 9 19:55:01 2024
4
5  @author: pcpedrosa
6  """
7  import scipy.stats as sts
8  import numpy as np
9  import matplotlib.pyplot as plt
10
11  mu = np.linspace(1.65, 1.8, num=50)
12  test = np.linspace(0, 2)
13  uniform_dist = sts.uniform.pdf(mu) + 1
14  uniform_dist = uniform_dist / uniform_dist.sum()
15  beta_dist = sts.beta.pdf(mu, 2, 5, loc=1.65, scale=0.2)
16  beta_dist = beta_dist / beta_dist.sum()
17
18  def likelihood_func(datum, mu):
19      likelihood_out = sts.norm.pdf(datum, mu, scale=0.1)
20      return likelihood_out / likelihood_out.sum()
21  likelihood_out = likelihood_func(1.7, mu)
22
23
24
25  import scipy as sp
26
27  unnormalized_posterior = likelihood_out * uniform_dist
28  plt.plot(mu, unnormalized_posterior)
29  plt.xlabel("$\mu$ in meters")
30  plt.ylabel("Unnormalized Posterior")
31
```

0.000450
0.000425
0.000400
0.000375
0.000350
0.000325
0.000300
0.000275

1.66 1.68 1.70 1.72 1.74 1.76 1.78 1.80

μ in meters

Unnormalized Posterior

Heb Variable Explorer Plots Files

Console 3/4 x

```
In [54]: runfile('C:/Users/acer/Downloads/pcpedrosa_posterior.py', wdir='C:/Users/acer/Downloads')
In [52]: runfile('C:/Users/acer/Downloads/pcpedrosa_posterior.py', wdir='C:/Users/acer/Downloads')
In [53]: runfile('C:/Users/acer/Downloads/pcpedrosa_prior.py', wdir='C:/Users/acer/Downloads')
In [54]: runfile('C:/Users/acer/Downloads/pcpedrosa_likelihood.py', wdir='C:/Users/acer/Downloads')
In [55]: runfile('C:/Users/acer/Downloads/pcpedrosa_posterior.py', wdir='C:/Users/acer/Downloads')
In [56]:
```

IPython Console History

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