Centering Your Data

14 min

Data centering involves subtracting the mean of a data set from each data point so that the new mean is 0. This process helps us understand how far above or below each of our data points is from the mean.

We can look at the nearest_starbucks column.

distance = coffee['nearest_starbucks']

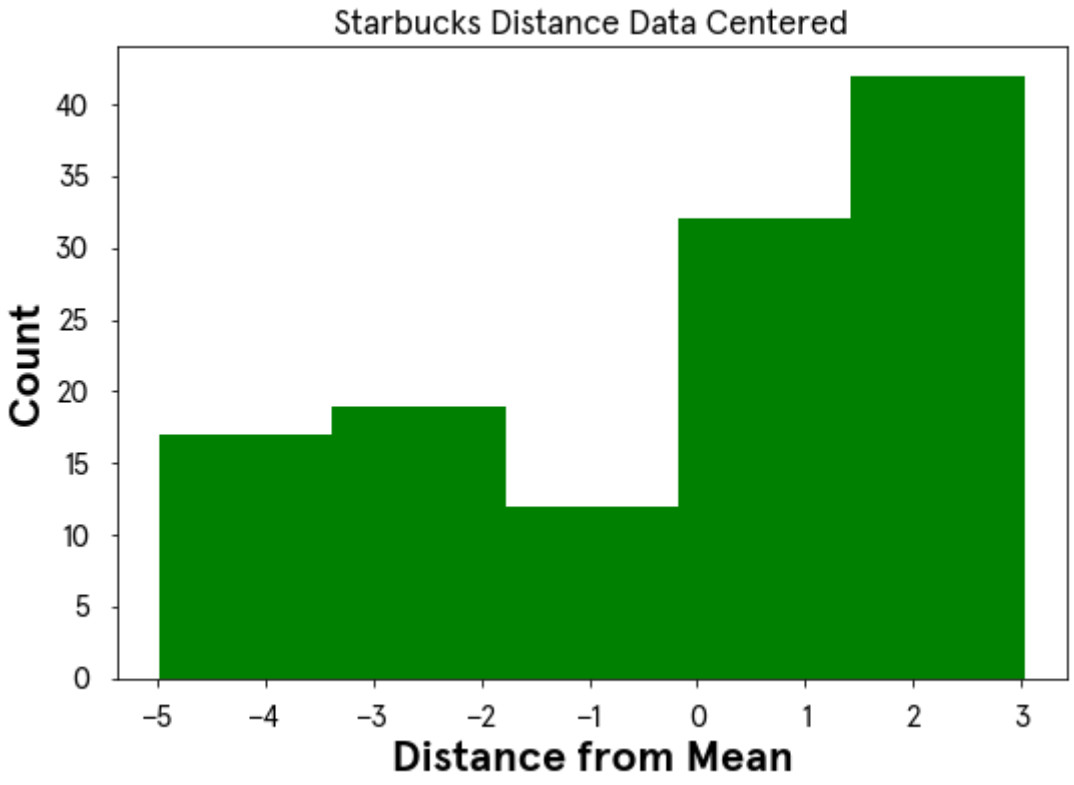
We will find the mean of our feature, create one line of code to center our data, and then plot the centered data. Here's what it will look like in Python.

```
#get the mean of your feature
mean_dis = np.mean(distance)

#take our distance array and subtract the mean_dis, this will create a new series with the results
centered_dis = distance - mean_dis

#visualize your new list
plt.hist(centered_dis, bins = 5, color = 'g')

#label our visual
plt.title('Starbucks Distance Data Centered')
plt.xlabel('Distance from Mean')
plt.ylabel('Count')
plt.show();
```



Now, look at that! Our data is centered at 0 and we can see the spread of data, many of our customers who took the survey tend to live fairly close to a Starbucks.

Let's try centering our age feature to see what happens there.

Instructions

1. Checkpoint 1 Passed

1.

Start by setting your age feature to a variable called ages

Stuck? Get extra guidance

2. Checkpoint 2 Passed

2.

It's helpful to know both the minimum and maximum age in our feature. First, create a variable called min_age and print the value

Stuck? Get extra guidance

3. Checkpoint 3 Passed

3.

Now find the maximum age and set it to a variable called max_age and print the value.

Stuck? Get extra guidance

4. Checkpoint 4 Passed

4.

We want to better understand the spread of our data, so print the difference between min_age and max_age

Stuck? Get extra guidance

5. Checkpoint 5 Passed

5.

We will need the mean age of our feature to center our data around, so create a variable called mean_age and print that value.

Stuck? Get extra guidance

6. Checkpoint 6 Passed

6.

Let's center our data! Set the result to a variable called centered_ages and print the results.

Stuck? Get extra guidance

7. Checkpoint 7 Passed

7.

Plot your centered data as a histogram.

_test.py

```
import numpy as np
import matplotlib as mpl
load_file_in_context('script.py')

bars = [rect for rect in plt.gca().get_children() if isinstance(rect, mpl.patches.Rectangle)]

#check bars
xs = [b.get_x() for b in bars]

xs_learner = np.round(xs, 2)
xs_expected = np.array([-14.34,-8.64,-2.94,2.76,8.46,14.16,19.86,25.56,31.26,36.96,0.])

if not (np.array_equal(np.sort(xs_learner), np.sort(xs_expected))):
  fail_tests('Did you use `centered_ages` for your histogram?')

pass_tests()
```

index.html

```
<html><head><style>html {
  box-sizing: border-box;
}

*, *:before, *:after {
  box-sizing: inherit;
}

body {
  text-align: center;
}

/*
```

```
 * Table stuff
 */

.table-container {
  width: max-content;
  min-width: 100%;
  padding: 0.5rem;
  margin-top: 2rem;
}

.scroll-container {
  overflow-y: auto;
  overflow-x: none;
  max-height: 14rem;
  border: 1px solid #3E3E40;
}

table {
  font-family: monospace;
  white-space: nowrap;
  padding: 0.625rem;
  width: 100%;
  overflow-x: none;
}

th,
td {
  text-align: left;
  padding: 0.25rem;
  background-color: transparent;
}
```

```
tr {
  height: 1.875rem;
  font-size: 0.8125rem;
}

tr:nth-child(odd) {
  background-color: #E9EAEA;
}

tr:nth-child(even),
th {
  background-color: #FFFFFF;
}

/*
 * Chart stuff
 */

svg {
  margin-top: 2rem;
  margin-bottom: 2rem;
  max-width: 100%;
}
```

```
</style></head><body><div class="table-container"><div class="scroll-
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<!DOCTYPE svg PUBLIC "-//W3C//DTD SVG 1.1//EN"

"http://www.w3.org/Graphics/SVG/1.1/DTD/svg11.dtd">

<!-- Created with matplotlib (http://matplotlib.org/) -->

<svg height="345pt" version="1.1" viewBox="0 0 460 345" width="460pt"
xmlns="http://www.w3.org/2000/svg" xmlns:xlink="http://www.w3.org/1999/xlink">

<defs>

<style type="text/css">

*{stroke-linecap:butt;stroke-linejoin:round;}

</style>

</defs>

<g id="figure_1">

<g id="patch_1">

<path d="M 0 345.6

L 460.8 345.6

L 460.8 0

L 0 0

z

" style="fill:#ffffff;"/>
 </g>
 <g id="axes_1">
  <g id="patch_2">
   <path d="M 57.6 307.584
L 414.72 307.584
L 414.72 41.472
L 57.6 41.472
z
" style="fill:#ffffff;"/>
  </g>
  <g id="patch_3">
   <path clip-path="url(#p54c3970bd0)" d="M 73.832727 307.584
L 106.298182 307.584
L 106.298182 244.224
L 73.832727 244.224
z
" style="fill:#1f77b4;"/>
  </g>
  <g id="patch_4">
   <path clip-path="url(#p54c3970bd0)" d="M 106.298182 307.584
L 138.763636 307.584
L 138.763636 54.144
L 106.298182 54.144
z
" style="fill:#1f77b4;"/>
  </g>
  <g id="patch_5">
   <path clip-path="url(#p54c3970bd0)" d="M 138.763636 307.584
L 171.229091 307.584
L 171.229091 82.944
L 138.763636 82.944

```
z
" style="fill:#1f77b4;"/>
  </g>
  <g id="patch_6">
   <path clip-path="url(#p54c3970bd0)" d="M 171.229091 307.584
L 203.694545 307.584
L 203.694545 249.984
L 171.229091 249.984
z
" style="fill:#1f77b4;"/>
  </g>
  <g id="patch_7">
   <path clip-path="url(#p54c3970bd0)" d="M 203.694545 307.584
L 236.16 307.584
L 236.16 255.744
L 203.694545 255.744
z
" style="fill:#1f77b4;"/>
  </g>
  <g id="patch_8">
   <path clip-path="url(#p54c3970bd0)" d="M 236.16 307.584
L 268.625455 307.584
L 268.625455 284.544
L 236.16 284.544
z
" style="fill:#1f77b4;"/>
  </g>
  <g id="patch_9">
   <path clip-path="url(#p54c3970bd0)" d="M 268.625455 307.584
L 301.090909 307.584
L 301.090909 290.304
L 268.625455 290.304
```

```
z
" style="fill:#1f77b4;"/>
  </g>
  <g id="patch_10">
   <path clip-path="url(#p54c3970bd0)" d="M 301.090909 307.584
L 333.556364 307.584
L 333.556364 307.584
L 301.090909 307.584
z
" style="fill:#1f77b4;"/>
  </g>
  <g id="patch_11">
   <path clip-path="url(#p54c3970bd0)" d="M 333.556364 307.584
L 366.021818 307.584
L 366.021818 307.584
L 333.556364 307.584
z
" style="fill:#1f77b4;"/>
  </g>
  <g id="patch_12">
   <path clip-path="url(#p54c3970bd0)" d="M 366.021818 307.584
L 398.487273 307.584
L 398.487273 296.064
L 366.021818 296.064
z
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  </g>
  <g id="matplotlib.axis_1">
   <g id="xtick_1">
    <g id="line2d_1">
     <defs>
      <path d="M 0 0
```

L 0 3.5

" id="ma06015986b" style="stroke:#000000;stroke-width:0.8;"/>

</defs>

<g>

<use style="stroke:#000000;stroke-width:0.8;" x="98.529629" xlink:href="#ma06015986b"
y="307.584"/>

</g>

</g>

<g id="text_1">

<!-- −10 -->

<defs>

<path d="M 10.59375 35.5

L 73.1875 35.5

L 73.1875 27.203125

L 10.59375 27.203125

z

" id="DejaVuSans-2212"/>

<path d="M 12.40625 8.296875

L 28.515625 8.296875

L 28.515625 63.921875

L 10.984375 60.40625

L 10.984375 69.390625

L 28.421875 72.90625

L 38.28125 72.90625

L 38.28125 8.296875

L 54.390625 8.296875

L 54.390625 0

L 12.40625 0

z

" id="DejaVuSans-31"/>

<path d="M 31.78125 66.40625

Q 24.171875 66.40625 20.328125 58.90625

Q 16.5 51.421875 16.5 36.375

Q 16.5 21.390625 20.328125 13.890625

Q 24.171875 6.390625 31.78125 6.390625

Q 39.453125 6.390625 43.28125 13.890625

Q 47.125 21.390625 47.125 36.375

Q 47.125 51.421875 43.28125 58.90625

Q 39.453125 66.40625 31.78125 66.40625

z

M 31.78125 74.21875

Q 44.046875 74.21875 50.515625 64.515625

Q 56.984375 54.828125 56.984375 36.375

Q 56.984375 17.96875 50.515625 8.265625

Q 44.046875 -1.421875 31.78125 -1.421875

Q 19.53125 -1.421875 13.0625 8.265625

Q 6.59375 17.96875 6.59375 36.375

Q 6.59375 54.828125 13.0625 64.515625

Q 19.53125 74.21875 31.78125 74.21875

z

" id="DejaVuSans-30"/>

    </defs>

    <g transform="translate(87.977285 322.182437)scale(0.1 -0.1)">

     <use xlink:href="#DejaVuSans-2212"/>

     <use x="83.789062" xlink:href="#DejaVuSans-31"/>

     <use x="147.412109" xlink:href="#DejaVuSans-30"/>

    </g>

   </g>

  </g>

  <g id="xtick_2">

   <g id="line2d_2">

    <g>

     <use style="stroke:#000000;stroke-width:0.8;" x="155.486567" xlink:href="#ma06015986b"
y="307.584"/>

    </g>

   </g>

<g id="text_2">
<!-- 0 -->
<g transform="translate(152.305317 322.182437)scale(0.1 -0.1)">
<use xlink:href="#DejaVuSans-30"/>
</g>
</g>
</g>
<g id="xtick_3">
<g id="line2d_3">
<g>
<use style="stroke:#000000;stroke-width:0.8;" x="212.443505" xlink:href="#ma06015986b" y="307.584"/>
</g>
</g>
<g id="text_3">
<!-- 10 -->
<g transform="translate(206.081005 322.182437)scale(0.1 -0.1)">
<use xlink:href="#DejaVuSans-31"/>
<use x="63.623047" xlink:href="#DejaVuSans-30"/>
</g>
</g>
</g>
<g id="xtick_4">
<g id="line2d_4">
<g>
<use style="stroke:#000000;stroke-width:0.8;" x="269.400442" xlink:href="#ma06015986b" y="307.584"/>
</g>
</g>
<g id="text_4">
<!-- 20 -->
<defs>
<path d="M 19.1875 8.296875

L 53.609375 8.296875

L 53.609375 0

L 7.328125 0

L 7.328125 8.296875

Q 12.9375 14.109375 22.625 23.890625

Q 32.328125 33.6875 34.8125 36.53125

Q 39.546875 41.84375 41.421875 45.53125

Q 43.3125 49.21875 43.3125 52.78125

Q 43.3125 58.59375 39.234375 62.25

Q 35.15625 65.921875 28.609375 65.921875

Q 23.96875 65.921875 18.8125 64.3125

Q 13.671875 62.703125 7.8125 59.421875

L 7.8125 69.390625

Q 13.765625 71.78125 18.9375 73

Q 24.125 74.21875 28.421875 74.21875

Q 39.75 74.21875 46.484375 68.546875

Q 53.21875 62.890625 53.21875 53.421875

Q 53.21875 48.921875 51.53125 44.890625

Q 49.859375 40.875 45.40625 35.40625

Q 44.1875 33.984375 37.640625 27.21875

Q 31.109375 20.453125 19.1875 8.296875

z

" id="DejaVuSans-32"/>

</defs>

<g transform="translate(263.037942 322.182437)scale(0.1 -0.1)">

<use xlink:href="#DejaVuSans-32"/>

<use x="63.623047" xlink:href="#DejaVuSans-30"/>

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<g id="xtick_5">

<g id="line2d_5">

```
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     <use style="stroke:#000000;stroke-width:0.8;" x="326.35738" xlink:href="#ma06015986b"
y="307.584"/>
    </g>
   </g>
   <g id="text_5">
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    <defs>
     <path d="M 40.578125 39.3125
Q 47.65625 37.796875 51.625 33
Q 55.609375 28.21875 55.609375 21.1875
Q 55.609375 10.40625 48.1875 4.484375
Q 40.765625 -1.421875 27.09375 -1.421875
Q 22.515625 -1.421875 17.65625 -0.515625
Q 12.796875 0.390625 7.625 2.203125
L 7.625 11.71875
Q 11.71875 9.328125 16.59375 8.109375
Q 21.484375 6.890625 26.8125 6.890625
Q 36.078125 6.890625 40.9375 10.546875
Q 45.796875 14.203125 45.796875 21.1875
Q 45.796875 27.640625 41.28125 31.265625
Q 36.765625 34.90625 28.71875 34.90625
L 20.21875 34.90625
L 20.21875 43.015625
L 29.109375 43.015625
Q 36.375 43.015625 40.234375 45.921875
Q 44.09375 48.828125 44.09375 54.296875
Q 44.09375 59.90625 40.109375 62.90625
Q 36.140625 65.921875 28.71875 65.921875
Q 24.65625 65.921875 20.015625 65.03125
Q 15.375 64.15625 9.8125 62.3125
L 9.8125 71.09375
Q 15.4375 72.65625 20.34375 73.4375
```

Q 25.25 74.21875 29.59375 74.21875

Q 40.828125 74.21875 47.359375 69.109375

Q 53.90625 64.015625 53.90625 55.328125

Q 53.90625 49.265625 50.4375 45.09375

Q 46.96875 40.921875 40.578125 39.3125

z

" id="DejaVuSans-33"/>

</defs>

<g transform="translate(319.99488 322.182437)scale(0.1 -0.1)">

<use xlink:href="#DejaVuSans-33"/>

<use x="63.623047" xlink:href="#DejaVuSans-30"/>

</g>

</g>

</g>

<g id="xtick_6">

<g id="line2d_6">

<g>

<use style="stroke:#000000;stroke-width:0.8;" x="383.314318" xlink:href="#ma06015986b"
y="307.584"/>

</g>

</g>

<g id="text_6">

<!-- 40 -->

<defs>

<path d="M 37.796875 64.3125

L 12.890625 25.390625

L 37.796875 25.390625

z

M 35.203125 72.90625

L 47.609375 72.90625

L 47.609375 25.390625

L 58.015625 25.390625

L 58.015625 17.1875

L 47.609375 17.1875

L 47.609375 0

L 37.796875 0

L 37.796875 17.1875

L 4.890625 17.1875

L 4.890625 26.703125

z

" id="DejaVuSans-34"/>

</defs>

<g transform="translate(376.951818 322.182437)scale(0.1 -0.1)">

<use xlink:href="#DejaVuSans-34"/>

<use x="63.623047" xlink:href="#DejaVuSans-30"/>

</g>

</g>

</g>

</g>

<g id="matplotlib.axis_2">

<g id="ytick_1">

<g id="line2d_7">

<defs>

<path d="M 0 0

L -3.5 0

" id="mfc249839cb" style="stroke:#000000;stroke-width:0.8;"/>

</defs>

<g>

<use style="stroke:#000000;stroke-width:0.8;" x="57.6" xlink:href="#mfc249839cb" y="307.584"/>

</g>

</g>

<g id="text_7">

<!-- 0 -->

<g transform="translate(44.2375 311.383219)scale(0.1 -0.1)">

<use xlink:href="#DejaVuSans-30"/>

```
 </g>
 </g>
</g>
<g id="ytick_2">
 <g id="line2d_8">
  <g>
   <use style="stroke:#000000;stroke-width:0.8;" x="57.6" xlink:href="#mfc249839cb" y="249.984"/>
  </g>
 </g>
 <g id="text_8">
  <!-- 10 -->
  <g transform="translate(37.875 253.783219)scale(0.1 -0.1)">
   <use xlink:href="#DejaVuSans-31"/>
   <use x="63.623047" xlink:href="#DejaVuSans-30"/>
  </g>
 </g>
</g>
<g id="ytick_3">
 <g id="line2d_9">
  <g>
   <use style="stroke:#000000;stroke-width:0.8;" x="57.6" xlink:href="#mfc249839cb" y="192.384"/>
  </g>
 </g>
 <g id="text_9">
  <!-- 20 -->
  <g transform="translate(37.875 196.183219)scale(0.1 -0.1)">
   <use xlink:href="#DejaVuSans-32"/>
   <use x="63.623047" xlink:href="#DejaVuSans-30"/>
  </g>
 </g>
</g>
<g id="ytick_4">
```

```
    <g id="line2d_10">
     <g>
      <use style="stroke:#000000;stroke-width:0.8;" x="57.6" xlink:href="#mfc249839cb" y="134.784"/>
     </g>
    </g>
    <g id="text_10">
     <!-- 30 -->
     <g transform="translate(37.875 138.583219)scale(0.1 -0.1)">
      <use xlink:href="#DejaVuSans-33"/>
      <use x="63.623047" xlink:href="#DejaVuSans-30"/>
     </g>
    </g>
   </g>
   <g id="ytick_5">
    <g id="line2d_11">
     <g>
      <use style="stroke:#000000;stroke-width:0.8;" x="57.6" xlink:href="#mfc249839cb" y="77.184"/>
     </g>
    </g>
    <g id="text_11">
     <!-- 40 -->
     <g transform="translate(37.875 80.983219)scale(0.1 -0.1)">
      <use xlink:href="#DejaVuSans-34"/>
      <use x="63.623047" xlink:href="#DejaVuSans-30"/>
     </g>
    </g>
   </g>
   <g id="patch_13">
    <path d="M 57.6 307.584
L 57.6 41.472
" style="fill:none;stroke:#000000;stroke-linecap:square;stroke-linejoin:miter;stroke-width:0.8;"/>
```

```
  </g>
  <g id="patch_14">
   <path d="M 414.72 307.584
L 414.72 41.472
" style="fill:none;stroke:#000000;stroke-linecap:square;stroke-linejoin:miter;stroke-width:0.8;"/>
  </g>
  <g id="patch_15">
   <path d="M 57.6 307.584
L 414.72 307.584
" style="fill:none;stroke:#000000;stroke-linecap:square;stroke-linejoin:miter;stroke-width:0.8;"/>
  </g>
  <g id="patch_16">
   <path d="M 57.6 41.472
L 414.72 41.472
" style="fill:none;stroke:#000000;stroke-linecap:square;stroke-linejoin:miter;stroke-width:0.8;"/>
  </g>
 </g>
</g>
<defs>
 <clipPath id="p54c3970bd0">
  <rect height="266.112" width="357.12" x="57.6" y="41.472"/>
 </clipPath>
</defs>
</svg>
</body></html>
```

script.py

```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import codecademylib3_seaborn

coffee = pd.read_csv('starbucks_customers.csv')

ages = coffee['age']

min_age = np.min(ages)
print(min_age)

max_age = np.max(ages)
print(max_age)

print(max_age - min_age)

mean_age = np.mean(ages)
print(mean_age)

centered_ages = ages - mean_age
print(centered_ages)

plt.hist(centered_ages)
plt.show();
```

starbucks_customers.csv

spent,nearest_starbucks,age,rate_quality,rate_price,rate_promo,ambiance,wifi,service,meetings_hangout

13,8,52,4,4,4,4,4,4

25,8,35,4,5,5,4,4,3,3

10,8,29,2,1,5,2,2,2,2

7,8,28,4,1,4,5,3,3,4

10,8,28,4,2,4,4,3,4,3

11,8,28,3,2,3,3,3,5,4

21,8,27,4,3,2,3,1,2,2

15,8,26,3,1,4,4,3,4,4

0,8,26,3,1,5,4,3,3,2

7,8,26,5,3,5,5,4,4,1

2,7,51,4,3,5,5,4,5,4

9,7,26,4,3,4,4,4,4,3

15,7,22,3,1,3,3,1,3,2

0,7,21,2,1,5,4,4,4,1

0,7,17,3,2,2,2,3,3,3

2,7,15,3,4,5,5,5,4,4

13,7,13,5,5,5,5,5,5,5

15,6,65,4,3,5,4,4,4,4

10,6,42,2,2,1,2,2,3,2

11,6,35,3,3,4,3,3,3,3

5,6,29,2,1,4,3,3,3,3

18,6,29,3,3,3,3,3,3,3

7,6,27,5,4,4,4,4,4,4

3,6,23,3,4,3,3,1,2,3

12,6,21,4,2,1,4,1,4,4

13,5,70,4,4,4,4,2,3,4

21,5,41,5,4,3,5,3,5,5

17,5,40,4,3,4,4,3,3,5

18,5,37,2,3,5,5,3,5,5

5,5,34,4,2,3,4,4,4,4

0,5,25,1,1,1,1,1,1

10,5,23,4,2,4,4,3,4,1

11,5,20,5,3,4,4,3,4,3

9,5,20,3,3,1,4,3,4,4

15,5,20,3,2,3,3,3,3,3

15,5,14,3,3,2,3,3,3,3

11,4,28,4,2,4,4,3,3,3

18,4,38,4,4,5,4,4,5,4

6,4,32,4,4,5,4,2,3,4

3,4,29,3,3,3,3,3,3,2

0,4,23,3,1,5,3,4,4,5

0,4,23,3,3,3,3,3,3,3

10,4,23,5,5,5,5,5,5,5

11,4,21,4,2,4,3,4,4,4

9,4,20,3,3,4,5,4,4,4

5,4,19,2,2,3,2,2,2,2

5,4,15,3,3,2,2,2,4,3

4,4,15,5,5,5,5,5,5,5

10,3,23,4,1,5,4,3,4,4

19,3,22,4,4,5,4,4,5,5

5,3,16,4,4,4,4,4,4,4

8,3,26,3,2,4,4,3,4,4

9,3,20,4,2,3,3,3,3,3

2,3,52,3,2,4,3,3,3,4

16,3,32,5,3,4,3,4,4,4

4,3,29,3,3,5,4,3,3,4

11,3,24,4,3,2,4,4,3,4

8,3,23,4,3,4,4,4,4,3

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6,2,22,4,3,4,4,3,4,3

0,2,21,4,2,3,5,4,4,2

7,2,16,3,2,5,4,3,3,5

28,2,23,5,4,4,4,4,4,4

15,2,22,4,3,3,4,3,3,4

12,2,30,4,3,4,4,3,4,4

24,2,44,4,5,3,3,3,4,5

7,2,38,4,2,4,4,4,4,2

10,2,31,3,2,4,4,4,5,4

6,2,30,4,4,2,4,3,4,5

9,2,29,5,4,4,5,4,4,3

5,2,28,4,4,4,4,4,4,4

9,2,25,4,3,4,3,2,3,4

27,2,25,2,1,5,1,4,3,3

4,2,24,4,3,2,4,3,4,4

10,2,22,4,3,4,4,4,5,2

0,2,21,5,5,5,5,4,5,5

7,2,20,3,4,3,4,3,4,2

25,2,20,5,5,5,5,5,5,5

8,2,19,3,3,3,3,4,3,3

0,2,17,3,3,3,3,3,3,3

3,1,13,5,2,3,4,4,3,5

18,1,45,5,4,3,4,3,3,3

14,1,42,3,3,3,4,3,3,3

14,1,40,3,3,5,3,2,4,4

19,1,38,4,3,1,4,4,5,4

4,1,27,3,2,3,3,3,4,3

19,1,27,3,2,4,3,1,3,3

10,1,26,5,5,5,5,3,5,5

13,1,26,5,4,3,4,3,3,3

3,1,26,3,3,5,4,3,3,4

11,1,23,4,3,4,5,5,5,5

4,1,23,4,2,5,3,2,4,4

10,1,23,1,1,5,4,3,3,2

11,1,22,4,3,4,3,3,4,4

12,1,21,3,3,4,2,2,3,3

13,0,41,5,4,5,5,1,4,4

6,0,38,3,2,5,3,3,5,3

11,0,34,4,3,3,4,3,3,3

14,0,34,3,3,3,3,3,3,3

18,0,33,2,2,5,3,3,4,3

19,0,31,4,3,4,5,5,4,5

14,0,29,5,5,5,5,3,5,5

18,0,29,5,4,5,5,3,5,5

19,0,29,4,3,4,5,4,4,4

8,0,28,4,3,4,5,5,5,3

0,0,28,3,3,3,3,3,3,3

3,0,27,3,4,4,3,4,4,3

12,0,27,5,1,3,3,2,3,3

3,0,26,5,2,5,5,5,5,2

2,0,26,4,4,4,4,4,4,4

7,0,26,5,2,5,5,2,4,3

9,0,26,4,2,3,5,4,4,5

0,0,24,3,3,3,1,3,3,4

6,0,24,4,4,4,4,4,4,4

19,0,22,5,3,4,3,3,4,5

11,0,22,4,3,3,3,2,3,4

2,0,22,3,3,4,4,5,5,2

5,0,22,3,4,5,4,3,4,2

16,0,22,4,3,5,4,4,5,5

2,0,20,4,3,5,5,4,4,3

19,0,20,4,4,4,4,4,4,4

3,0,14,3,3,3,3,3,3,3

Output

```
13
70
57
27.33606557377049
0      24.663934
1       7.663934
2       1.663934
3       0.663934
4       0.663934
        ...
117    -5.336066
118    -5.336066
119    -7.336066
120    -7.336066
121   -13.336066
Name: age, Length: 122, dtype: float64
```

	age
0	24.66393442622951
1	7.66393442622951
2	1.6639344262295097
3	0.6639344262295097
4	0.6639344262295097
5	0.6639344262295097