Lend.it Analytics

O projeto utiliza de microsserviços, onde cada serviço abrange uma funcionalidade do *software*. Cada serviço possui seu próprio repositório, dentro da organização (https://github.com/Lend-it) do projeto:

- Front (https://github.com/Lend-it/Front) - Serviço responsável pela interface do usuário;
- Avaliação (https://github.com/Lend-it/Rating) - Serviço responsável pelo sistema de feedbacks para os usuários da aplicação;
- Usuário (https://github.com/Lend-it/User) - Serviço que gerencia usuários da aplicação;
- Pedidos (https://github.com/Lend-it/Request) - Serviço que gerencia o sistema de pedidos de empréstimos;
- Gateway (https://github.com/Lend-it/Gateway) - Serviço responsável por intermediar a comunicação entre o *Back-end* e o *Front-end*.

Equipe

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In [1]:

```
from metaflow import Flow, get_metadata
print("Current metadata provider: %s" % get_metadata())

run = Flow('DataProcessing').latest_successful_run

m_dfs = run.data.product_metrics_df
issues_dfs = run.data.project_metrics_df
```

```
Current metadata provider: local@/home/linux/Documentos/unb/eps/code/A
nalytics
```

In [2]:

```
import matplotlib.pyplot as plt
import seaborn as sns
import numpy as np
from pylab import rcParams

def plot_linear_regression(df):
    sns.regplot(x=df["totalAC1"],
                y=[i for i in range(1, len(df) + 1)],
                line_kws={"color":"r","alpha":0.7,"lw":5}
    )
    plt.show()

def plot_corr_matrix(df):
    corr_matrix = df.corr(method="spearman")

    mask = np.triu(np.ones(corr_matrix.shape)).astype(np.bool)

    rcParams['figure.figsize'] = 12, 12

    heatmap = sns.heatmap(corr_matrix.abs(), mask = mask, square=True, linewidths=1
                          vmin=0, vmax=1)

def unique_plot_histogram(df, metric):
    sns.distplot(df[metric])
```

Métricas de projeto

User

In [3]:

```
m_dfs['user']['metrics']
```

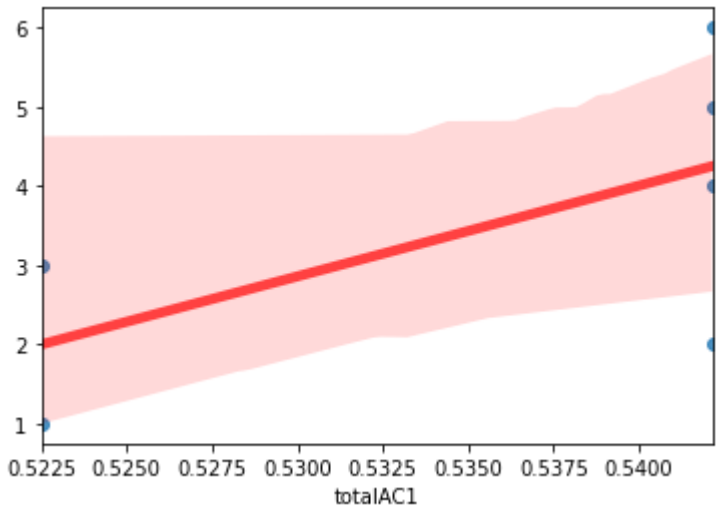
Out[3]:

	m1	m2	m3	asc1	ac1	totalAC1	ncloc
goblinone	0.583333	0.0	1.0	0.522500	0.522500	0.522500	291
nunito	0.642857	0.0	1.0	0.542143	0.542143	0.542143	354
quicksand	0.583333	0.0	1.0	0.522500	0.522500	0.522500	291
raleway	0.642857	0.0	1.0	0.542143	0.542143	0.542143	354
rubik	0.642857	0.0	1.0	0.542143	0.542143	0.542143	354
zendots	0.642857	0.0	1.0	0.542143	0.542143	0.542143	354

Regressão linear

In [4]:

```
plot_linear_regression(m_dfs['user']['metrics'])
```

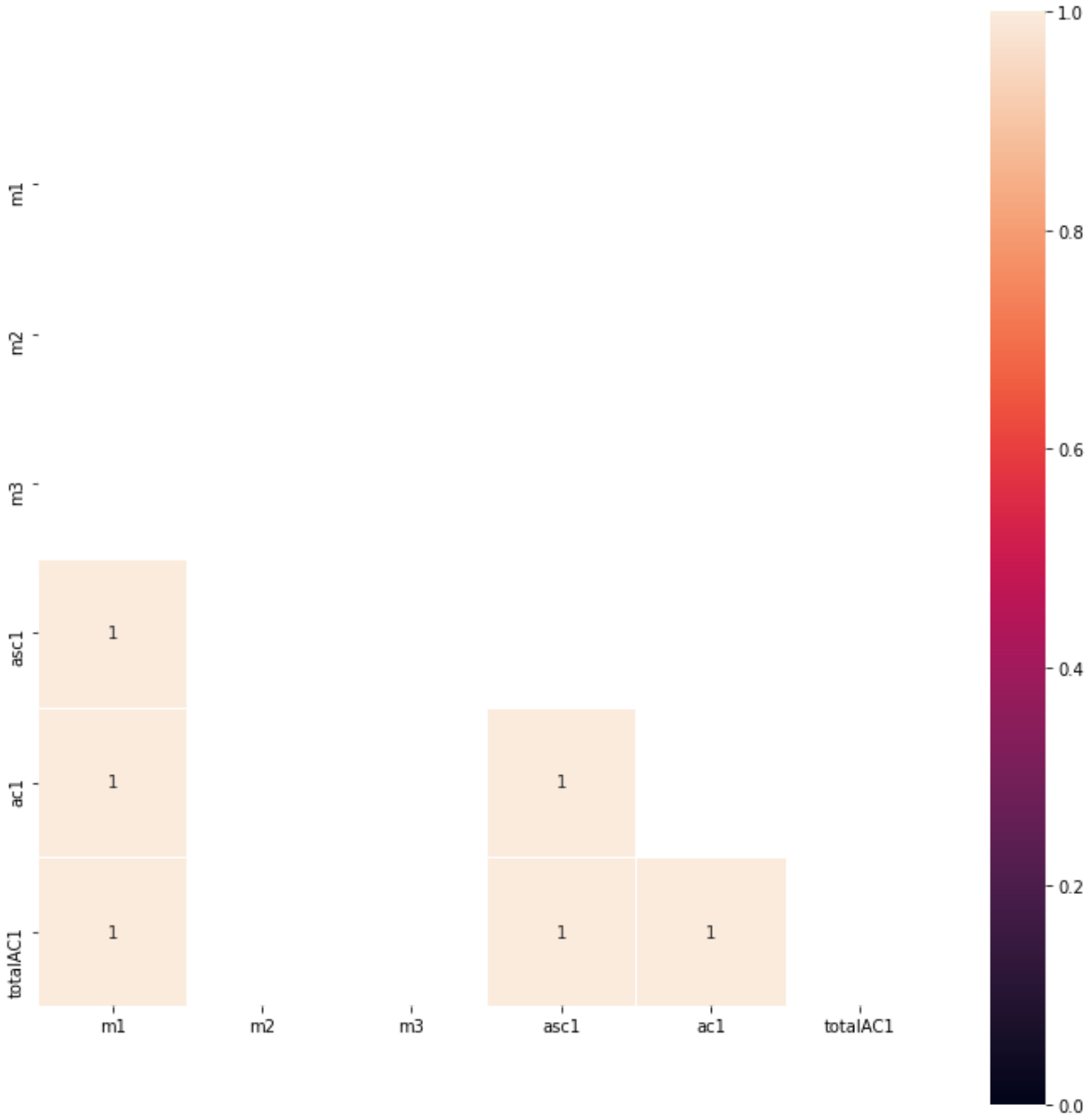


Matriz de correlação

In [5]:

```
plot_corr_matrix(m_dfs['user']['metrics'])
```

```
<ipython-input-2-c62a57b12cbd>:16: DeprecationWarning: `np.bool` is a
deprecated alias for the builtin `bool`. To silence this warning, use
`bool` by itself. Doing this will not modify any behavior and is safe.
If you specifically wanted the numpy scalar type, use `np.bool_` here.
Deprecated in NumPy 1.20; for more details and guidance: https://nump
y.org/devdocs/release/1.20.0-notes.html#deprecations (https://numpy.or
g/devdocs/release/1.20.0-notes.html#deprecations)
  mask = np.triu(np.ones(corr_matrix.shape)).astype(np.bool)
```

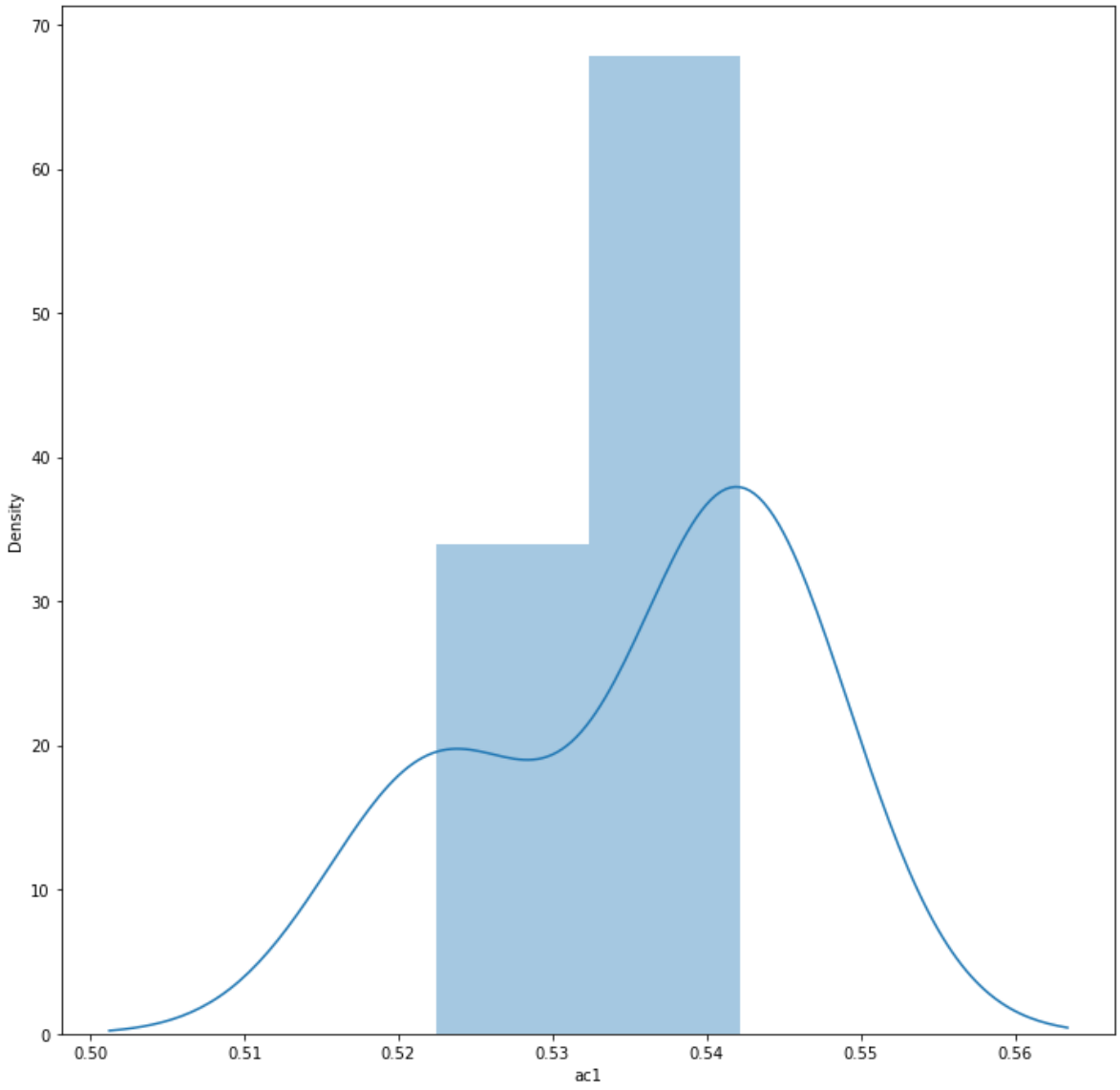


Histograma AC1

In [6]:

```
unique_plot_histogram(m_dfs['user']['metrics'], "ac1")
```

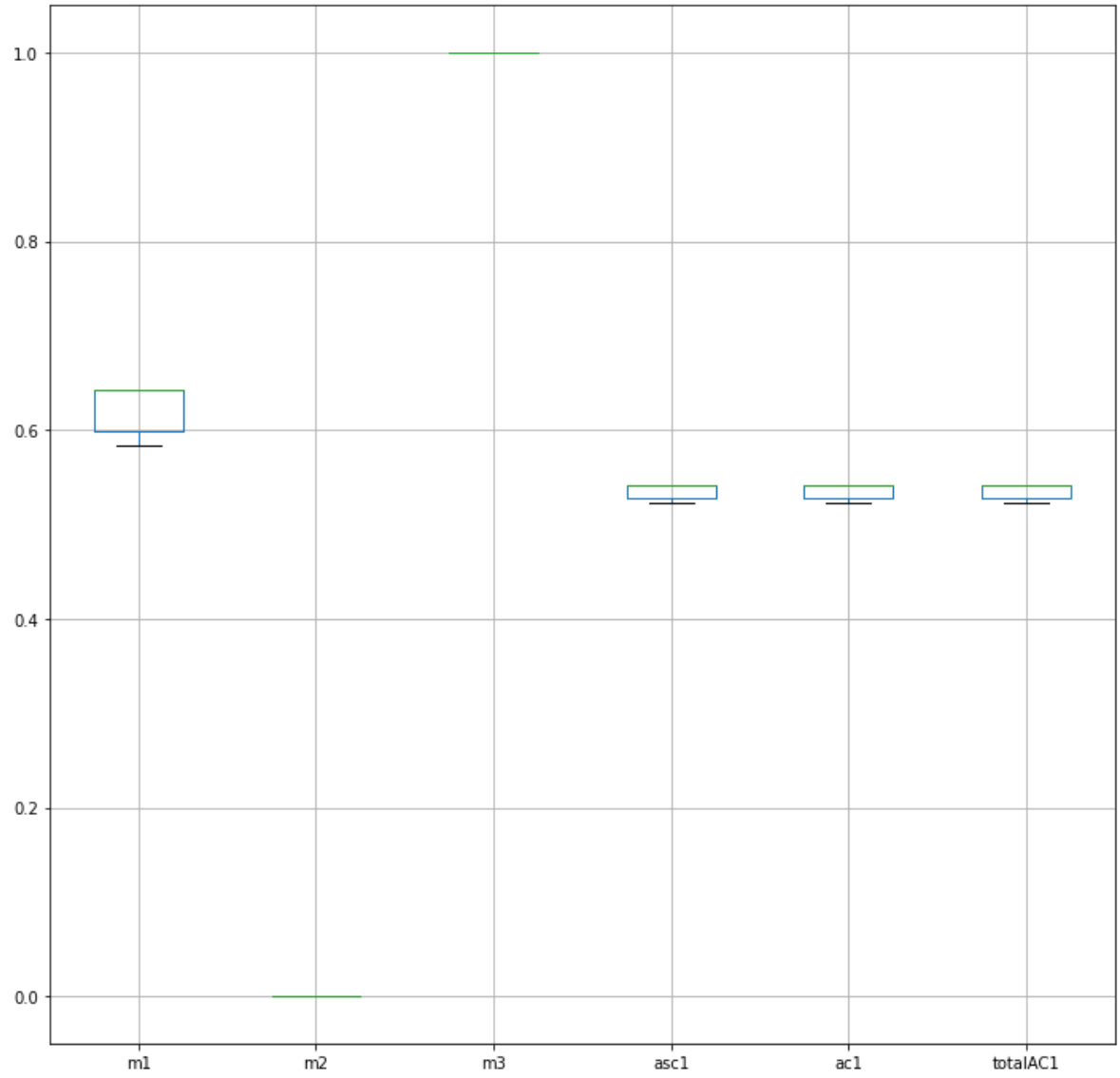
```
/home/linux/Documentos/unb/eps/code/Analytics/venv/lib/python3.8/site-
packages/seaborn/distributions.py:2557: FutureWarning: `distplot` is a
deprecated function and will be removed in a future version. Please ad
apt your code to use either `displot` (a figure-level function with si
milar flexibility) or `histplot` (an axes-level function for histogram
s).
  warnings.warn(msg, FutureWarning)
```



Box Plot

In [7]:

```
boxplot = m_dfs['user']['metrics'].boxplot(column=['m1', 'm2', 'm3', 'asc1', 'ac1',
```



Estatística descritiva

In [8]:

```
m_dfs['user']['descriptive']
```

Out[8]:

	m1	m2	m3
mean	0.623016	0.0	1.0
mode	0.642857	0.0	1.0
25%	0.598214	0.0	1.0
50%	0.642857	0.0	1.0
75%	0.642857	0.0	1.0
standart_deviation	0.030738	0.0	0.0
variance	0.000945	0.0	0.0
min	0.583333	0.0	1.0
max	0.642857	0.0	1.0

Gateway

In [9]:

```
m_dfs['gateway']['metrics']
```

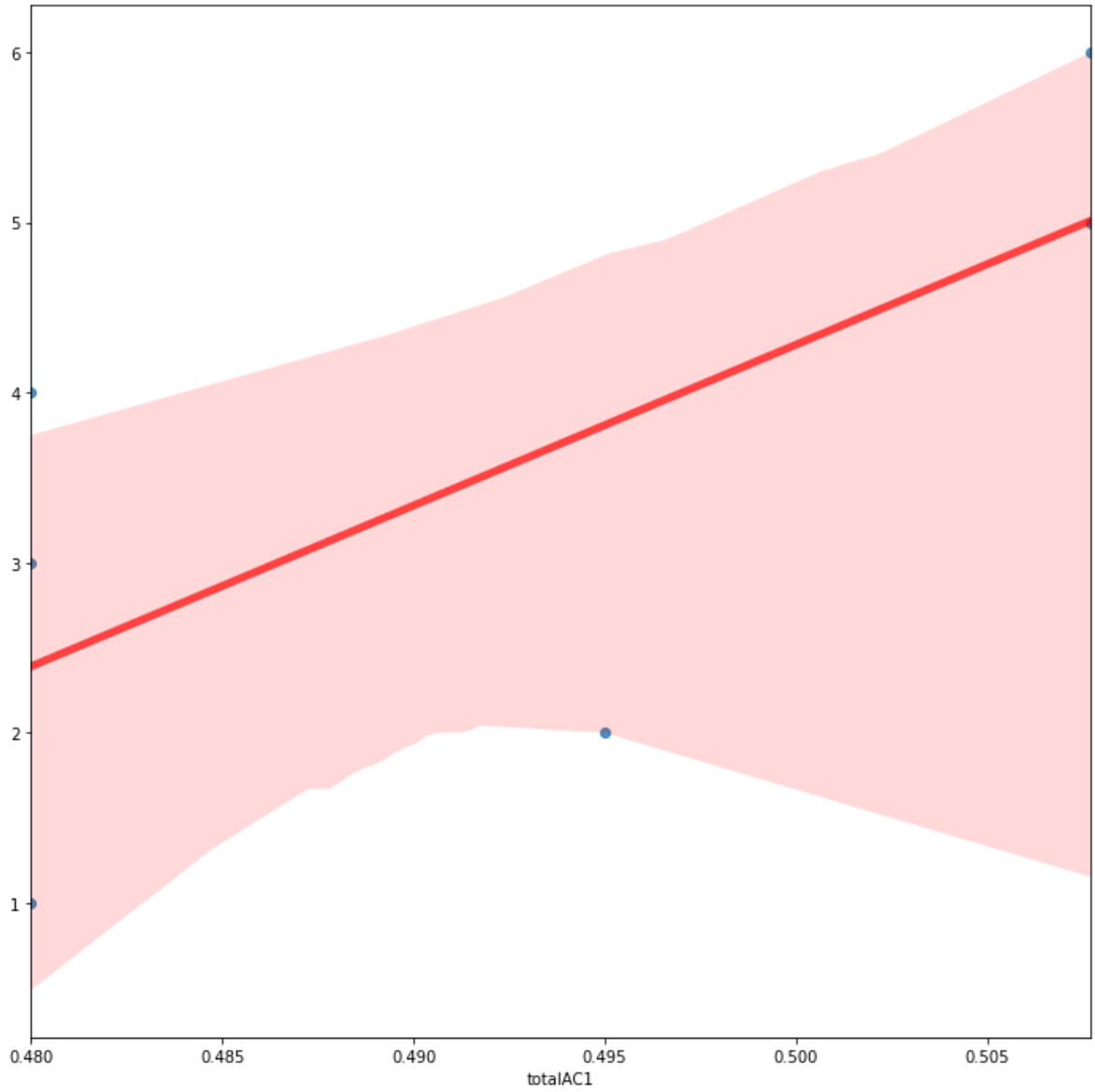
Out[9]:

	m1	m2	m3	asc1	ac1	totalAC1	ncloc
goblinone	0.454545	0.0	1.0	0.480000	0.480000	0.480000	214
nunito	0.500000	0.0	1.0	0.495000	0.495000	0.495000	270
quicksand	0.454545	0.0	1.0	0.480000	0.480000	0.480000	214
raleway	0.454545	0.0	1.0	0.480000	0.480000	0.480000	216
rubik	0.538462	0.0	1.0	0.507692	0.507692	0.507692	343
zendots	0.538462	0.0	1.0	0.507692	0.507692	0.507692	343

Regressão linear

In [10]:

```
plot_linear_regression(m_dfs['gateway']['metrics'])
```

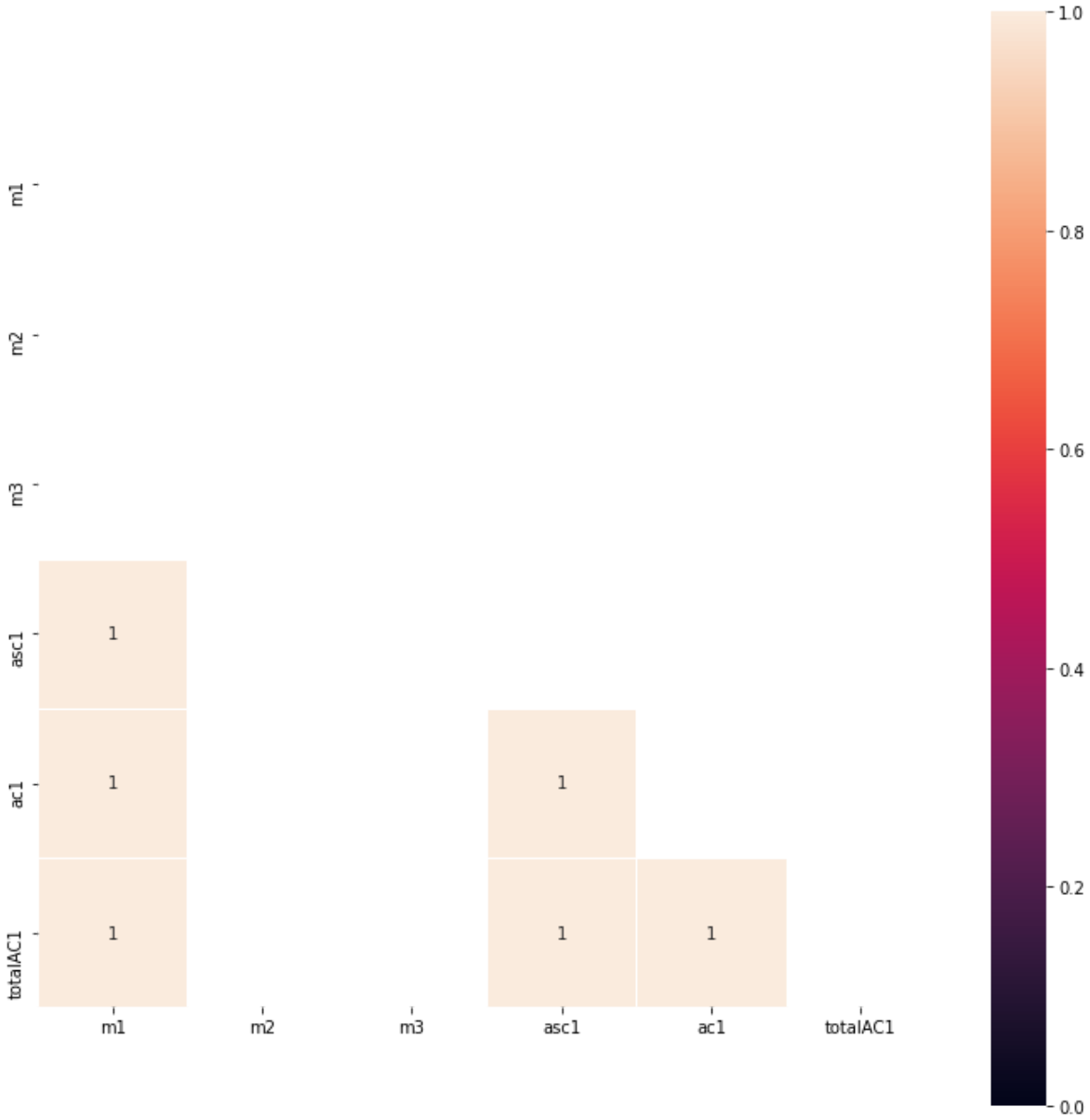


Matriz de correlação

In [11]:

```
plot_corr_matrix(m_dfs['gateway']['metrics'])
```

```
<ipython-input-2-c62a57b12cbd>:16: DeprecationWarning: `np.bool` is a
deprecated alias for the builtin `bool`. To silence this warning, use
`bool` by itself. Doing this will not modify any behavior and is safe.
If you specifically wanted the numpy scalar type, use `np.bool_` here.
Deprecated in NumPy 1.20; for more details and guidance: https://nump
y.org/devdocs/release/1.20.0-notes.html#deprecations (https://numpy.or
g/devdocs/release/1.20.0-notes.html#deprecations)
  mask = np.triu(np.ones(corr_matrix.shape)).astype(np.bool)
```

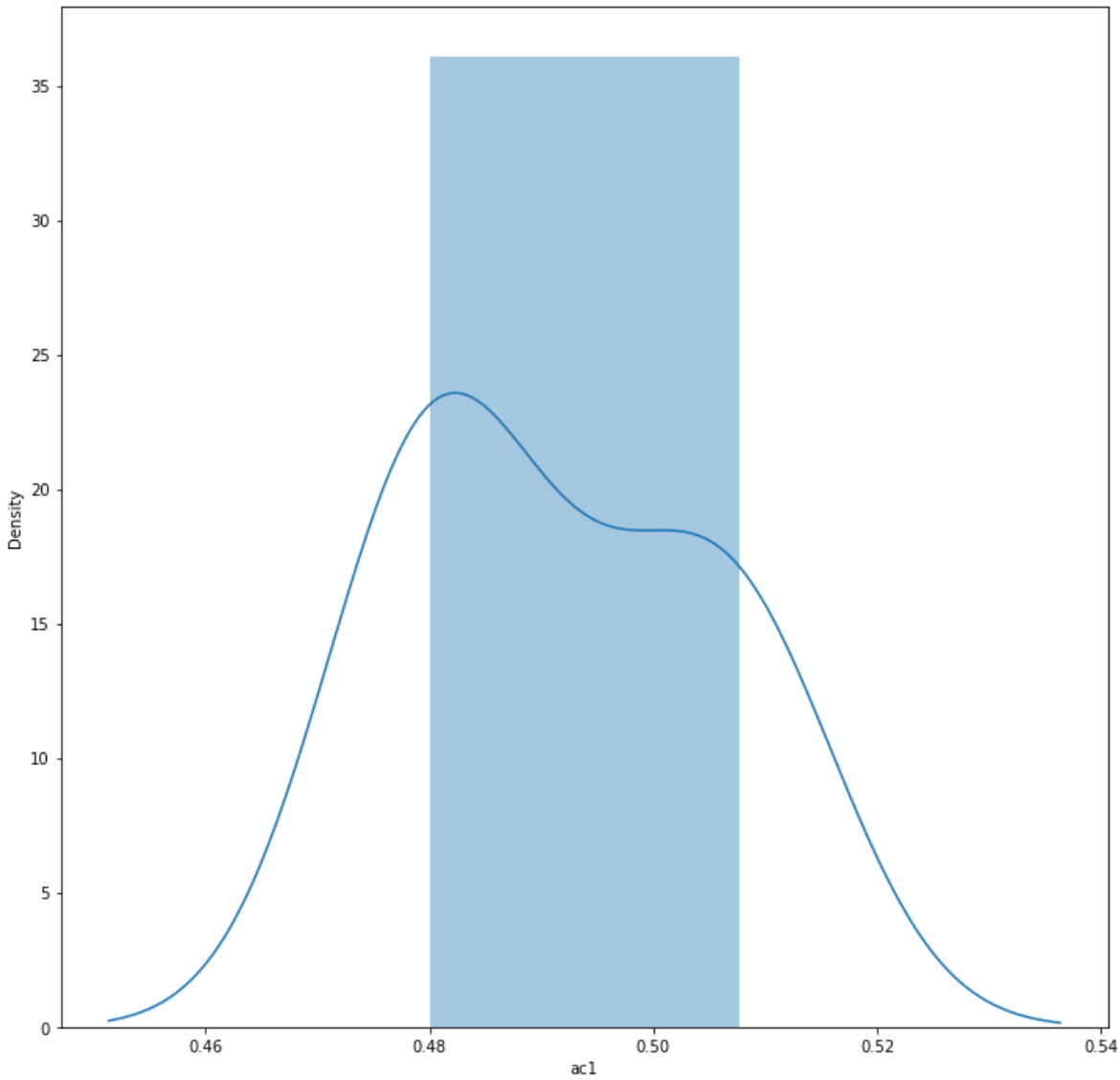


Histograma AC1

In [12]:

```
unique_plot_histogram(m_dfs['gateway']['metrics'], "ac1")
```

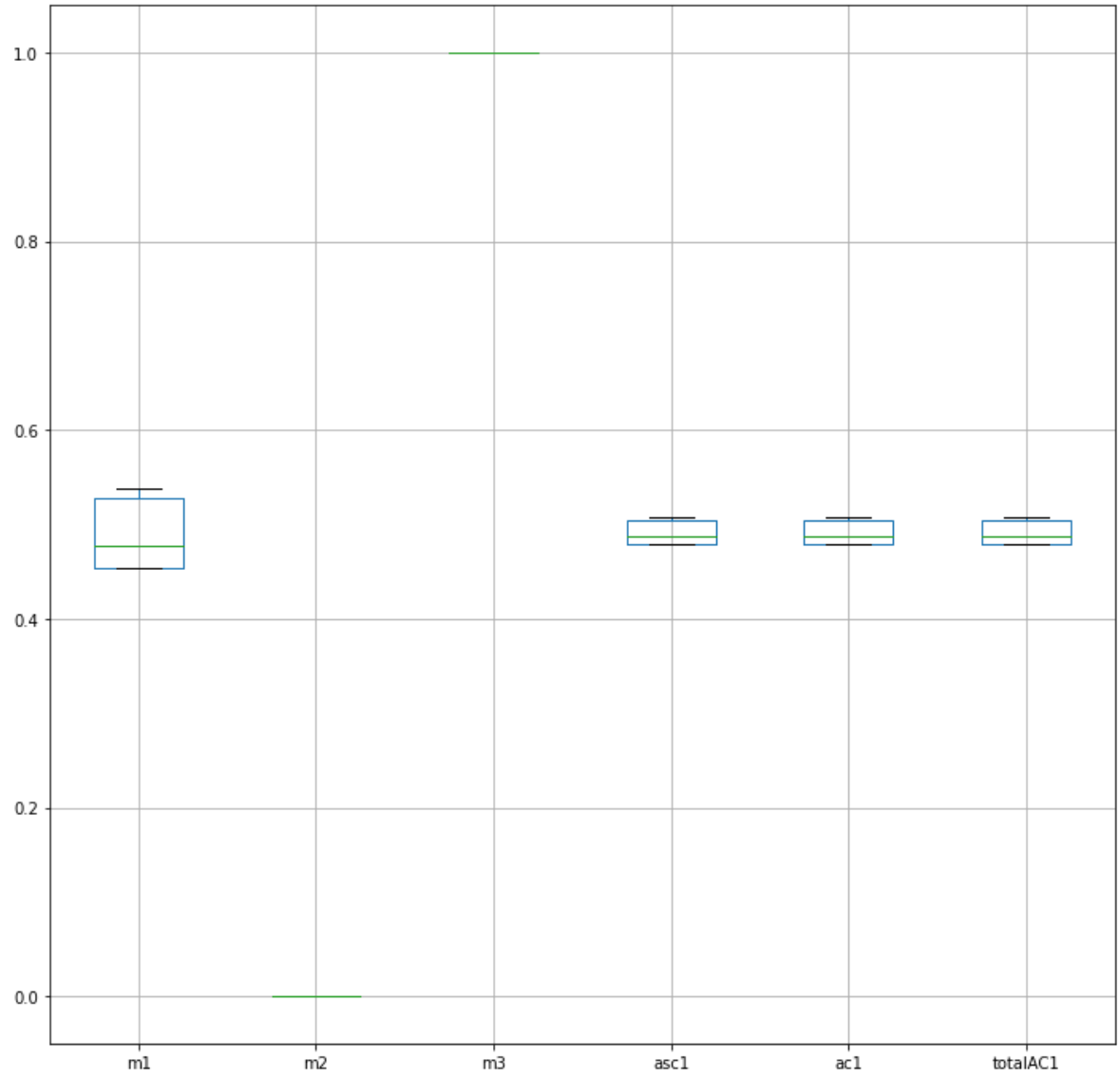
```
/home/linux/Documentos/unb/eps/code/Analytics/venv/lib/python3.8/site-
packages/seaborn/distributions.py:2557: FutureWarning: `distplot` is a
deprecated function and will be removed in a future version. Please ad
apt your code to use either `displot` (a figure-level function with si
milar flexibility) or `histplot` (an axes-level function for histogram
s).
  warnings.warn(msg, FutureWarning)
```



Box Plot

In [13]:

```
boxplot = m_dfs['gateway']['metrics'].boxplot(column=['m1', 'm2', 'm3', 'asc1', 'ac
```



Estatística descritiva

In [14]:

```
m_dfs['gateway']['descriptive']
```

Out[14]:

	m1	m2	m3
mean	0.490093	0.0	1.0
mode	0.454545	0.0	1.0
25%	0.454545	0.0	1.0
50%	0.477273	0.0	1.0
75%	0.528846	0.0	1.0
standart_deviation	0.041396	0.0	0.0
variance	0.001714	0.0	0.0
min	0.454545	0.0	1.0
max	0.538462	0.0	1.0

Request

In [15]:

```
m_dfs['request']['metrics']
```

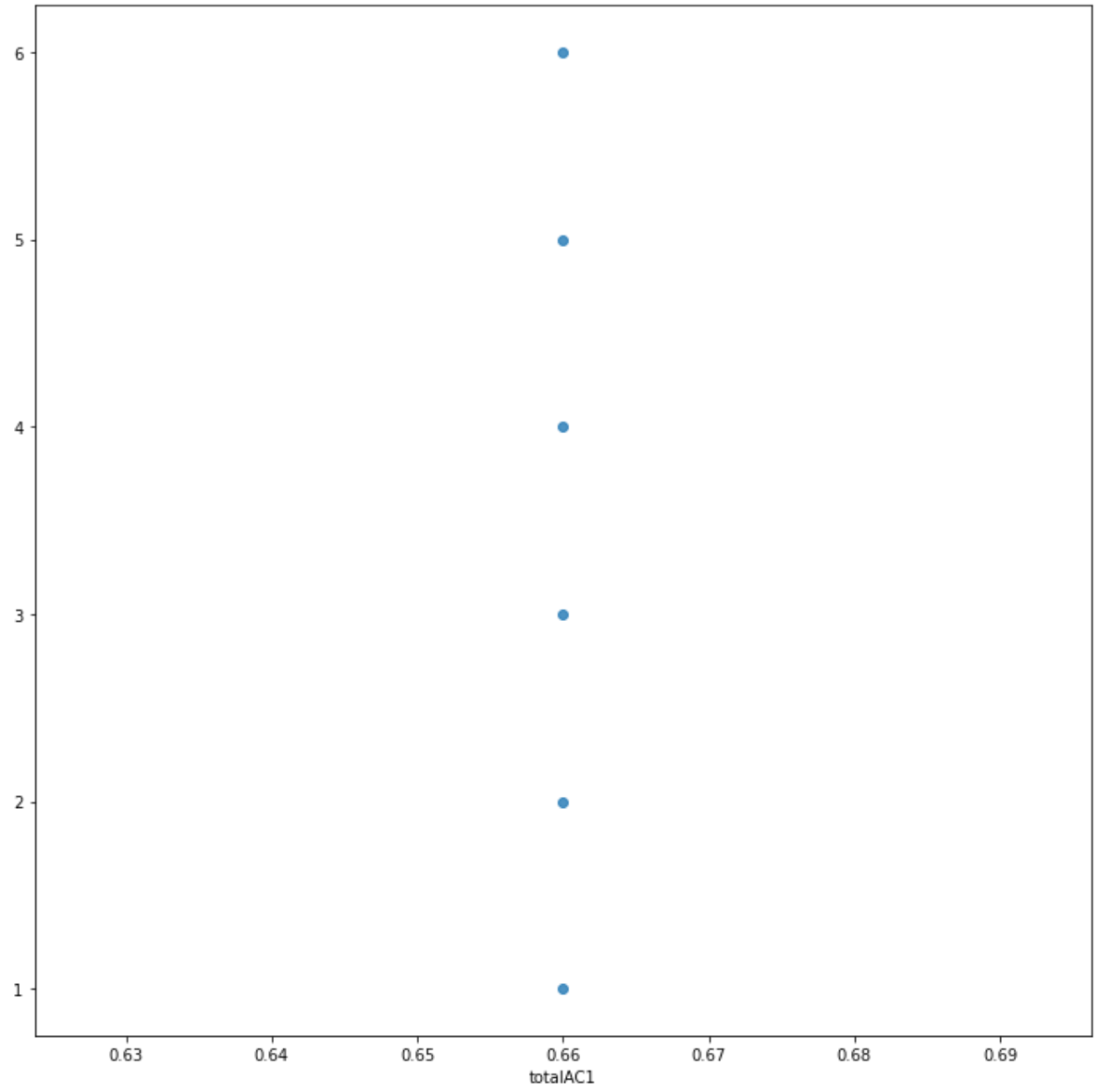
Out[15]:

	m1	m2	m3	asc1	ac1	totalAC1	ncloc
goblinone	0.769231	0.230769	1.0	0.66	0.66	0.66	481
nunito	0.800000	0.200000	1.0	0.66	0.66	0.66	816
quicksand	0.769231	0.230769	1.0	0.66	0.66	0.66	481
raleway	0.800000	0.200000	1.0	0.66	0.66	0.66	816
rubik	0.800000	0.200000	1.0	0.66	0.66	0.66	835
zendots	0.800000	0.200000	1.0	0.66	0.66	0.66	816

Regressão linear

In [16]:

```
plot_linear_regression(m_dfs['request']['metrics'])
```

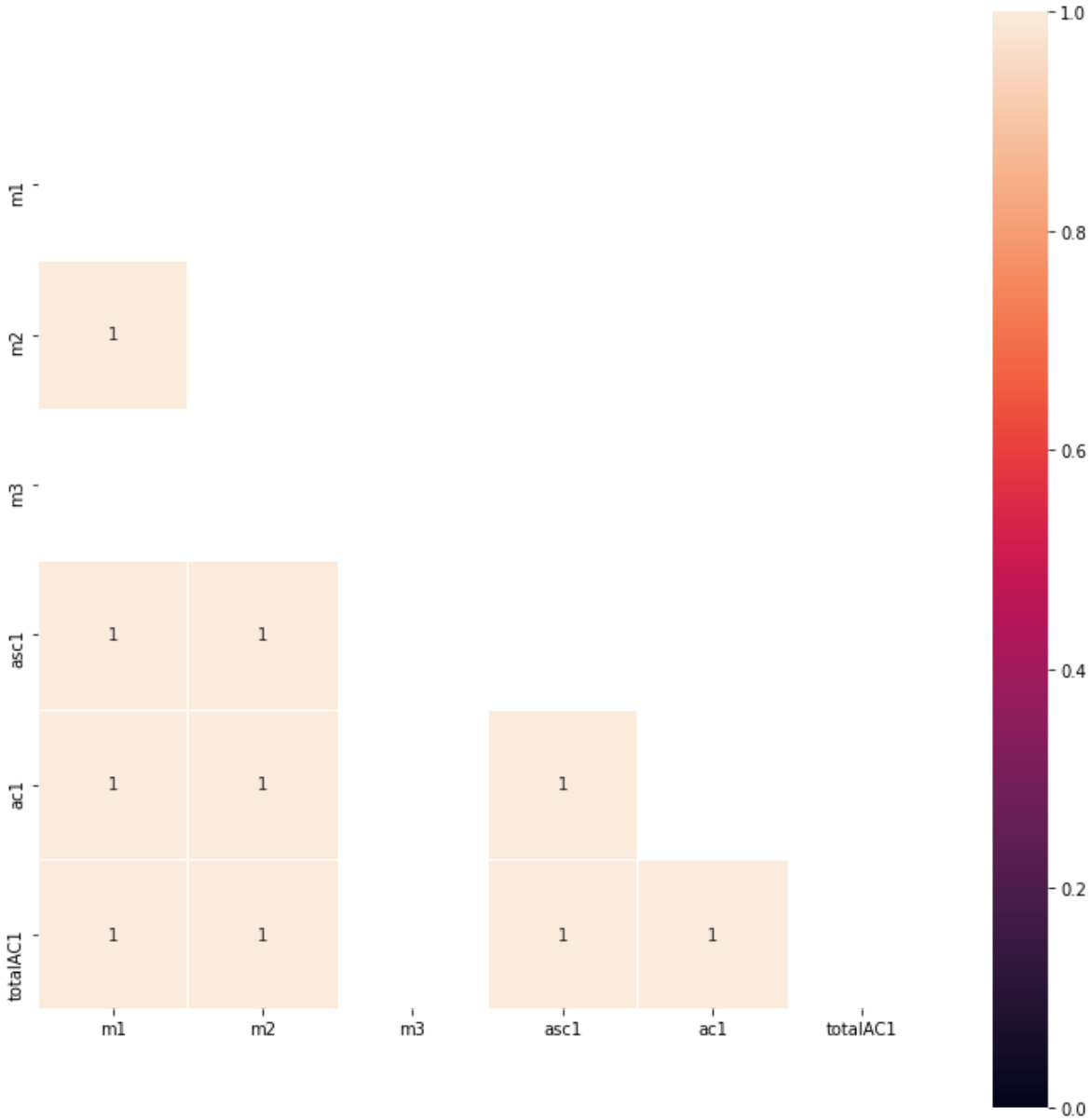


Matriz de correlação

In [17]:

```
plot_corr_matrix(m_dfs['request']['metrics'])
```

```
<ipython-input-2-c62a57b12cbd>:16: DeprecationWarning: `np.bool` is a
deprecated alias for the builtin `bool`. To silence this warning, use
`bool` by itself. Doing this will not modify any behavior and is safe.
If you specifically wanted the numpy scalar type, use `np.bool_` here.
Deprecated in NumPy 1.20; for more details and guidance: https://nump
y.org/devdocs/release/1.20.0-notes.html#deprecations (https://numpy.or
g/devdocs/release/1.20.0-notes.html#deprecations)
  mask = np.triu(np.ones(corr_matrix.shape)).astype(np.bool)
```

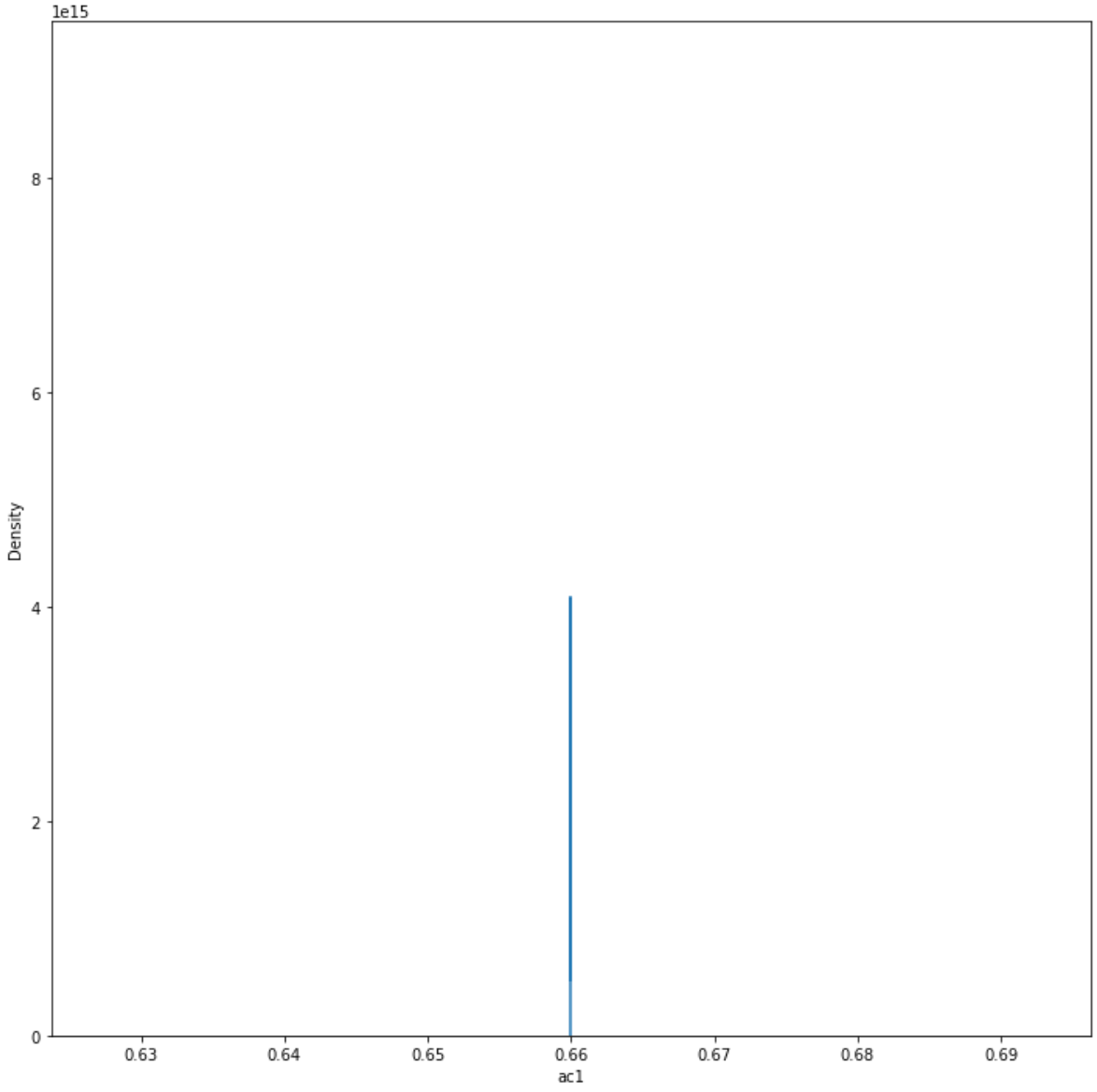


Histograma AC1

In [18]:

```
unique_plot_histogram(m_dfs['request']['metrics'], "ac1")
```

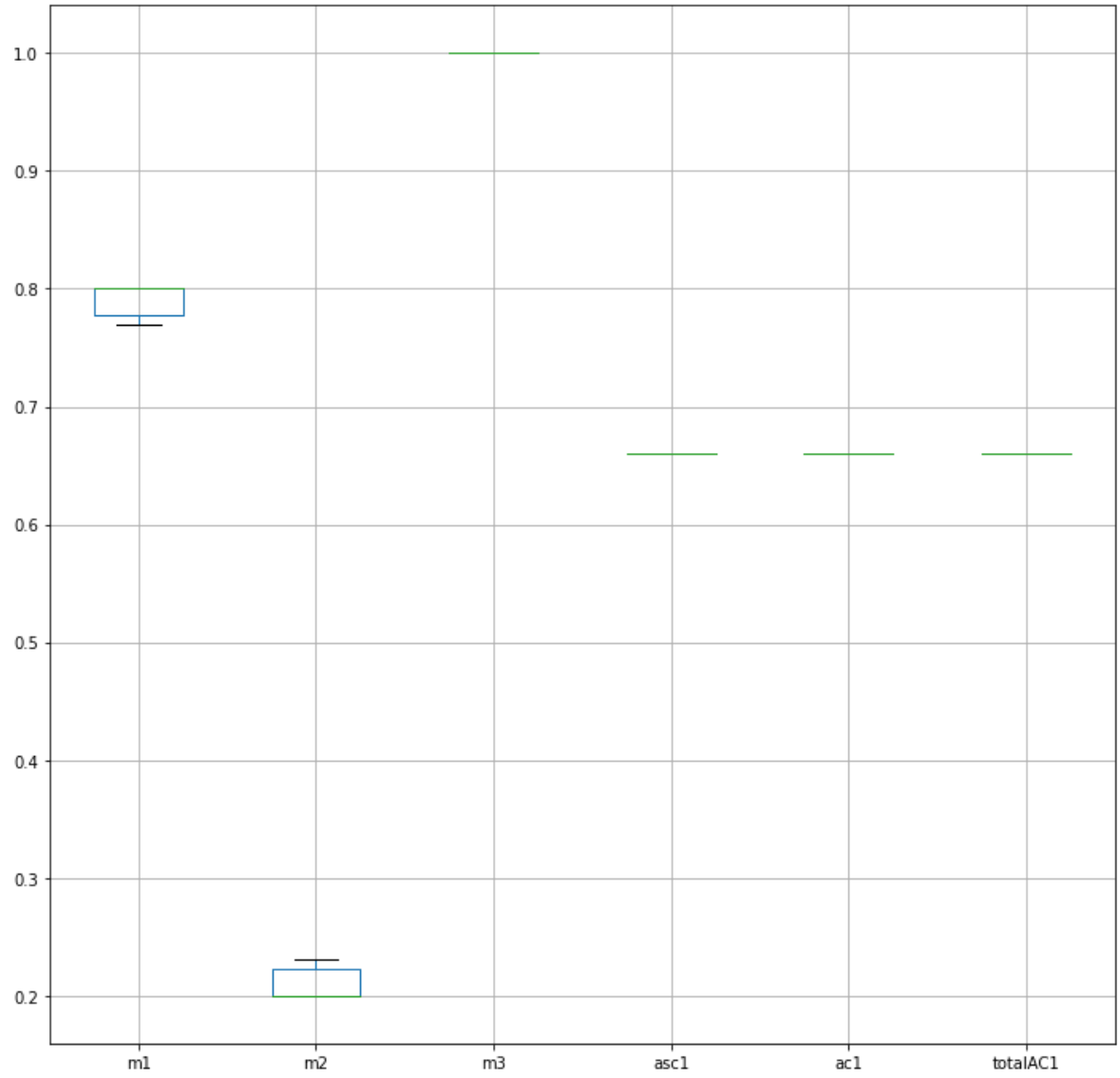
```
/home/linux/Documentos/unb/eps/code/Analytics/venv/lib/python3.8/site-
packages/seaborn/distributions.py:2557: FutureWarning: `distplot` is a
deprecated function and will be removed in a future version. Please ad
apt your code to use either `displot` (a figure-level function with si
milar flexibility) or `histplot` (an axes-level function for histogram
s).
  warnings.warn(msg, FutureWarning)
```



Box Plot

In [19]:

```
boxplot = m_dfs['request']['metrics'].boxplot(column=['m1', 'm2', 'm3', 'asc1', 'ac
```



Estatística descritiva

In [20]:

```
m_dfs['request']['descriptive']
```

Out[20]:

	m1	m2	m3
mean	0.789744	0.210256	1.0
mode	0.800000	0.200000	1.0
25%	0.776923	0.200000	1.0
50%	0.800000	0.200000	1.0
75%	0.800000	0.223077	1.0
standart_deviation	0.015889	0.015889	0.0
variance	0.000252	0.000252	0.0
min	0.769231	0.200000	1.0
max	0.800000	0.230769	1.0

Rating

In [21]:

```
m_dfs['rating']['metrics']
```

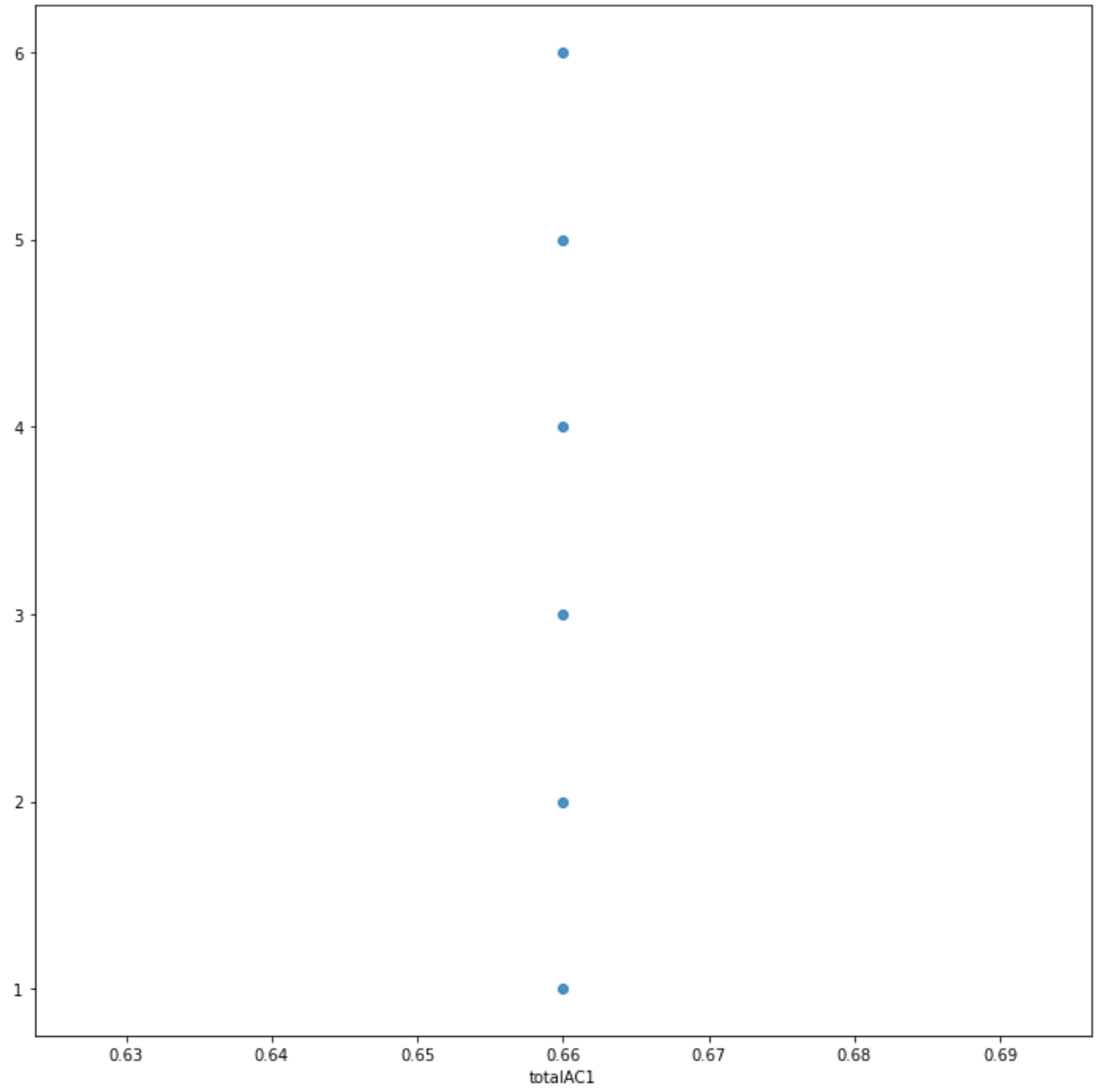
Out[21]:

	m1	m2	m3	asc1	ac1	totalAC1	ncloc
goblinone	0.750000	0.250000	1.0	0.66	0.66	0.66	315
nunito	0.727273	0.272727	1.0	0.66	0.66	0.66	238
quicksand	0.750000	0.250000	1.0	0.66	0.66	0.66	315
raleway	0.727273	0.272727	1.0	0.66	0.66	0.66	238
rubik	0.769231	0.230769	1.0	0.66	0.66	0.66	356
zendots	0.769231	0.230769	1.0	0.66	0.66	0.66	356

Regressão linear

In [22]:

```
plot_linear_regression(m_dfs['rating']['metrics'])
```

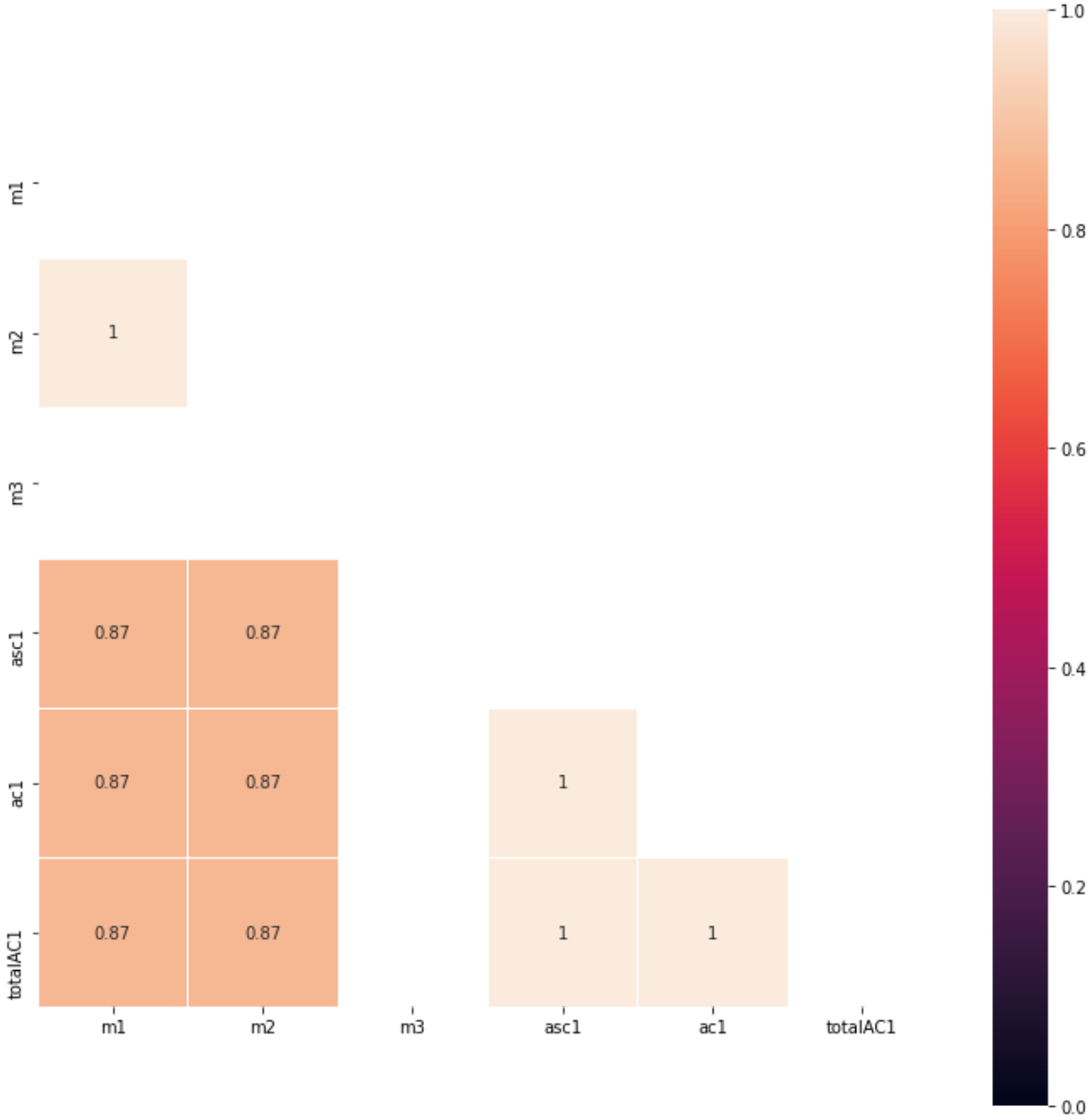


Matriz correlação

In [23]:

```
plot_corr_matrix(m_dfs['rating']['metrics'])
```

```
<ipython-input-2-c62a57b12cbd>:16: DeprecationWarning: `np.bool` is a
deprecated alias for the builtin `bool`. To silence this warning, use
`bool` by itself. Doing this will not modify any behavior and is safe.
If you specifically wanted the numpy scalar type, use `np.bool_` here.
Deprecated in NumPy 1.20; for more details and guidance: https://nump
y.org/devdocs/release/1.20.0-notes.html#deprecations (https://numpy.or
g/devdocs/release/1.20.0-notes.html#deprecations)
  mask = np.triu(np.ones(corr_matrix.shape)).astype(np.bool)
```

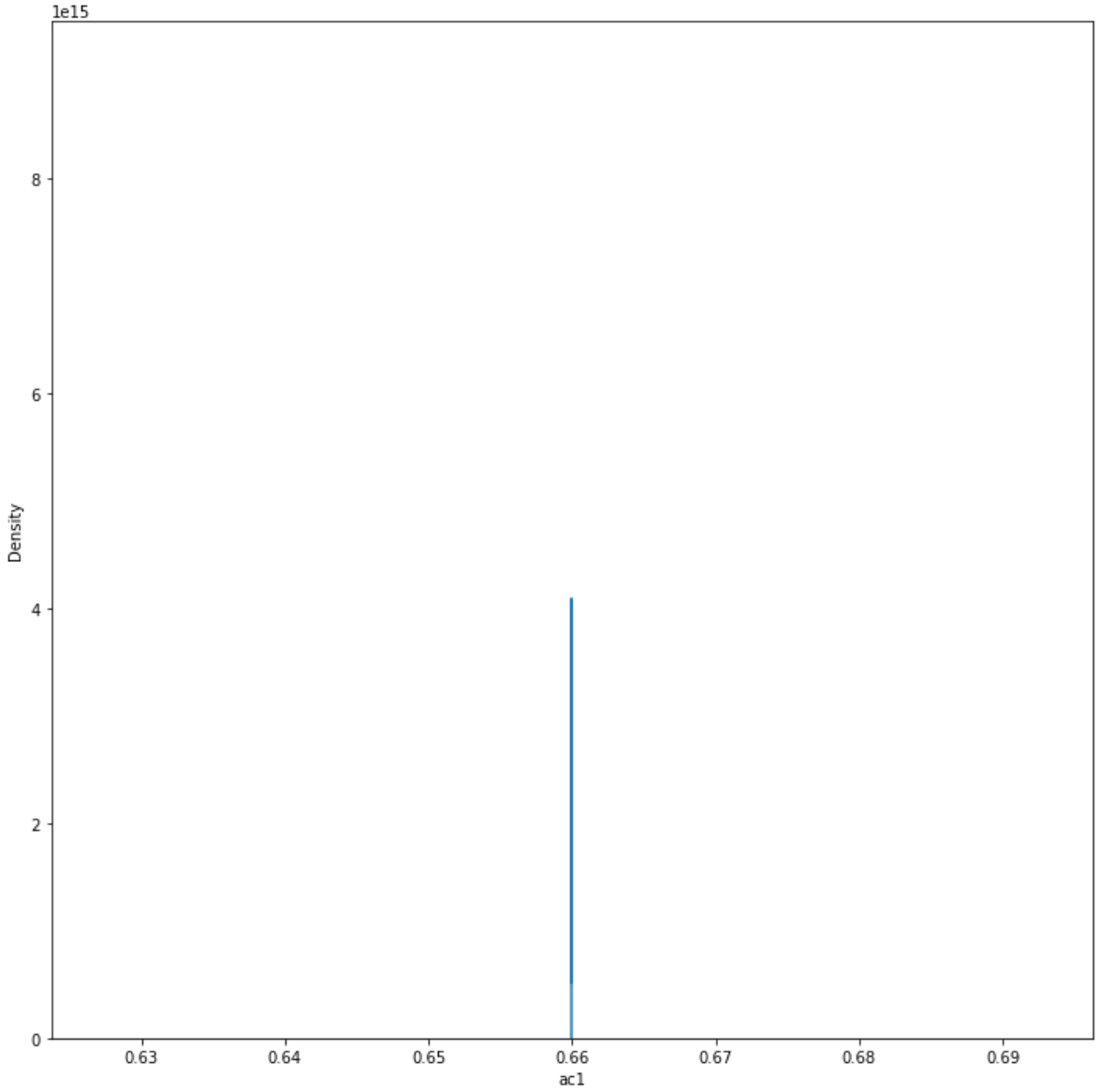


Histograma AC1

In [24]:

```
unique_plot_histogram(m_dfs['rating']['metrics'], "ac1")
```

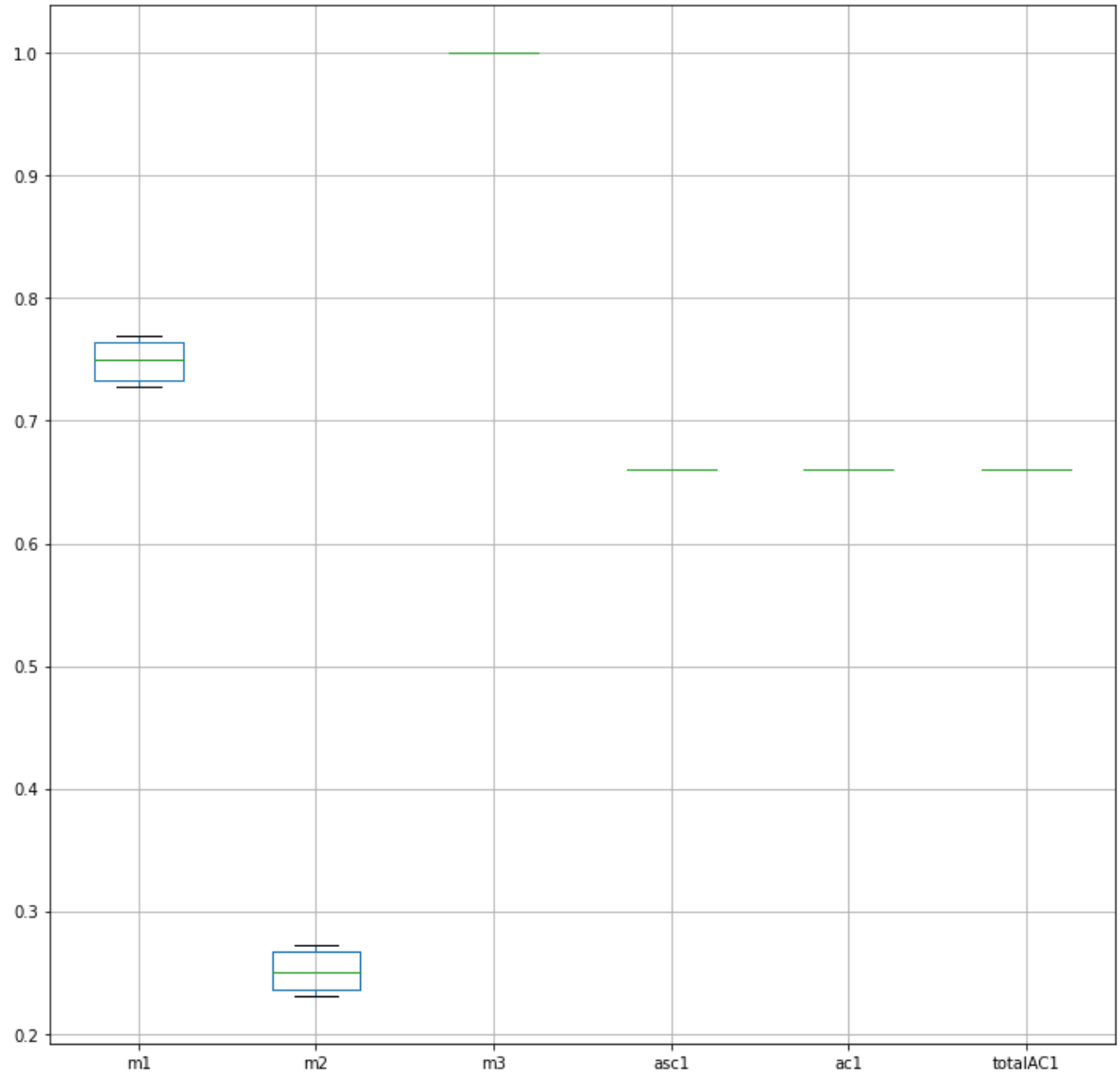
```
/home/linux/Documentos/unb/eps/code/Analytics/venv/lib/python3.8/site-
packages/seaborn/distributions.py:2557: FutureWarning: `distplot` is a
deprecated function and will be removed in a future version. Please ad
apt your code to use either `displot` (a figure-level function with si
milar flexibility) or `histplot` (an axes-level function for histogram
s).
  warnings.warn(msg, FutureWarning)
```



Box Plot

In [25]:

```
boxplot = m_dfs['rating']['metrics'].boxplot(column=['m1', 'm2', 'm3', 'asc1', 'ac1
```



Estatística descritiva

In [26]:

```
m_dfs['rating']['descriptive']
```

Out[26]:

	m1	m2	m3
mean	0.748834	0.251166	1.0
mode	0.769231	0.272727	1.0
25%	0.732955	0.235577	1.0
50%	0.750000	0.250000	1.0
75%	0.764423	0.267045	1.0
standart_deviation	0.018786	0.018786	0.0
variance	0.000353	0.000353	0.0
min	0.727273	0.230769	1.0
max	0.769231	0.272727	1.0

Métricas de produto

In [27]:

```
issues_dfs['metrics']
```

Out[27]:

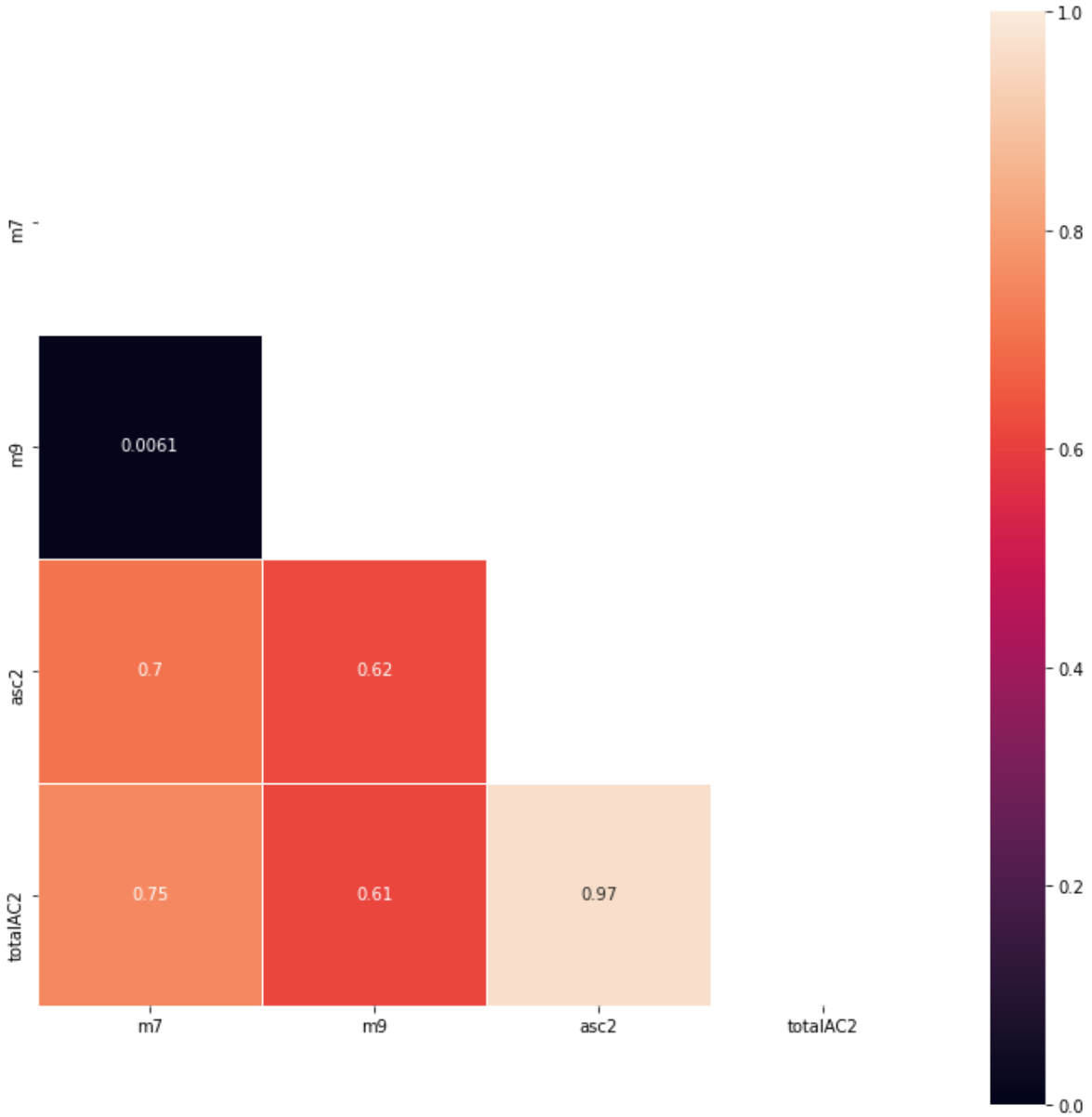
	data_inicio	data_fim	m7	m9	asc2	totalAC2	no_sprint
sprint 0	02/02/2021	08/02/2021	100.00	85.00	66.944444	92.500	0
sprint 1	09/02/2021	15/02/2021	100.00	62.50	59.027778	81.250	1
sprint 2	16/02/2021	22/02/2021	100.00	100.00	72.916667	100.000	2
sprint 3	23/02/2021	01/03/2021	100.00	110.00	77.222222	105.000	3
sprint 4	02/03/2021	08/03/2021	100.00	65.00	60.000000	82.500	4
sprint 5	09/03/2021	15/03/2021	100.00	16.67	45.371667	58.335	5
sprint 6	16/03/2021	22/03/2021	100.00	58.33	59.721389	79.165	6
sprint 7	23/03/2021	29/03/2021	100.00	11.11	45.370000	55.555	7
sprint 8	30/03/2021	05/04/2021	80.00	20.00	41.666667	50.000	8
sprint 10	14/03/2021	19/04/2021	100.00	16.67	47.223333	58.335	10
sprint 11	20/04/2021	26/04/2021	33.33	0.00	18.517500	16.665	11
sprint 12	27/04/2021	03/05/2021	33.33	0.00	16.665556	16.665	12
sprint 13	04/05/2021	10/05/2021	62.50	93.75	61.805556	78.125	13
sprint 14	11/05/2021	17/05/2021	15.38	92.31	40.383611	53.845	14
sprint 15	18/05/2021	24/05/2021	0.00	100.00	38.888889	50.000	15

Matriz de correlação

In [28]:

```
plot_corr_matrix(issues_dfs['metrics'])
```

```
<ipython-input-2-c62a57b12cbd>:16: DeprecationWarning: `np.bool` is a
deprecated alias for the builtin `bool`. To silence this warning, use
`bool` by itself. Doing this will not modify any behavior and is safe.
If you specifically wanted the numpy scalar type, use `np.bool_` here.
Deprecated in NumPy 1.20; for more details and guidance: https://nump
y.org/devdocs/release/1.20.0-notes.html#deprecations (https://numpy.or
g/devdocs/release/1.20.0-notes.html#deprecations)
  mask = np.triu(np.ones(corr_matrix.shape)).astype(np.bool)
```

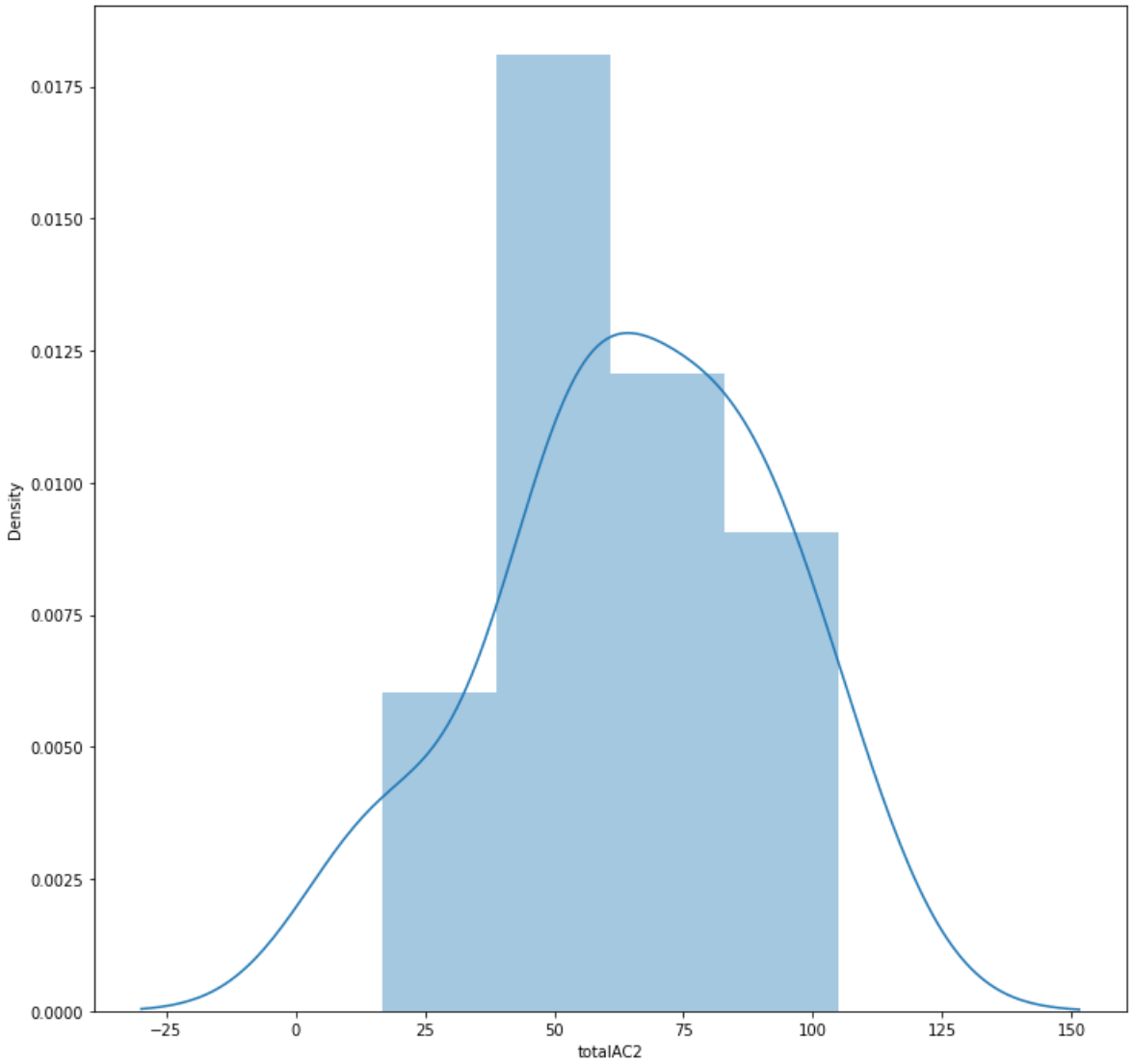


Histograma

In [29]:

```
unique_plot_histogram(issues_dfs['metrics'], "totalAC2")
```

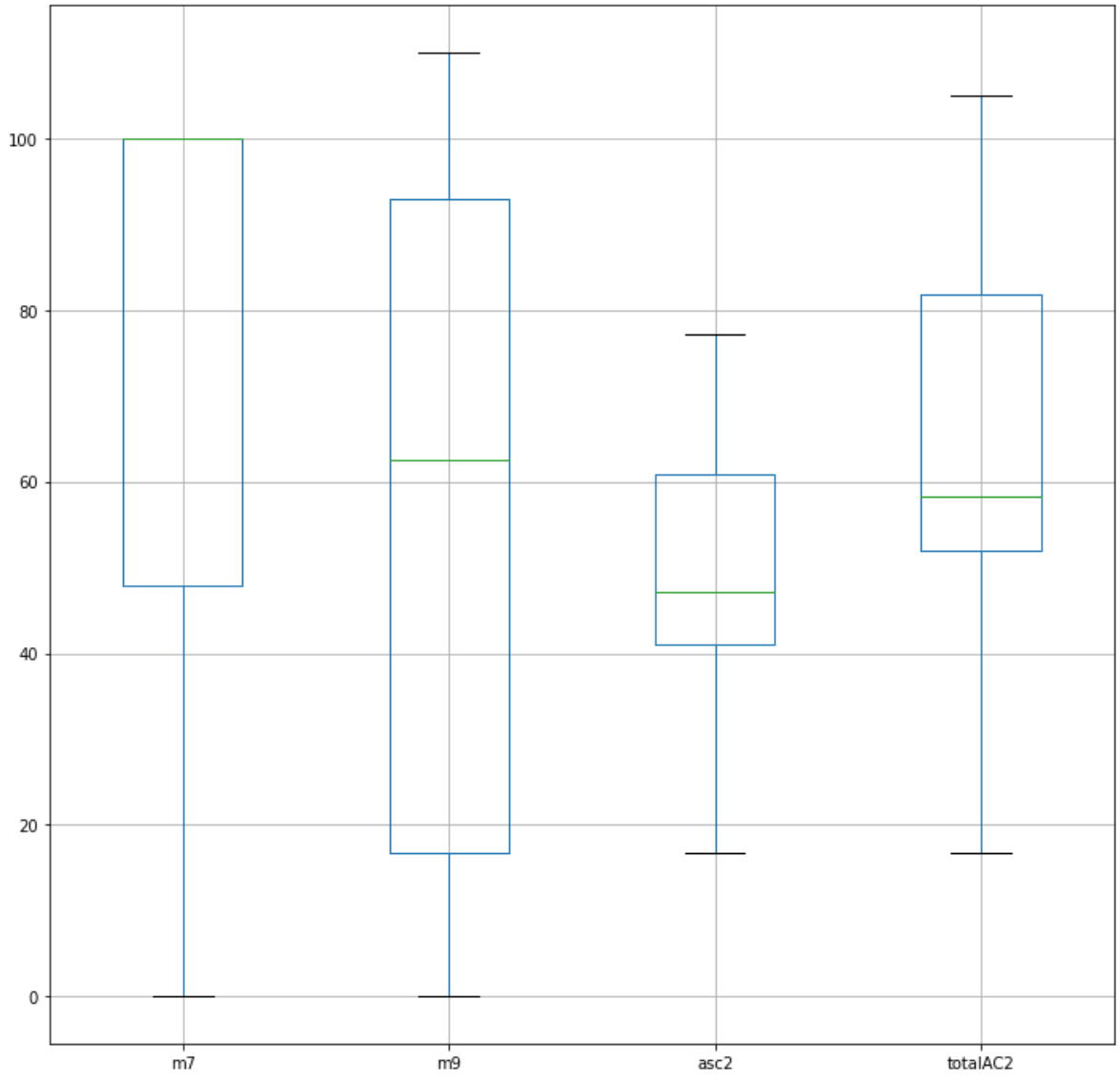
```
/home/linux/Documentos/unb/eps/code/Analytics/venv/lib/python3.8/site-
packages/seaborn/distributions.py:2557: FutureWarning: `distplot` is a
deprecated function and will be removed in a future version. Please ad
apt your code to use either `displot` (a figure-level function with si
milar flexibility) or `histplot` (an axes-level function for histogram
s).
  warnings.warn(msg, FutureWarning)
```



Boxplot

In [30]:

```
boxplot = issues_dfs['metrics'].boxplot(column=['m7', 'm9', 'asc2', 'totalAC2'])
```



Estatística descritiva

In [31]:

```
issues_dfs['descriptive']
```

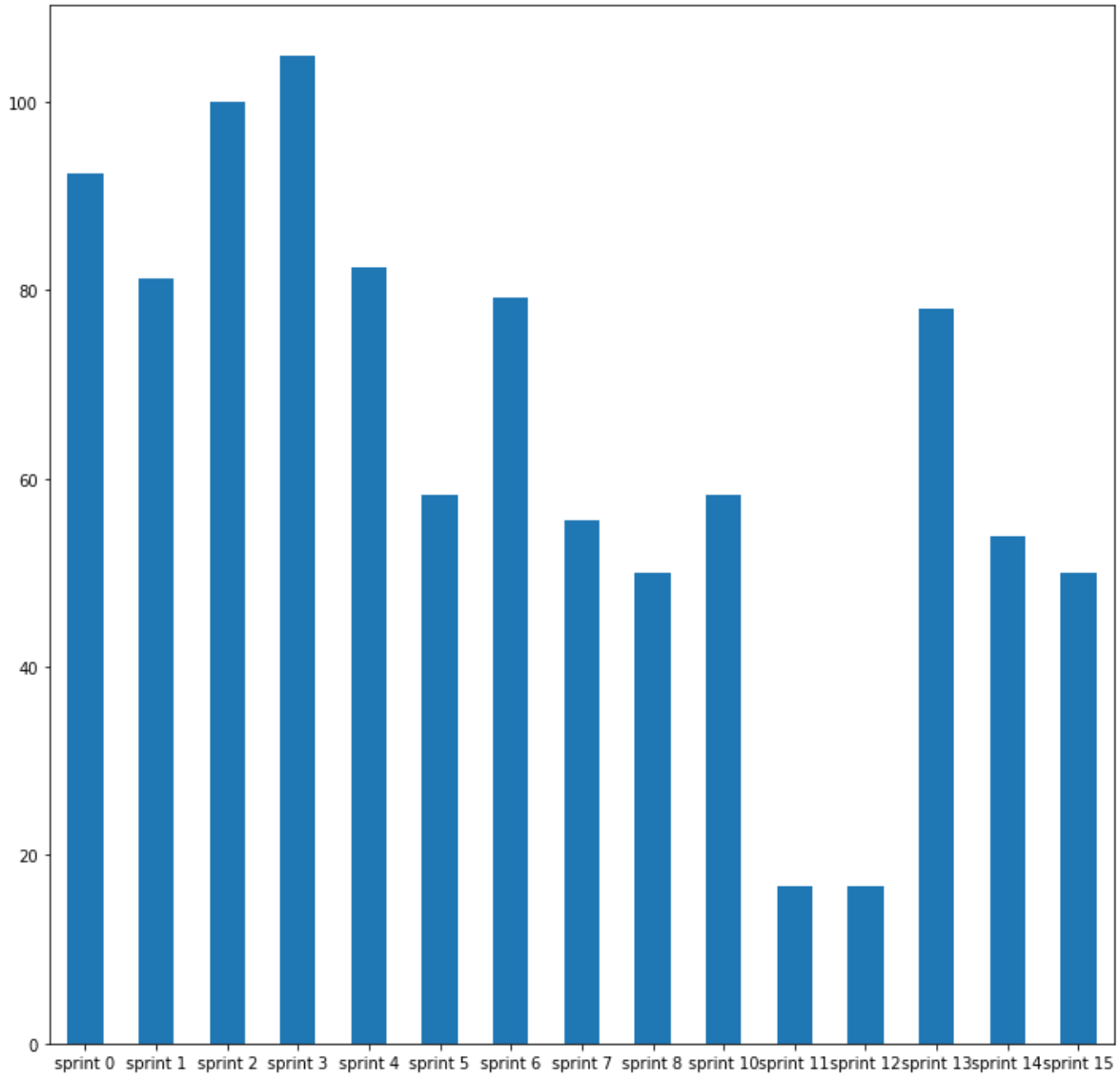
Out[31]:

	m7	m9
mean	74.969333	55.422667
mode	100.000000	100.000000
25%	47.915000	16.670000
50%	100.000000	62.500000
75%	100.000000	93.030000
standart_deviation	36.310721	40.684296
variance	1318.468435	1655.211978
min	0.000000	0.000000
max	100.000000	110.000000

Gráfico de barras totalAC2

In [32]:

```
ax = issues_dfs['metrics']['totalAC2'].plot.bar(rot=0)
```



Dataframe de métricas m8

In [33]:

```
issues_dfs['m8']
```

Out[33]:

	hotfix	docs	feature	arq	devops	analytics	us	easy	medium	hard	eps
sprint 0	0.00	85.00	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	90.00
sprint 1	0.00	62.50	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	87.50
sprint 2	0.00	100.00	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	100.00
sprint 3	0.00	70.00	0.00	10.0	30.00	0.00	0.00	0.00	0.00	0.00	90.00
sprint 4	0.00	35.00	0.00	10.0	20.00	0.00	0.00	0.00	0.00	0.00	70.00
sprint 5	0.00	0.00	0.00	0.0	16.67	0.00	66.67	16.67	33.33	0.00	33.33
sprint 6	0.00	16.67	25.00	0.0	16.67	0.00	41.67	8.33	66.67	0.00	33.33
sprint 7	33.33	11.11	0.00	0.0	0.00	0.00	55.56	44.44	55.56	0.00	11.11
sprint 8	0.00	0.00	0.00	0.0	0.00	20.00	80.00	0.00	80.00	20.00	20.00
sprint 10	0.00	16.67	0.00	0.0	0.00	0.00	83.33	33.33	66.67	0.00	16.67
sprint 11	0.00	0.00	0.00	0.0	0.00	0.00	83.33	0.00	50.00	50.00	16.67
sprint 12	0.00	0.00	0.00	0.0	0.00	0.00	0.00	0.00	100.00	0.00	0.00
sprint 13	0.00	6.25	0.00	0.0	12.50	75.00	0.00	0.00	81.25	18.75	93.75
sprint 14	0.00	23.08	53.85	0.0	0.00	15.38	0.00	15.38	15.38	0.00	7.69
sprint 15	0.00	100.00	0.00	0.0	0.00	0.00	0.00	0.00	0.00	0.00	100.00