Exploratory Data Analysis

In [1]:

```
!wget https://technionmail-my.sharepoint.com/:u:/g/personal/ploznik_campus_technion_a
c_il/EQc79uRBeO1FqtH6ILFDx78BuuWui3DuRaBtnzTB6Aqxqg?download=1 -O data.tar
!tar -xf data.tar
```

```
--2022-05-12 08:10:50--  https://technionmail-my.sharepoint.com/:u:/g/pers
onal/ploznik_campus_technion_ac_il/EQc79uRBeO1FqtH6ILFDx78BuuWui3DuRaBtnzT
B6Aqxqg?download=1
Resolving technionmail-my.sharepoint.com (technionmail-my.sharepoint.co
m)... 13.107.136.9, 13.107.138.9
Connecting to technionmail-my.sharepoint.com (technionmail-my.sharepoint.c
om)|13.107.136.9|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: /personal/ploznik_campus_technion_ac_il/Documents/HW1_data/data.
tar?ga=1 [following]
--2022-05-12 08:10:51--  https://technionmail-my.sharepoint.com/personal/p
loznik_campus_technion_ac_il/Documents/HW1_data/data.tar?ga=1
Reusing existing connection to technionmail-my.sharepoint.com:443.
HTTP request sent, awaiting response... 200 OK
Length: 212420608 (203M) [application/x-tar]
Saving to: 'data.tar'

data.tar              100%[===================>] 202.58M  56.4MB/s    in 3.6
s

2022-05-12 08:10:55 (56.4 MB/s) - 'data.tar' saved [212420608/212420608]
```

In [2]:

```python
import os
import pandas as pd
files = os.listdir('data/train')
full_data = pd.concat([pd.read_csv(f'data/train/{file_p}',sep='|') for file_p in (files
)])
```

a. Which features are available in the dataset

In [3]:

```python
full_data.columns
```

Out[3]:

```
Index(['HR', 'O2Sat', 'Temp', 'SBP', 'MAP', 'DBP', 'Resp', 'EtCO2',
       'BaseExcess', 'HCO3', 'FiO2', 'pH', 'PaCO2', 'SaO2', 'AST', 'BUN',
       'Alkalinephos', 'Calcium', 'Chloride', 'Creatinine', 'Bilirubin_dir
ect',
       'Glucose', 'Lactate', 'Magnesium', 'Phosphate', 'Potassium',
       'Bilirubin_total', 'TroponinI', 'Hct', 'Hgb', 'PTT', 'WBC',
       'Fibrinogen', 'Platelets', 'Age', 'Gender', 'Unit1', 'Unit2',
       'HospAdmTime', 'ICULOS', 'SepsisLabel'],
      dtype='object')
```

Basic data description:

- Distribution values for each feature.

In [4]:

```python
description = full_data.describe(include='all')
# count the percent of null values (missing data) in each parameter:
description.loc['not null(%)'] = round(description.loc['count'] / (full_data.shape[0])*
100,2)
description = round(description,2)
description = description.T
description
```

Out[4]:

	count	mean	std	min	25%	50%	75%	max	not null(%)
HR	690913.0	84.66	17.40	20.00	72.00	84.00	96.00	280.00	90.09
O2Sat	666682.0	97.19	2.95	20.00	96.00	98.00	99.50	100.00	86.93
Temp	260148.0	36.98	0.78	20.90	36.50	37.00	37.50	50.00	33.92
SBP	654052.0	123.52	23.16	20.00	106.50	121.00	138.00	299.00	85.29
MAP	671078.0	82.30	16.29	20.00	71.00	80.00	92.00	300.00	87.51
DBP	527697.0	63.79	13.90	20.00	54.00	62.00	72.00	300.00	68.81
Resp	648543.0	18.75	5.11	1.00	15.00	18.00	21.50	100.00	84.57
EtCO2	27441.0	33.03	7.99	10.00	28.00	33.00	38.00	100.00	3.58
BaseExcess	42076.0	-0.75	4.31	-32.00	-3.00	0.00	1.00	49.50	5.49
HCO3	31809.0	24.08	4.39	0.00	22.00	24.00	26.00	55.00	4.15
FiO2	63797.0	0.59	15.84	-50.00	0.40	0.50	0.60	4000.00	8.32
pH	53754.0	7.38	0.08	6.62	7.34	7.38	7.43	7.78	7.01
PaCO2	43005.0	41.16	9.39	10.00	36.00	40.00	45.00	100.00	5.61
SaO2	26842.0	92.52	11.02	23.00	94.00	97.00	98.00	100.00	3.50
AST	12242.0	264.54	879.48	5.00	22.00	40.00	110.00	9961.00	1.60
BUN	52537.0	23.56	19.74	1.00	12.00	17.00	28.00	268.00	6.85
Alkalinephos	12113.0	101.38	111.62	7.00	53.00	73.00	107.00	2528.00	1.58
Calcium	44917.0	7.54	2.44	1.00	7.60	8.25	8.70	27.90	5.86
Chloride	34581.0	105.89	5.81	74.00	102.50	106.00	109.00	145.00	4.51
Creatinine	46603.0	1.49	1.77	0.10	0.70	0.92	1.40	41.90	6.08
Bilirubin_direct	1452.0	1.59	3.20	0.01	0.20	0.42	1.60	35.00	0.19
Glucose	131713.0	137.07	51.25	10.00	106.00	127.00	153.50	952.00	17.18
Lactate	20544.0	2.69	2.57	0.20	1.28	1.88	3.02	31.00	2.68
Magnesium	48227.0	2.05	0.40	0.60	1.80	2.00	2.20	9.80	6.29
Phosphate	30459.0	3.54	1.42	0.30	2.60	3.30	4.10	17.60	3.97
Potassium	71627.0	4.14	0.65	1.30	3.70	4.10	4.40	27.50	9.34
Bilirubin_total	11282.0	1.99	3.94	0.10	0.50	0.80	1.60	49.60	1.47
TroponinI	7426.0	8.34	24.99	0.01	0.04	0.30	4.02	440.00	0.97
Hct	68128.0	30.81	5.50	8.80	27.00	30.30	34.10	71.70	8.88
Hgb	56731.0	10.43	1.97	2.60	9.00	10.30	11.70	25.00	7.40
PTT	22296.0	41.30	26.49	17.10	27.80	32.40	42.60	250.00	2.91
WBC	49059.0	11.45	7.49	0.10	7.60	10.30	13.75	440.00	6.40
Fibrinogen	4924.0	285.70	152.92	35.00	181.00	248.00	349.00	1760.00	0.64
Platelets	45450.0	196.72	104.07	2.00	127.00	182.00	244.00	2322.00	5.93
Age	766884.0	62.04	16.41	15.00	51.64	64.00	74.00	100.00	100.00
Gender	766884.0	0.56	0.50	0.00	0.00	1.00	1.00	1.00	100.00

	count	mean	std	min	25%	50%	75%	max	not null(%)
Unit1	467722.0	0.49	0.50	0.00	0.00	0.00	1.00	1.00	60.99
Unit2	467722.0	0.51	0.50	0.00	0.00	1.00	1.00	1.00	60.99
HospAdmTime	766884.0	-55.05	168.75	-5366.86	-45.62	-5.94	-0.04	17.34	100.00
ICULOS	766884.0	26.57	28.00	1.00	11.00	21.00	34.00	336.00	100.00
SepsisLabel	766884.0	0.02	0.13	0.00	0.00	0.00	0.00	1.00	100.00

- Missing Data: checking the percent of not null values for each feature

In [5]:

```
gr = description.plot.bar(y='not null(%)',figsize=(12, 4), grid=True, title='Percent of
not null values of each feature')
```
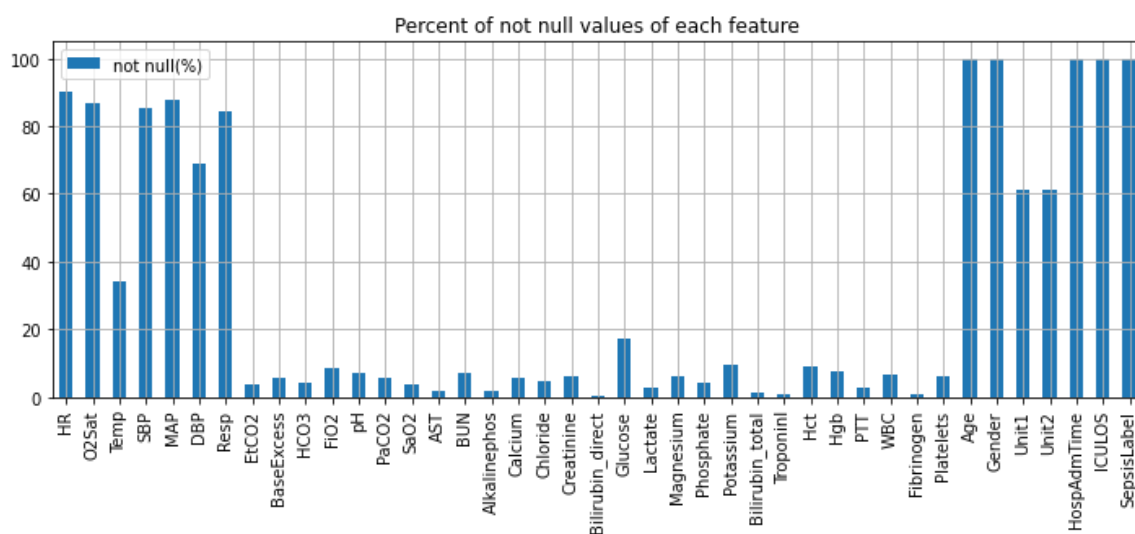

Feature distribution:

Histograms for each feature.

In [6]:

```python
# function for printing two histograms- of "have sepsis" and "no sepsis"- for one param
eter
# using those histograms for checking if the distribution is normal, so we can use Ttes
t

import matplotlib.pyplot as plt
def printHist(colName, tmpDF):
  tmpDF[tmpDF['SepsisLabel']==1][colName].hist(color='r',alpha=0.6)
  tmpDF[tmpDF['SepsisLabel']==0][colName].hist(color='g',alpha=0.4)
  plt.title(f'Histograms of {colName} for have sepsis and no sepsis')
  plt.xlabel(f'{colName} value')
  plt.ylabel("amount of people")
  plt.legend(['sepsis','no sepsis'])
  plt.show()
```
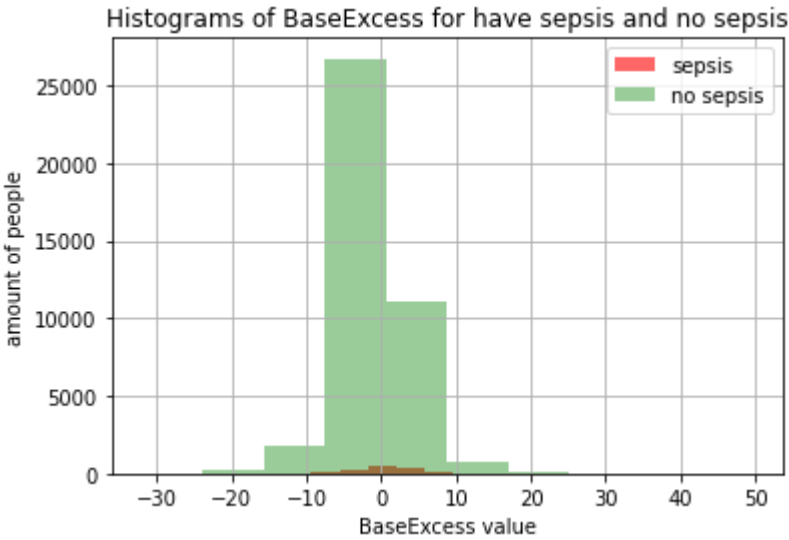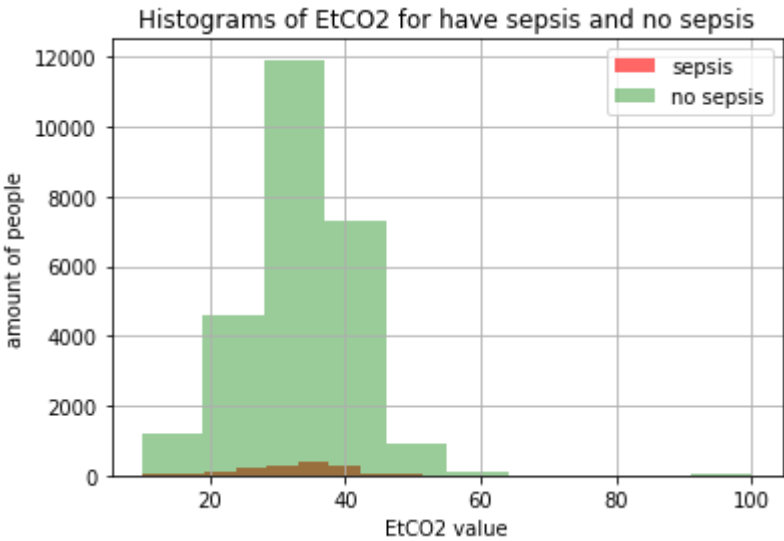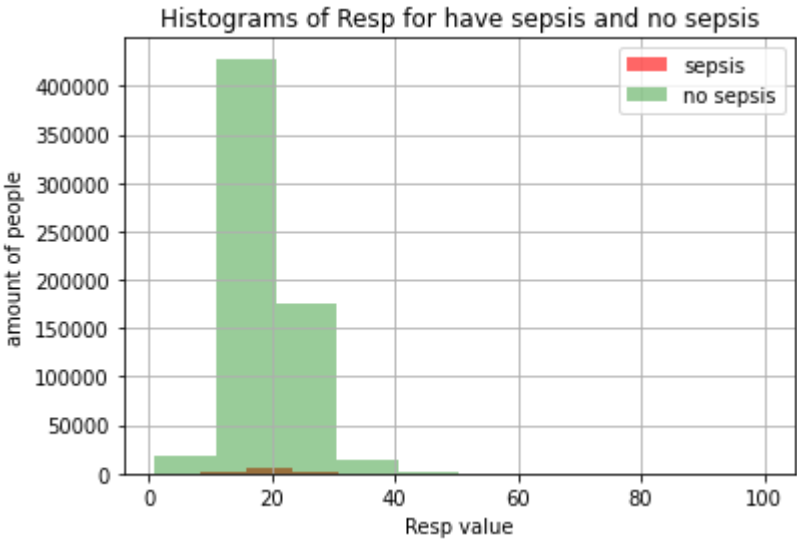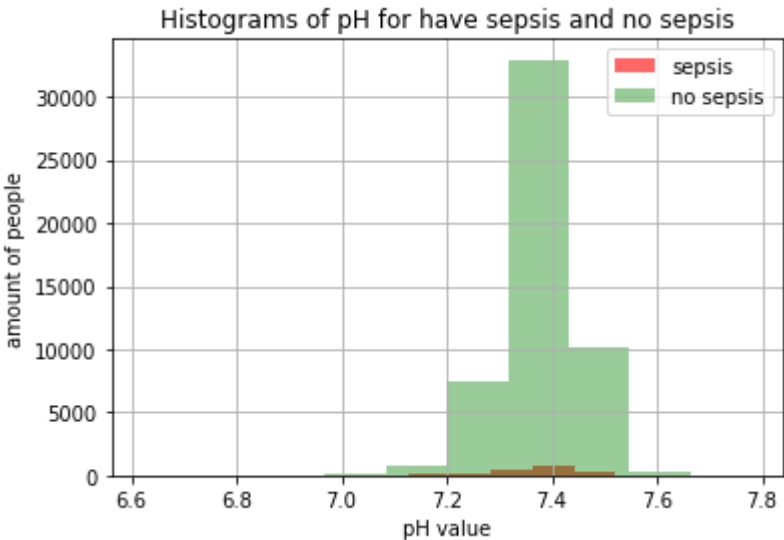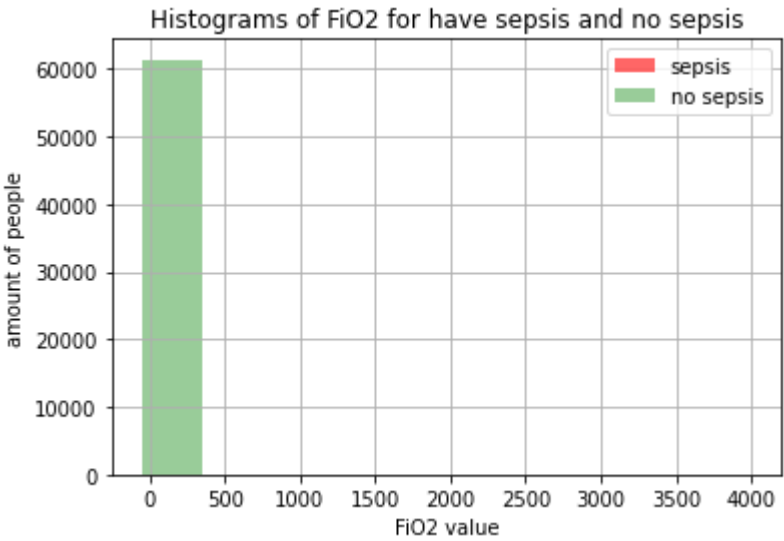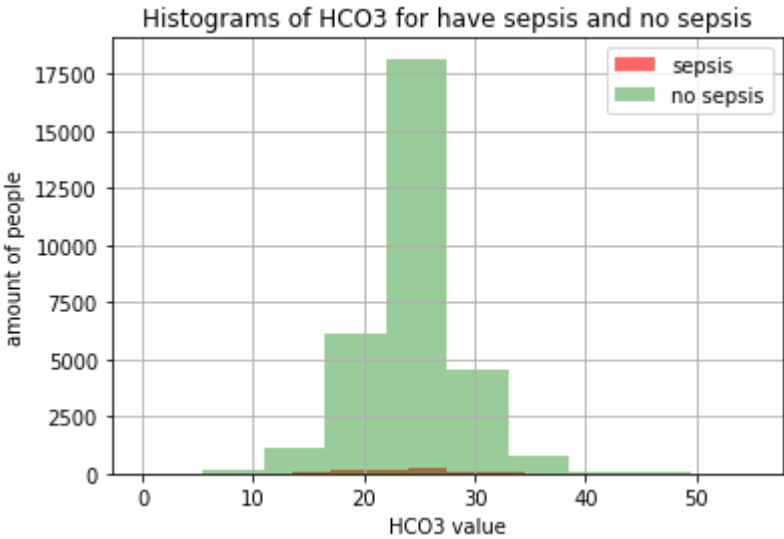
In [7]:

```python
feature_list = list(full_data.columns.values)
for feat in feature_list:
  printHist(feat, full_data)
```

Histograms of HR for have sepsis and no sepsis
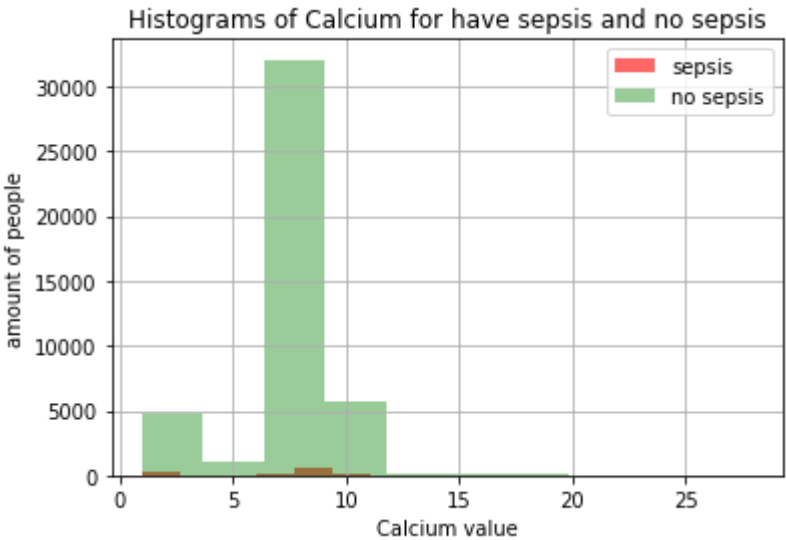

Histograms of O2Sat for have sepsis and no sepsis

Histograms of Temp for have sepsis and no sepsis

Histograms of SBP for have sepsis and no sepsis

Histograms of MAP for have sepsis and no sepsis

Histograms of DBP for have sepsis and no sepsis

Histograms of Resp for have sepsis and no sepsis

Histograms of EtCO2 for have sepsis and no sepsis

Histograms of BaseExcess for have sepsis and no sepsis

Histograms of HCO3 for have sepsis and no sepsis

- sepsis
- no sepsis

Histograms of FiO2 for have sepsis and no sepsis

- sepsis
- no sepsis

Histograms of pH for have sepsis and no sepsis

- sepsis
- no sepsis

Histograms of PaCO2 for have sepsis and no sepsis

Histograms of SaO2 for have sepsis and no sepsis

Histograms of AST for have sepsis and no sepsis

Histograms of BUN for have sepsis and no sepsis

Histograms of Alkalinephos for have sepsis and no sepsis

Histograms of Calcium for have sepsis and no sepsis

Histograms of Chloride for have sepsis and no sepsis

Histograms of Creatinine for have sepsis and no sepsis

Histograms of Bilirubin_direct for have sepsis and no sepsis

Histograms of Glucose for have sepsis and no sepsis

Histograms of Lactate for have sepsis and no sepsis

Histograms of Magnesium for have sepsis and no sepsis

Histograms of Phosphate for have sepsis and no sepsis

Histograms of Potassium for have sepsis and no sepsis

Histograms of Bilirubin_total for have sepsis and no sepsis

Histograms of TroponinI for have sepsis and no sepsis

Histograms of Hct for have sepsis and no sepsis

Histograms of Hgb for have sepsis and no sepsis

Histograms of PTT for have sepsis and no sepsis

Histograms of WBC for have sepsis and no sepsis

Histograms of Fibrinogen for have sepsis and no sepsis

Histograms of Platelets for have sepsis and no sepsis

Histograms of Age for have sepsis and no sepsis

Histograms of Gender for have sepsis and no sepsis

Histograms of Unit1 for have sepsis and no sepsis

Histograms of Unit2 for have sepsis and no sepsis

Histograms of HospAdmTime for have sepsis and no sepsis

Histograms of ICULOS for have sepsis and no sepsis

Histograms of SepsisLabel for have sepsis and no sepsis

Specific Data Analysis

To get more helpfull results, we decided to make more specific data exploration.

In [8]:

```python
# for each patient return a "window" of 10 rows and the label.
# for patiet without sepsis the "window" is the last 10 rows, and the label=0.
# for patiet with sepsis the "window" is the the first row with SepsisLabel==1
# and the 9 rows before it, and the label=1.

def take_rows(patient_df: pd.DataFrame, num_rows=25):
  if patient_df.SepsisLabel.sum()>0:
    tmp = patient_df.SepsisLabel.argmax()+1
    label = 1
  else:
    tmp = patient_df.shape[0]
    label = 0
  return patient_df.iloc[tmp-num_rows:tmp], label
```

In [9]:

```python
# create dataframes for each feature/metric group, and in each of them every patient wi
ll be represented as one row
# patient row - is a result of an aggrigation of his "window" by metric(mean/std/max/mi
n/last-mean-difference)

dfMean = pd.DataFrame(columns = full_data.columns)
dfStd = pd.DataFrame(columns = full_data.columns)
dfMax = pd.DataFrame(columns = full_data.columns)
dfMin = pd.DataFrame(columns = full_data.columns)
dfLastMeanDif = pd.DataFrame(columns = full_data.columns)


for file_p in files:
  dftry = pd.read_csv(f'data/train/{file_p}',sep='|')
  window_df, label = take_rows(dftry)

  # mean
  resMean = window_df.mean()
  resMean.SepsisLabel = label
  dfMean = dfMean.append(resMean, ignore_index = True)

  # std
  resStd = window_df.std()
  resStd.SepsisLabel = label
  dfStd = dfStd.append(resStd, ignore_index = True)

  # max
  resMax = window_df.max()
  resMax.SepsisLabel = label
  dfMax = dfMax.append(resMax, ignore_index = True)

  # min
  resMin = window_df.max()
  resMin.SepsisLabel = label
  dfMin = dfMin.append(resMin, ignore_index = True)

  # difference between the last hour values and the mean values of 10hours
  resLastMean = window_df.tail(1) - window_df.mean()
  resLastMean.SepsisLabel = label
  dfLastMeanDif = dfLastMeanDif.append(resLastMean, ignore_index = True)
```
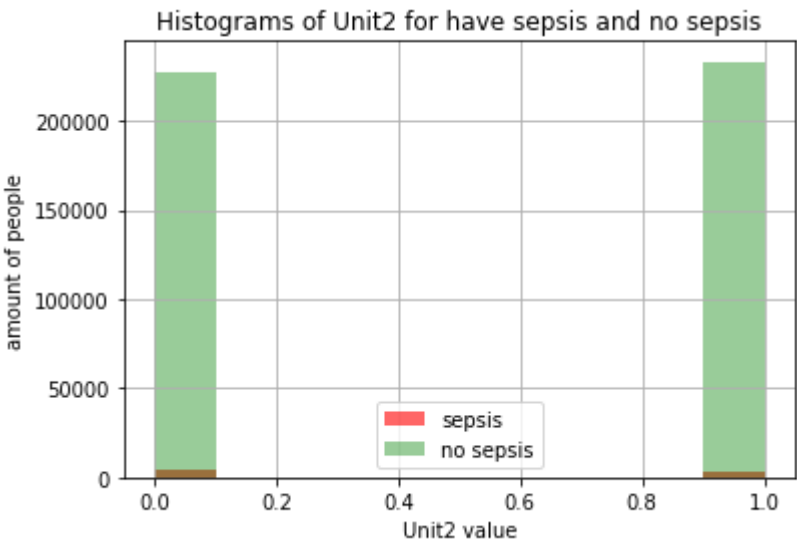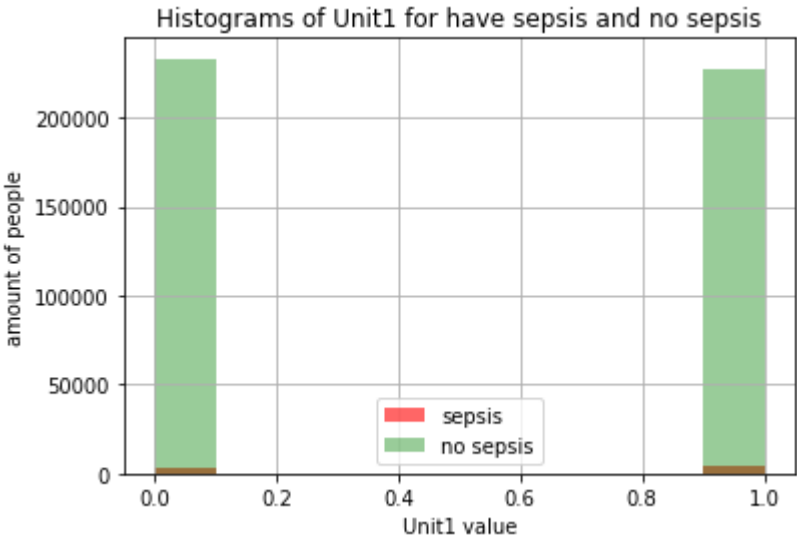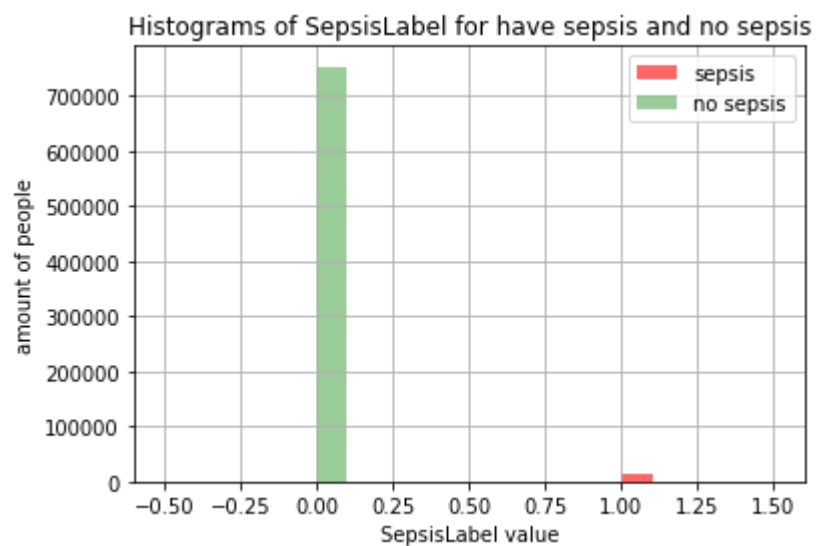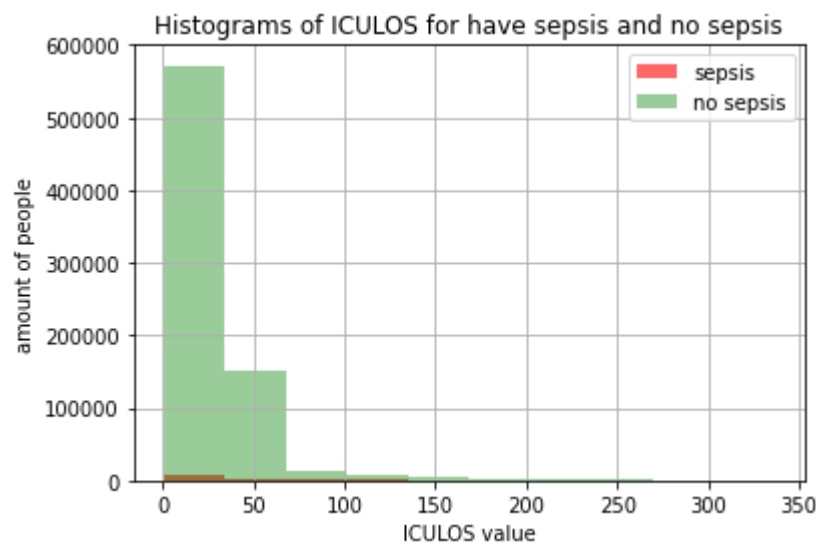
In [10]:

```python
# make Ttest for current parameter in current dataframe, where:
# µ1 is the µ for "have sepsis"
# µ2 is the µ for "no sepsis"
# null hypothesis H0: µ1 = µ2
# level of significance: alpha = 0.05

from scipy import stats

def tTest(colName, tmpDF):
  # t-test for null hypothesis H0 that µ1 = µ2
  SEP=tmpDF[tmpDF['SepsisLabel']==1][colName].dropna()  # for µ1
  NOSEP=tmpDF[tmpDF['SepsisLabel']==0][colName].dropna()  # for µ2

  t_value,p_value=stats.ttest_ind(SEP,NOSEP)

  print(f'\n Ttest - Check {colName} parameter:')
  print('Test statistic is %f'%float("{:.6f}".format(t_value)))
  print('p-value for two tailed test is %f'%p_value)
  flag = True
  alpha = 0.05
  if p_value<=alpha:
      print('Conclusion','n','Since p-value(=%f)'%p_value,'<','alpha(=%.2f)'%alpha,'''W
e reject the null hypothesis H0 for''', colName ,'''parameter. at %.2f level of signifi
cance.'''%alpha)
      flag = True
  else:
      print('Conclusion','n','Since p-value(=%f)'%p_value,'>','alpha(=%.2f)'%alpha,'''W
e do not reject the null hypothesis H0 for''', colName ,'''parameter.''')
      flag = False
  return flag
```

In [11]:

```python
# make wilcoxon test for current parameter in current dataframe, where:
# ** (mannwhitneyu is a version of wilcoxon test for two sets with different sizes)
# ** this test is usefull for parameters with not normal distribution
# It is a non-parametric version of the paired T-test.
# level of significance: alpha = 0.05


def WTest(colName, tmpDF):
    SEP=dfMean[dfMean['SepsisLabel']==1][colName].dropna()  # for μ1
    NOSEP=dfMean[dfMean['SepsisLabel']==0][colName].dropna()  # for μ2
    w_value,w_p_value=stats.mannwhitneyu(SEP,NOSEP,alternative="two-sided")
    print(f'\n Wilcoxon  - Check {colName} parameter in wilcoxon test:')
    print('Test statistic is %f'%float("{:.6f}".format(w_value)))
    print('p-value for two tailed test is %f'%w_p_value)
    flag = True
    alpha = 0.05
    if w_p_value<=alpha:
        print('Conclusion','n','Since p-value(=%f)'%w_p_value,'<','alpha(=%.2f)'%alpha,
'''We reject the null hypothesis H0 for''', colName ,'''parameter. at %.2f level of sig
nificance.'''%alpha)
        flag = True
    else:
        print('Conclusion','n','Since p-value(=%f)'%w_p_value,'>','alpha(=%.2f)'%alpha,
'''We do not reject the null hypothesis H0 for''', colName ,'''parameter.''')
        flag = False
    print('\n\n')
    return flag
```

In [12]:

```python
# print the histograms and Ttest results for each dataframe

parametersList = list(full_data.columns)
parametersList = [x for x in parametersList if x not in ['Unit1','Unit2','HospAdmTime',
'ICULOS','SepsisLabel']]

def printRes(DFrame, metric):
  print("----------------------------------------------------------")
  print(f'histograms, Ttest and Wilcoxon-Test results for {metric} of each parameter')
  print("----------------------------------------------------------")
  TParameters = []
  WParameters = []
  for col in parametersList:
    printHist(col,DFrame)
    checkT = tTest(col, DFrame)
    if checkT:
      TParameters.append(col)
    checkW = WTest(col, DFrame)
    if checkW:
      WParameters.append(col)
  return TParameters,WParameters



meanTParameters, meanWParameters = printRes(dfMean,'mean')
stdTParameters, stdWParameters = printRes(dfStd,'std')
maxTParameters, maxWParameters = printRes(dfMax,'max')
minTParameters, minWParameters = printRes(dfMin,'min')
lastMeanDifTParameters, lastMeanDifWParameters = printRes(dfLastMeanDif,'last-mean diff
erence')
```
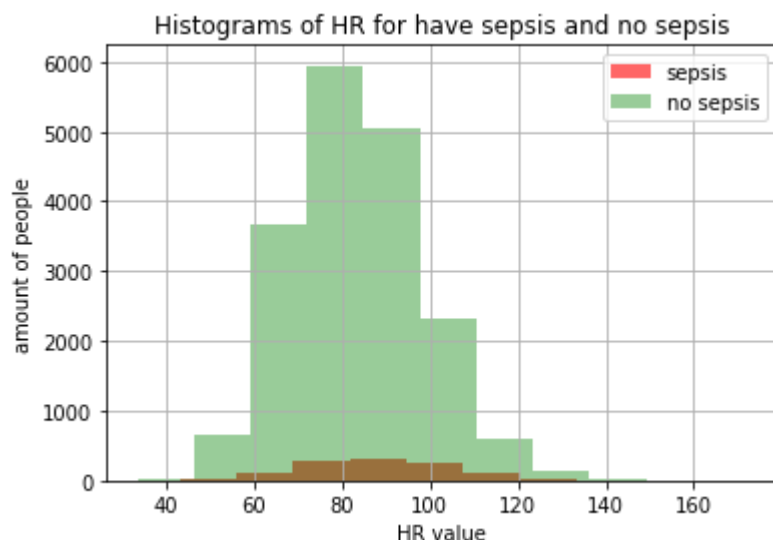
---
histograms, Ttest and Wilcoxon-Test results for mean of each parameter
---

Histograms of HR for have sepsis and no sepsis

```
 Ttest - Check HR parameter:
Test statistic is 12.353960
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for HR parameter. at 0.05 level of significance.

 Wilcoxon  - Check HR parameter in wilcoxon test:
Test statistic is 12303692.500000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for HR parameter. at 0.05 level of significance.
```
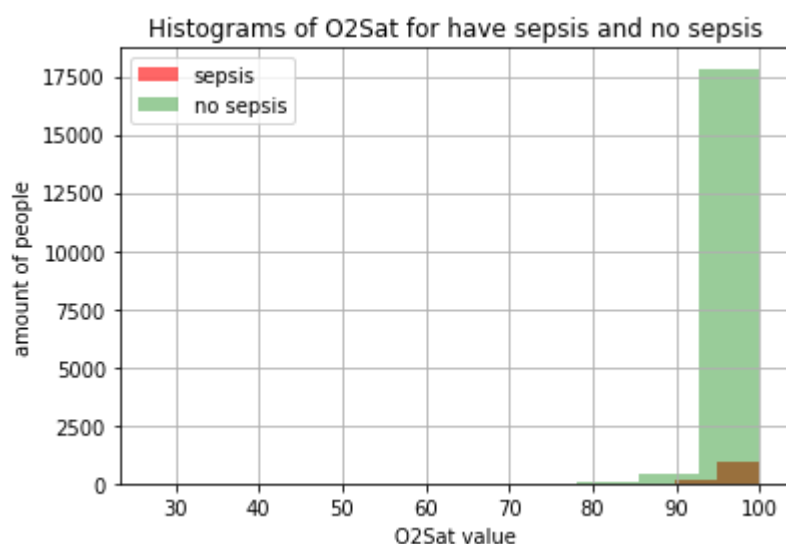

Histograms of O2Sat for have sepsis and no sepsis

 Ttest - Check O2Sat parameter:
Test statistic is 2.734202
p-value for two tailed test is 0.006259
Conclusion n Since p-value(=0.006259) < alpha(=0.05) We reject the null hy
pothesis H0 for O2Sat parameter. at 0.05 level of significance.

 Wilcoxon - Check O2Sat parameter in wilcoxon test:
Test statistic is 11078426.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for O2Sat parameter. at 0.05 level of significance.

Histograms of Temp for have sepsis and no sepsis

 Ttest - Check Temp parameter:
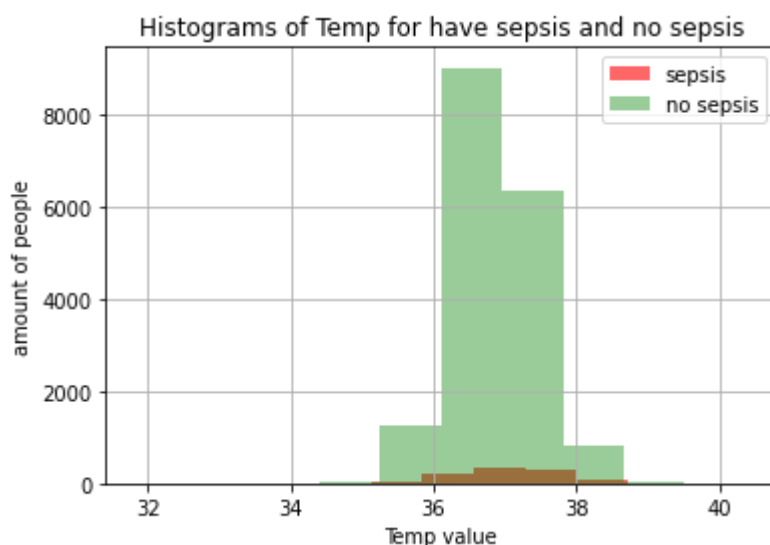Test statistic is 10.298178
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Temp parameter. at 0.05 level of significance.

 Wilcoxon - Check Temp parameter in wilcoxon test:
Test statistic is 10516195.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Temp parameter. at 0.05 level of significance.

Histograms of SBP for have sepsis and no sepsis

```
 Ttest - Check SBP parameter:
Test statistic is -2.230799
p-value for two tailed test is 0.025706
Conclusion n Since p-value(=0.025706) < alpha(=0.05) We reject the null hy
pothesis H0 for SBP parameter. at 0.05 level of significance.

 Wilcoxon  - Check SBP parameter in wilcoxon test:
Test statistic is 8962797.000000
p-value for two tailed test is 0.036610
Conclusion n Since p-value(=0.036610) < alpha(=0.05) We reject the null hy
pothesis H0 for SBP parameter. at 0.05 level of significance.
```
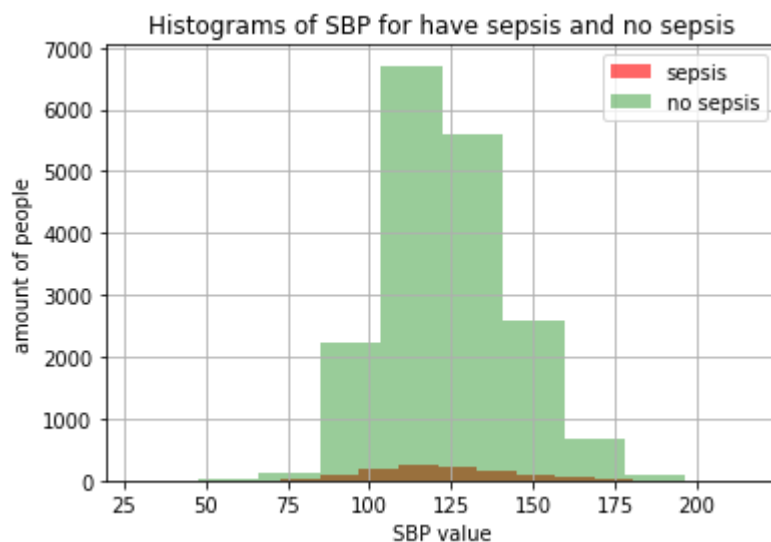
Histograms of MAP for have sepsis and no sepsis

```
 Ttest - Check MAP parameter:
Test statistic is -4.233930
p-value for two tailed test is 0.000023
Conclusion n Since p-value(=0.000023) < alpha(=0.05) We reject the null hy
pothesis H0 for MAP parameter. at 0.05 level of significance.

 Wilcoxon  - Check MAP parameter in wilcoxon test:
Test statistic is 9505940.500000
p-value for two tailed test is 0.000583
Conclusion n Since p-value(=0.000583) < alpha(=0.05) We reject the null hy
pothesis H0 for MAP parameter. at 0.05 level of significance.
```
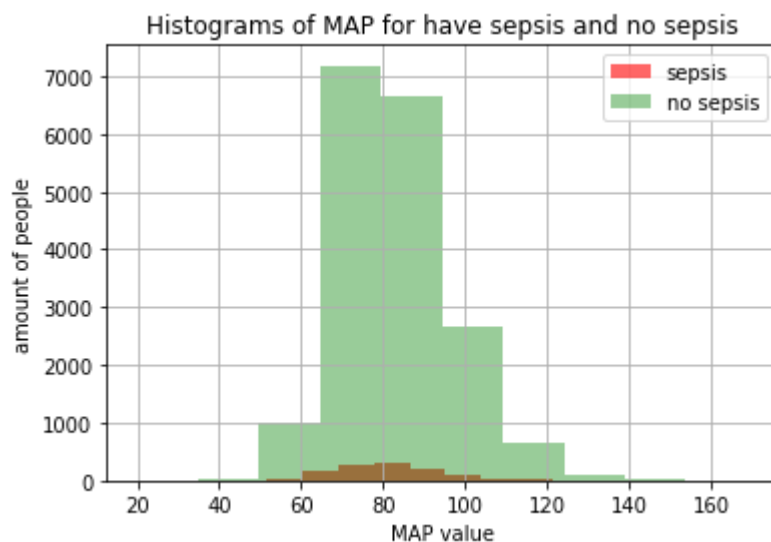
Histograms of DBP for have sepsis and no sepsis

 Ttest - Check DBP parameter:
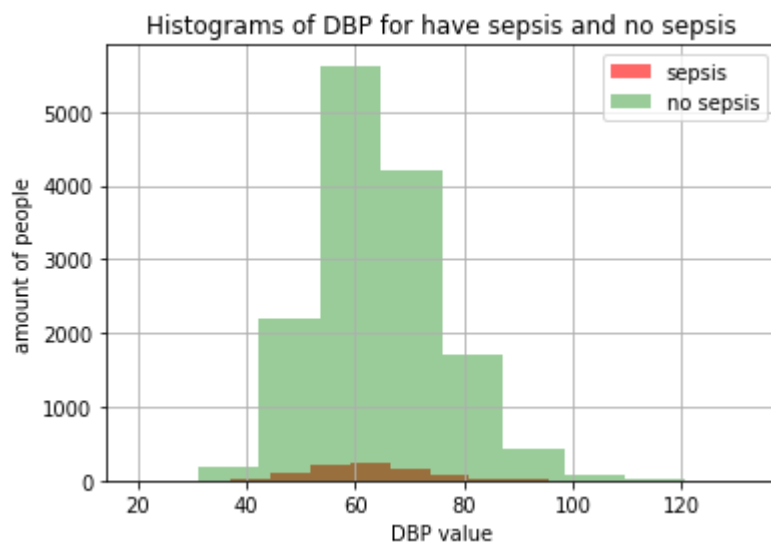Test statistic is -4.336773
p-value for two tailed test is 0.000015
Conclusion n Since p-value(=0.000015) < alpha(=0.05) We reject the null hy
pothesis H0 for DBP parameter. at 0.05 level of significance.

 Wilcoxon - Check DBP parameter in wilcoxon test:
Test statistic is 5793612.000000
p-value for two tailed test is 0.000082
Conclusion n Since p-value(=0.000082) < alpha(=0.05) We reject the null hy
pothesis H0 for DBP parameter. at 0.05 level of significance.

Histograms of Resp for have sepsis and no sepsis

 Ttest - Check Resp parameter:
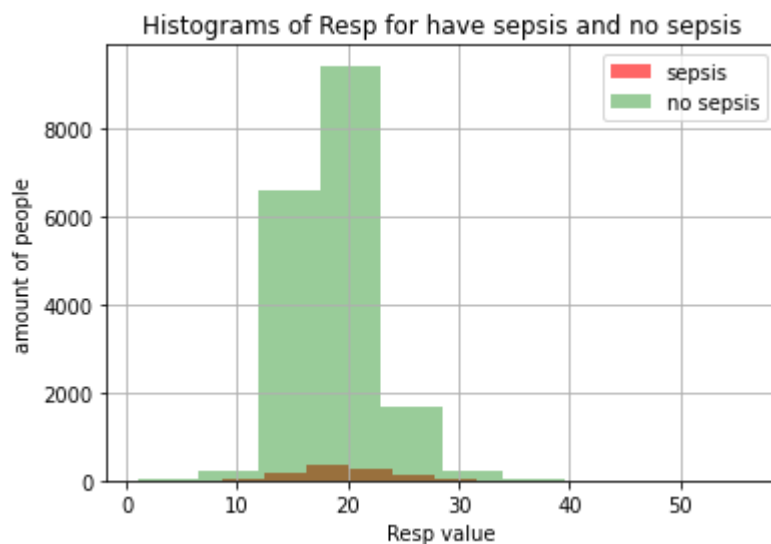Test statistic is 11.104781
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Resp parameter. at 0.05 level of significance.

 Wilcoxon - Check Resp parameter in wilcoxon test:
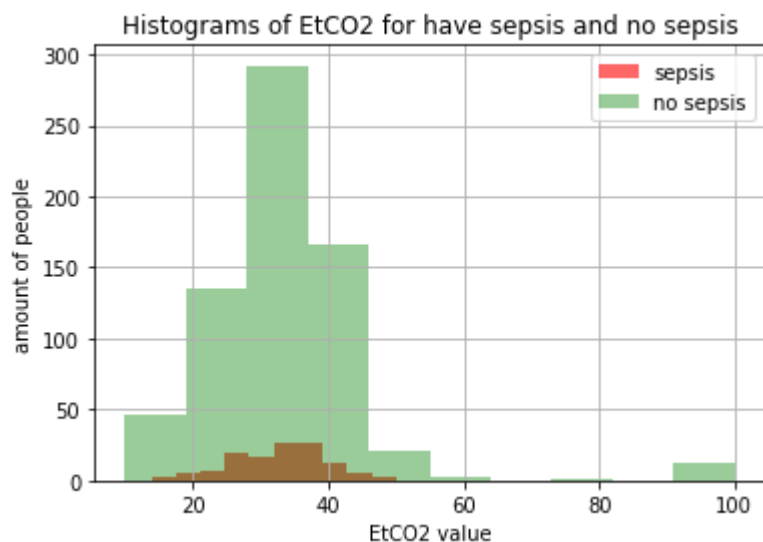Test statistic is 11674948.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Resp parameter. at 0.05 level of significance.

Histograms of EtCO2 for have sepsis and no sepsis

 Ttest - Check EtCO2 parameter:
Test statistic is -0.528470
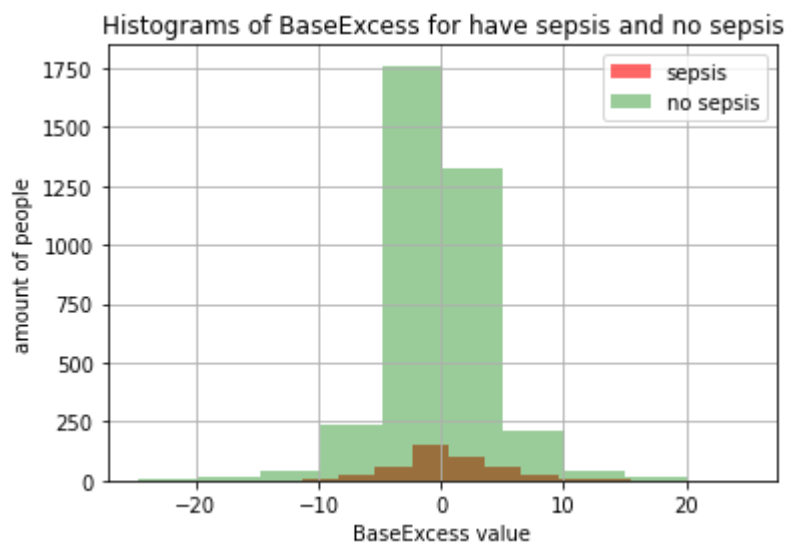p-value for two tailed test is 0.597320
Conclusion n Since p-value(=0.597320) > alpha(=0.05) We do not reject the
null hypothesis H0 for EtCO2 parameter.

 Wilcoxon - Check EtCO2 parameter in wilcoxon test:
Test statistic is 42594.500000
p-value for two tailed test is 0.664844
Conclusion n Since p-value(=0.664844) > alpha(=0.05) We do not reject the
null hypothesis H0 for EtCO2 parameter.

Histograms of BaseExcess for have sepsis and no sepsis

```
 Ttest - Check BaseExcess parameter:
Test statistic is 2.585636
p-value for two tailed test is 0.009754
Conclusion n Since p-value(=0.009754) < alpha(=0.05) We reject the null hy
pothesis H0 for BaseExcess parameter. at 0.05 level of significance.

 Wilcoxon  - Check BaseExcess parameter in wilcoxon test:
Test statistic is 848686.500000
p-value for two tailed test is 0.019760
Conclusion n Since p-value(=0.019760) < alpha(=0.05) We reject the null hy
pothesis H0 for BaseExcess parameter. at 0.05 level of significance.
```
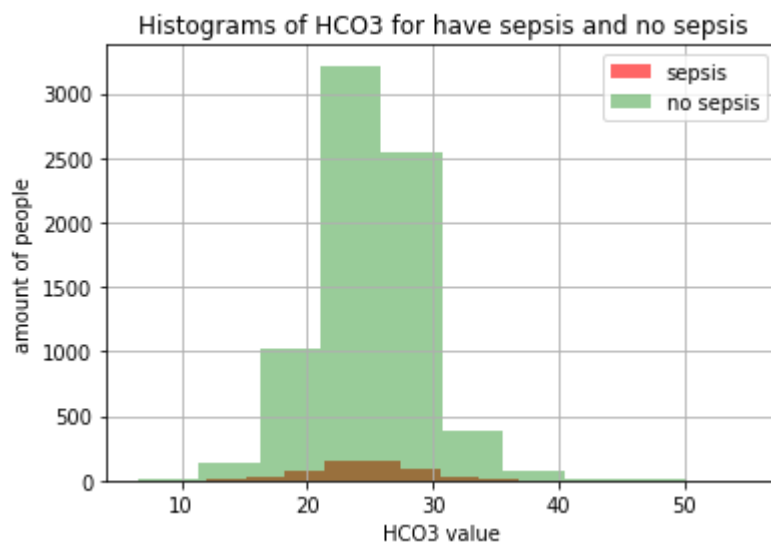
Histograms of HCO3 for have sepsis and no sepsis


```
 Ttest - Check HCO3 parameter:
Test statistic is -0.043815
p-value for two tailed test is 0.965053
Conclusion n Since p-value(=0.965053) > alpha(=0.05) We do not reject the
null hypothesis H0 for HCO3 parameter.

 Wilcoxon  - Check HCO3 parameter in wilcoxon test:
Test statistic is 2013805.000000
p-value for two tailed test is 0.562284
Conclusion n Since p-value(=0.562284) > alpha(=0.05) We do not reject the
null hypothesis H0 for HCO3 parameter.
```
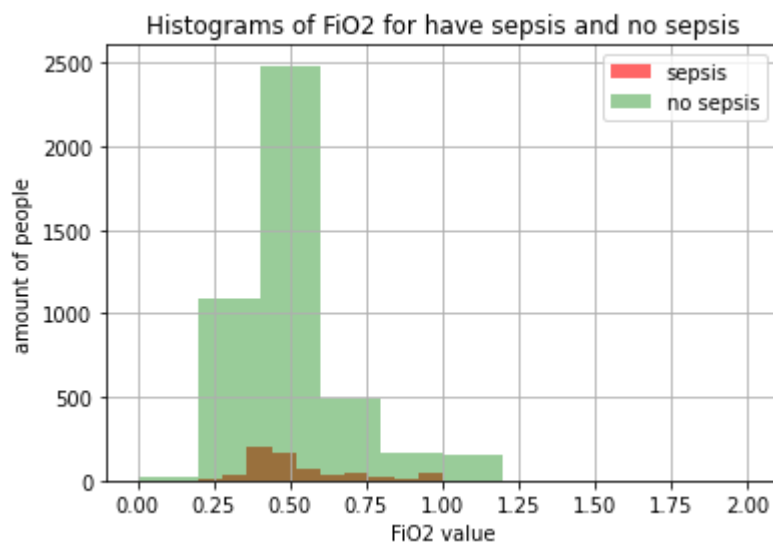
Histograms of FiO2 for have sepsis and no sepsis

```
 Ttest - Check FiO2 parameter:
Test statistic is 4.784076
p-value for two tailed test is 0.000002
Conclusion n Since p-value(=0.000002) < alpha(=0.05) We reject the null hy
pothesis H0 for FiO2 parameter. at 0.05 level of significance.

 Wilcoxon  - Check FiO2 parameter in wilcoxon test:
Test statistic is 1507641.000000
p-value for two tailed test is 0.000101
Conclusion n Since p-value(=0.000101) < alpha(=0.05) We reject the null hy
pothesis H0 for FiO2 parameter. at 0.05 level of significance.
```
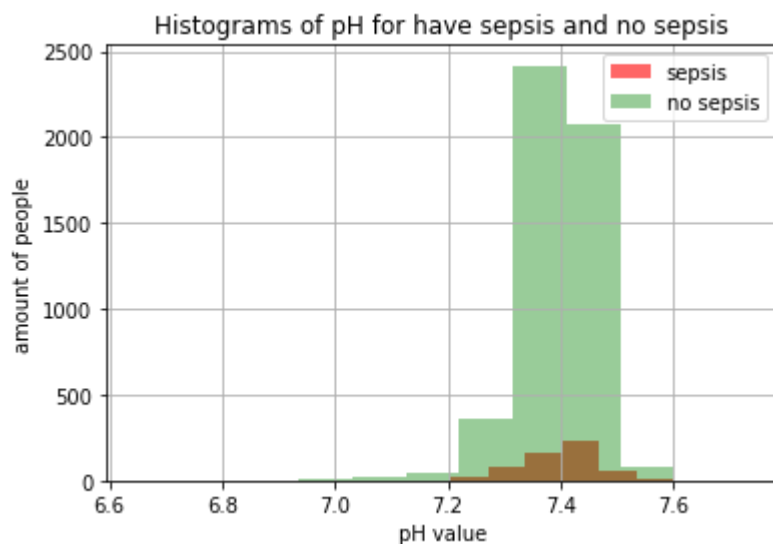
Histograms of pH for have sepsis and no sepsis

 Ttest - Check pH parameter:
Test statistic is 1.143252
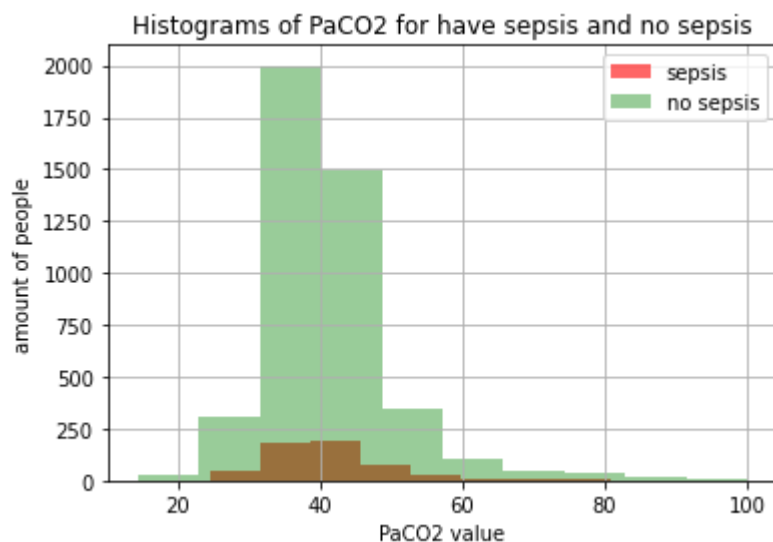p-value for two tailed test is 0.252983
Conclusion n Since p-value(=0.252983) > alpha(=0.05) We do not reject the
null hypothesis H0 for pH parameter.

 Wilcoxon - Check pH parameter in wilcoxon test:
Test statistic is 1465724.000000
p-value for two tailed test is 0.172022
Conclusion n Since p-value(=0.172022) > alpha(=0.05) We do not reject the
null hypothesis H0 for pH parameter.

Histograms of PaCO2 for have sepsis and no sepsis

 Ttest - Check PaCO2 parameter:
Test statistic is 0.140309
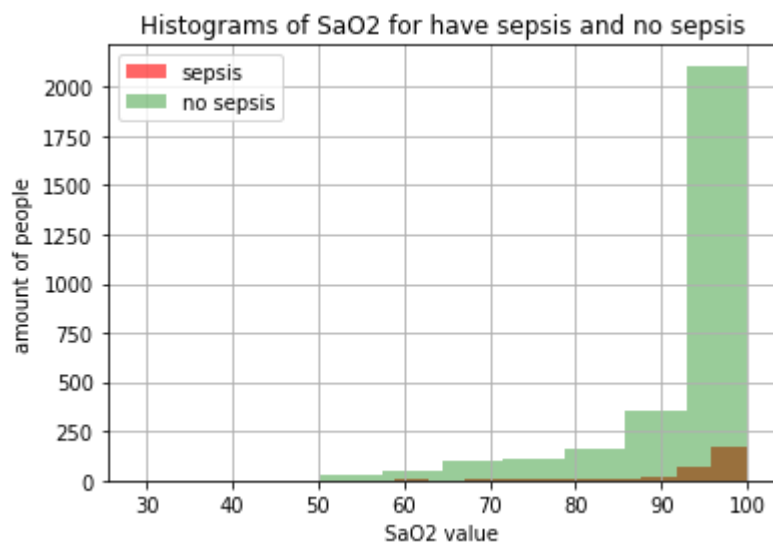p-value for two tailed test is 0.888422
Conclusion n Since p-value(=0.888422) > alpha(=0.05) We do not reject the
null hypothesis H0 for PaCO2 parameter.

 Wilcoxon - Check PaCO2 parameter in wilcoxon test:
Test statistic is 1191247.500000
p-value for two tailed test is 0.976337
Conclusion n Since p-value(=0.976337) > alpha(=0.05) We do not reject the
null hypothesis H0 for PaCO2 parameter.

Histograms of SaO2 for have sepsis and no sepsis

 Ttest - Check SaO2 parameter:
Test statistic is 2.673301
p-value for two tailed test is 0.007549
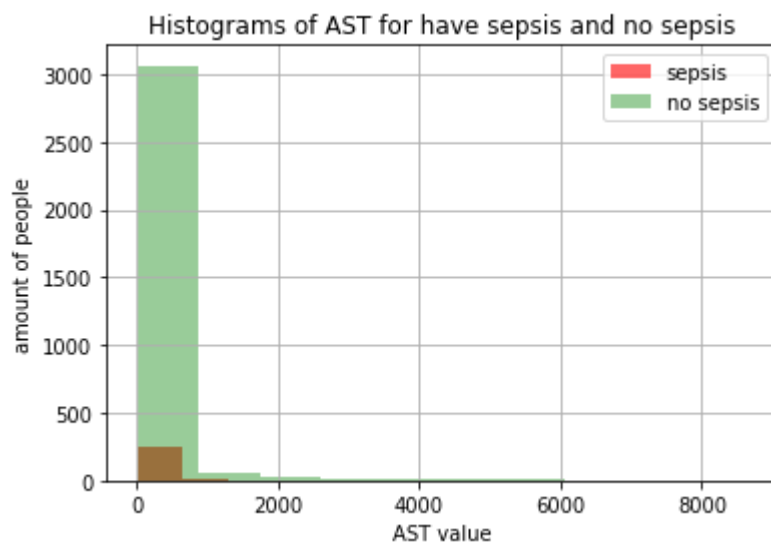Conclusion n Since p-value(=0.007549) < alpha(=0.05) We reject the null hy
pothesis H0 for SaO2 parameter. at 0.05 level of significance.

 Wilcoxon - Check SaO2 parameter in wilcoxon test:
Test statistic is 479035.500000
p-value for two tailed test is 0.001774
Conclusion n Since p-value(=0.001774) < alpha(=0.05) We reject the null hy
pothesis H0 for SaO2 parameter. at 0.05 level of significance.

Histograms of AST for have sepsis and no sepsis

 Ttest - Check AST parameter:
Test statistic is 0.030806
p-value for two tailed test is 0.975426
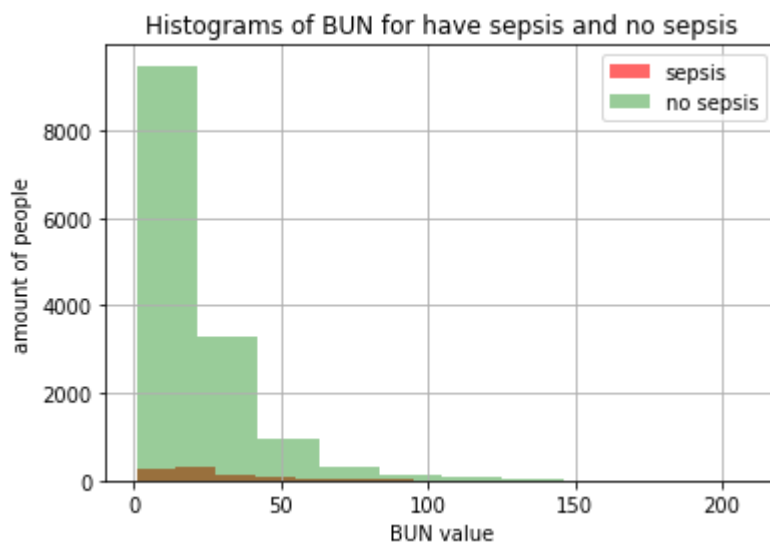Conclusion n Since p-value(=0.975426) > alpha(=0.05) We do not reject the
null hypothesis H0 for AST parameter.

 Wilcoxon - Check AST parameter in wilcoxon test:
Test statistic is 451343.000000
p-value for two tailed test is 0.011535
Conclusion n Since p-value(=0.011535) < alpha(=0.05) We reject the null hy
pothesis H0 for AST parameter. at 0.05 level of significance.

Histograms of BUN for have sepsis and no sepsis

Ttest - Check BUN parameter:
Test statistic is 8.059657
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for BUN parameter. at 0.05 level of significance.

Wilcoxon - Check BUN parameter in wilcoxon test:
Test statistic is 7187585.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for BUN parameter. at 0.05 level of significance.

Histograms of Alkalinephos for have sepsis and no sepsis

 Ttest - Check Alkalinephos parameter:
Test statistic is -0.500493
p-value for two tailed test is 0.616760
Conclusion n Since p-value(=0.616760) > alpha(=0.05) We do not reject the
null hypothesis H0 for Alkalinephos parameter.

 Wilcoxon - Check Alkalinephos parameter in wilcoxon test:
Test statistic is 402449.500000
p-value for two tailed test is 0.458888
Conclusion n Since p-value(=0.458888) > alpha(=0.05) We do not reject the
null hypothesis H0 for Alkalinephos parameter.

Histograms of Calcium for have sepsis and no sepsis

 Ttest - Check Calcium parameter:
Test statistic is -9.769018
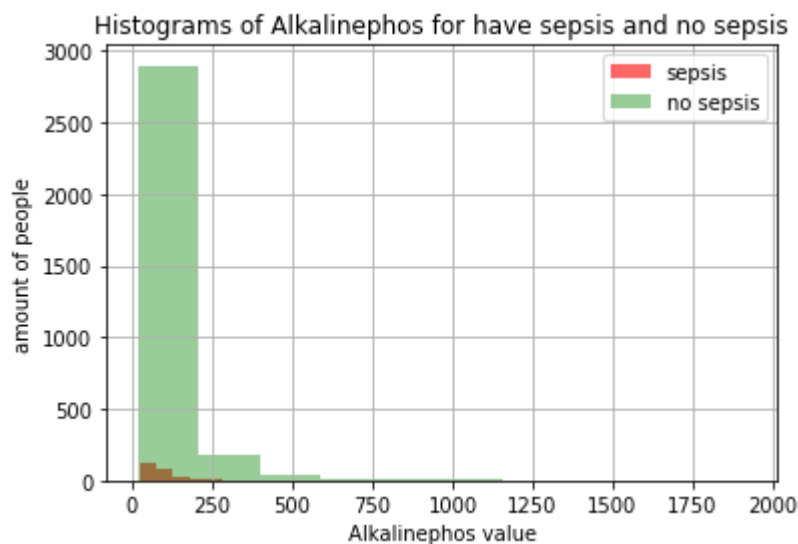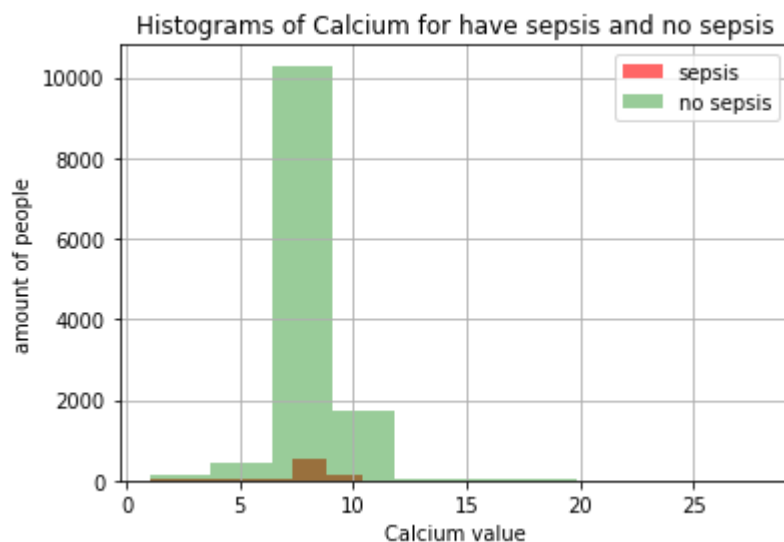p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Calcium parameter. at 0.05 level of significance.

 Wilcoxon - Check Calcium parameter in wilcoxon test:
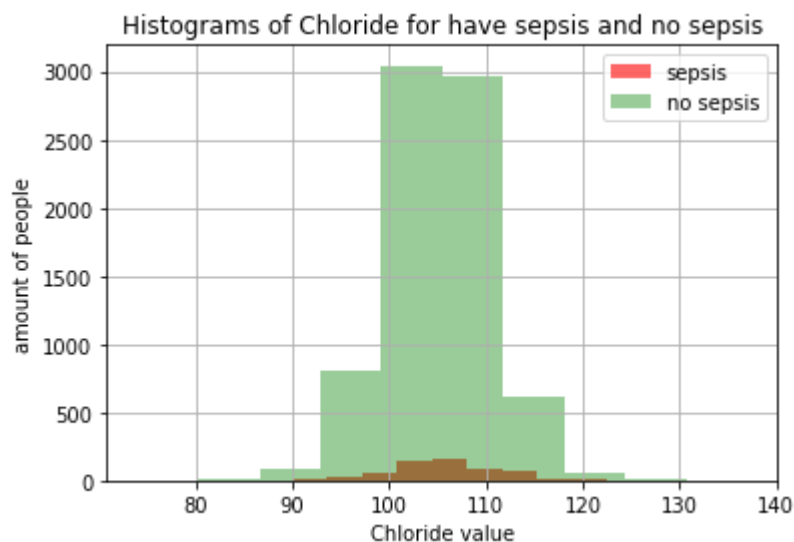Test statistic is 4258344.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Calcium parameter. at 0.05 level of significance.

Histograms of Chloride for have sepsis and no sepsis


```
 Ttest - Check Chloride parameter:
Test statistic is 1.627093
p-value for two tailed test is 0.103756
Conclusion n Since p-value(=0.103756) > alpha(=0.05) We do not reject the
null hypothesis H0 for Chloride parameter.

 Wilcoxon  - Check Chloride parameter in wilcoxon test:
Test statistic is 2347707.500000
p-value for two tailed test is 0.081692
Conclusion n Since p-value(=0.081692) > alpha(=0.05) We do not reject the
null hypothesis H0 for Chloride parameter.
```
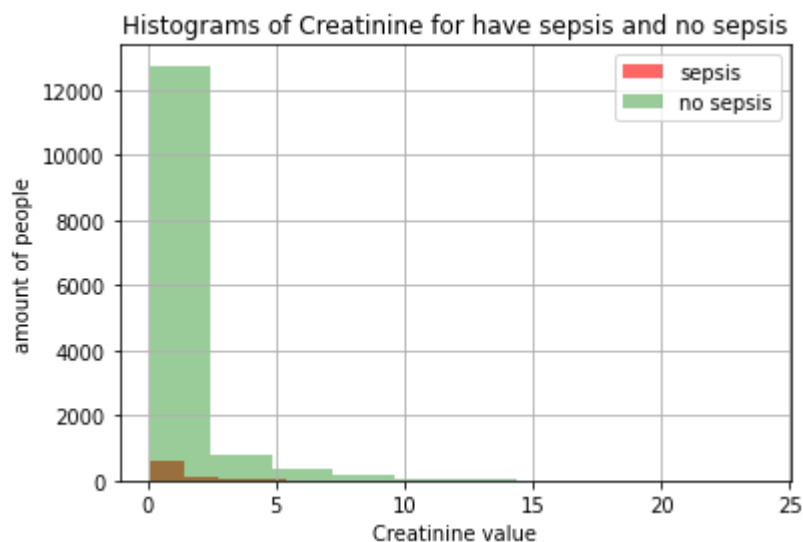
Histograms of Creatinine for have sepsis and no sepsis

 Ttest - Check Creatinine parameter:
Test statistic is 1.922313
p-value for two tailed test is 0.054585
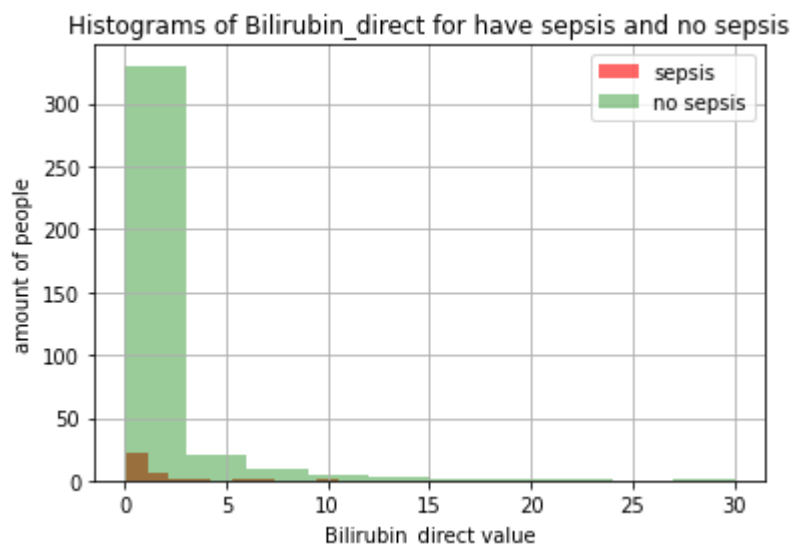Conclusion n Since p-value(=0.054585) > alpha(=0.05) We do not reject the
null hypothesis H0 for Creatinine parameter.

 Wilcoxon - Check Creatinine parameter in wilcoxon test:
Test statistic is 6310030.500000
p-value for two tailed test is 0.014732
Conclusion n Since p-value(=0.014732) < alpha(=0.05) We reject the null hy
pothesis H0 for Creatinine parameter. at 0.05 level of significance.

Histograms of Bilirubin_direct for have sepsis and no sepsis

 Ttest - Check Bilirubin_direct parameter:
Test statistic is 0.495551
p-value for two tailed test is 0.620480
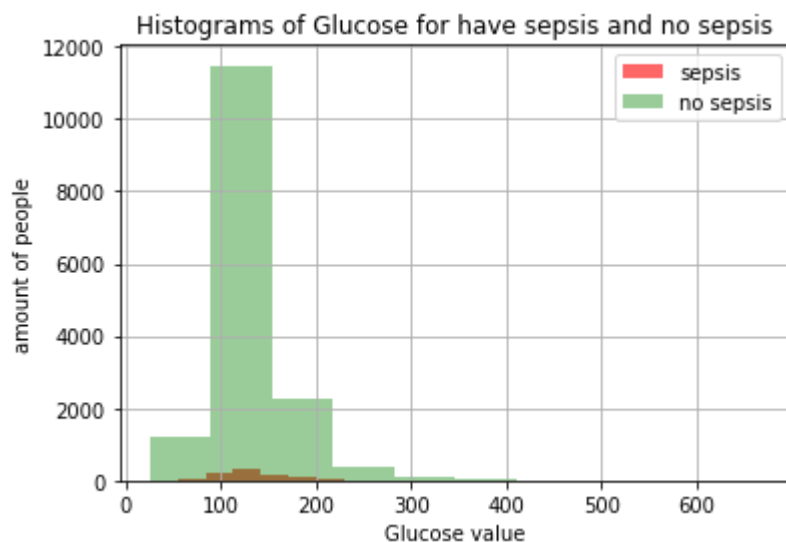Conclusion n Since p-value(=0.620480) > alpha(=0.05) We do not reject the
null hypothesis H0 for Bilirubin_direct parameter.

 Wilcoxon - Check Bilirubin_direct parameter in wilcoxon test:
Test statistic is 8312.000000
p-value for two tailed test is 0.006469
Conclusion n Since p-value(=0.006469) < alpha(=0.05) We reject the null hy
pothesis H0 for Bilirubin_direct parameter. at 0.05 level of significance.

Histograms of Glucose for have sepsis and no sepsis

```
 Ttest - Check Glucose parameter:
Test statistic is 5.206576
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Glucose parameter. at 0.05 level of significance.

 Wilcoxon  - Check Glucose parameter in wilcoxon test:
Test statistic is 7982248.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Glucose parameter. at 0.05 level of significance.
```
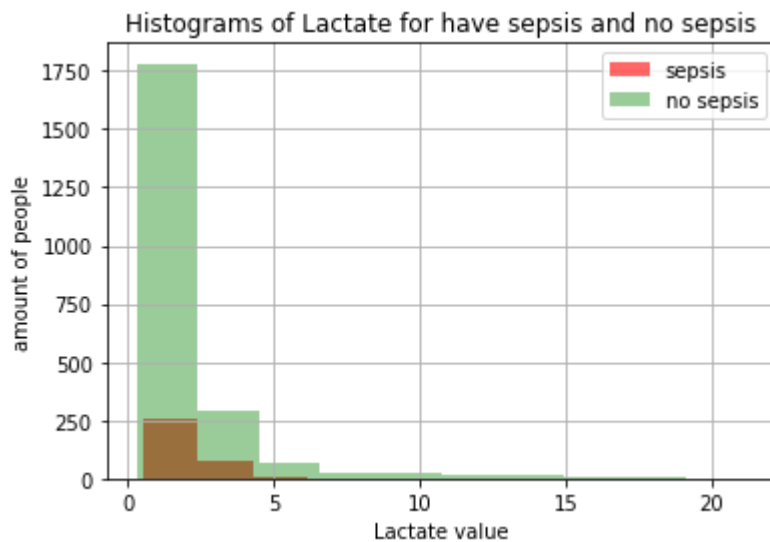
Histograms of Lactate for have sepsis and no sepsis

```
 Ttest - Check Lactate parameter:
Test statistic is -0.083821
p-value for two tailed test is 0.933205
Conclusion n Since p-value(=0.933205) > alpha(=0.05) We do not reject the
null hypothesis H0 for Lactate parameter.

 Wilcoxon  - Check Lactate parameter in wilcoxon test:
Test statistic is 410670.000000
p-value for two tailed test is 0.105473
Conclusion n Since p-value(=0.105473) > alpha(=0.05) We do not reject the
null hypothesis H0 for Lactate parameter.
```
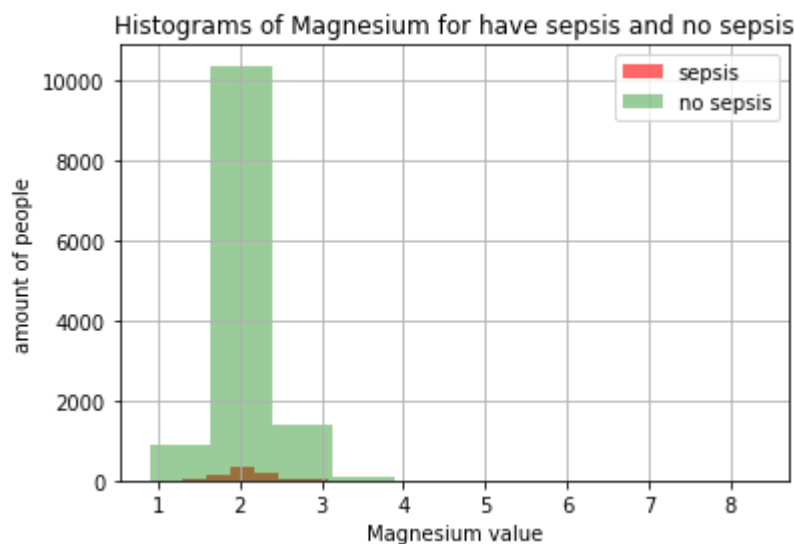
Histograms of Magnesium for have sepsis and no sepsis

```
 Ttest - Check Magnesium parameter:
Test statistic is 3.205256
p-value for two tailed test is 0.001353
Conclusion n Since p-value(=0.001353) < alpha(=0.05) We reject the null hy
pothesis H0 for Magnesium parameter. at 0.05 level of significance.

 Wilcoxon  - Check Magnesium parameter in wilcoxon test:
Test statistic is 5599809.500000
p-value for two tailed test is 0.000240
Conclusion n Since p-value(=0.000240) < alpha(=0.05) We reject the null hy
pothesis H0 for Magnesium parameter. at 0.05 level of significance.
```
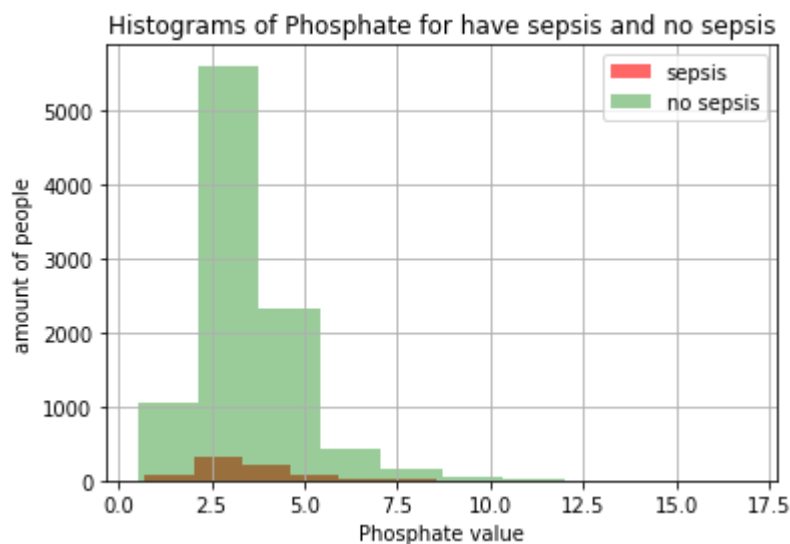
Histograms of Phosphate for have sepsis and no sepsis

 Ttest - Check Phosphate parameter:
Test statistic is 1.153644
p-value for two tailed test is 0.248673
Conclusion n Since p-value(=0.248673) > alpha(=0.05) We do not reject the
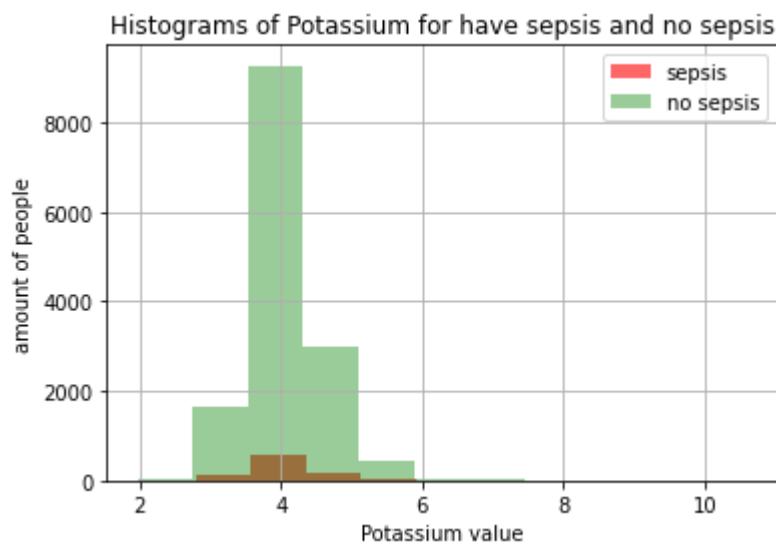null hypothesis H0 for Phosphate parameter.

 Wilcoxon - Check Phosphate parameter in wilcoxon test:
Test statistic is 3459569.000000
p-value for two tailed test is 0.356921
Conclusion n Since p-value(=0.356921) > alpha(=0.05) We do not reject the
null hypothesis H0 for Phosphate parameter.

Histograms of Potassium for have sepsis and no sepsis

```
 Ttest - Check Potassium parameter:
Test statistic is -1.421788
p-value for two tailed test is 0.155108
Conclusion n Since p-value(=0.155108) > alpha(=0.05) We do not reject the
null hypothesis H0 for Potassium parameter.

 Wilcoxon  - Check Potassium parameter in wilcoxon test:
Test statistic is 6053364.500000
p-value for two tailed test is 0.006588
Conclusion n Since p-value(=0.006588) < alpha(=0.05) We reject the null hy
pothesis H0 for Potassium parameter. at 0.05 level of significance.
```
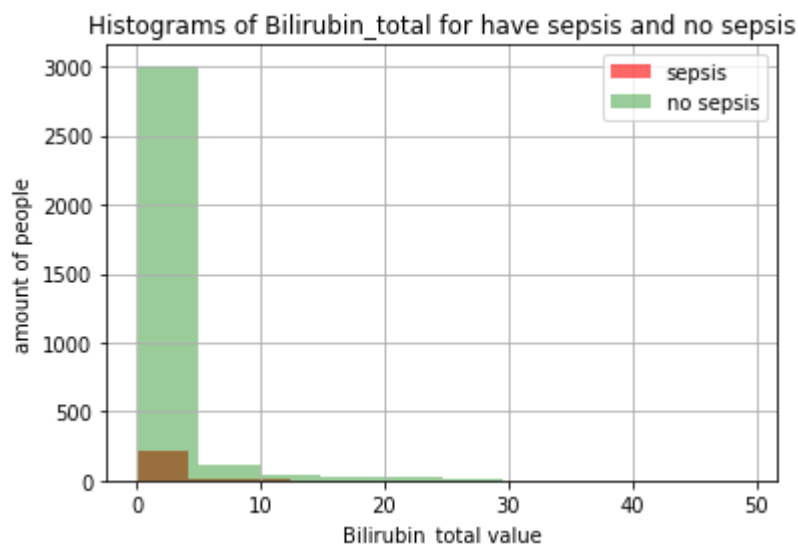
Histograms of Bilirubin_total for have sepsis and no sepsis

 Ttest - Check Bilirubin_total parameter:
Test statistic is 3.115949
p-value for two tailed test is 0.001848
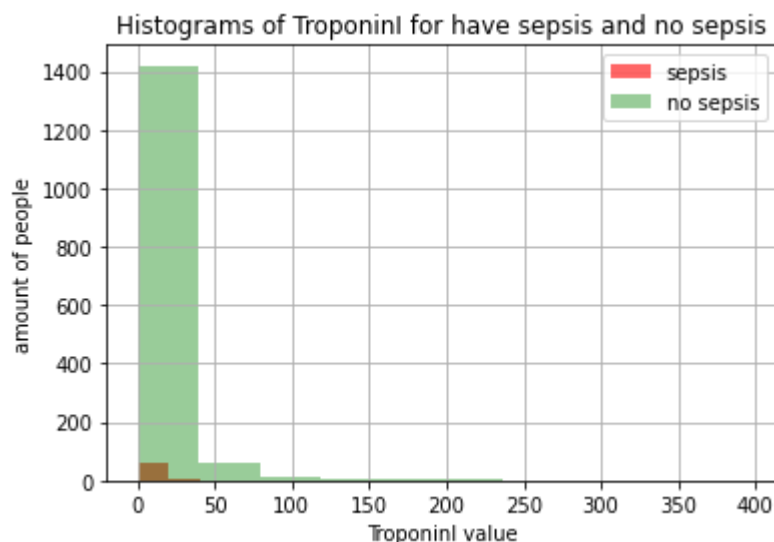Conclusion n Since p-value(=0.001848) < alpha(=0.05) We reject the null hy
pothesis H0 for Bilirubin_total parameter. at 0.05 level of significance.

 Wilcoxon - Check Bilirubin_total parameter in wilcoxon test:
Test statistic is 438778.000000
p-value for two tailed test is 0.055420
Conclusion n Since p-value(=0.055420) > alpha(=0.05) We do not reject the
null hypothesis H0 for Bilirubin_total parameter.

Histograms of TroponinI for have sepsis and no sepsis

  Ttest - Check TroponinI parameter:
Test statistic is 0.994925
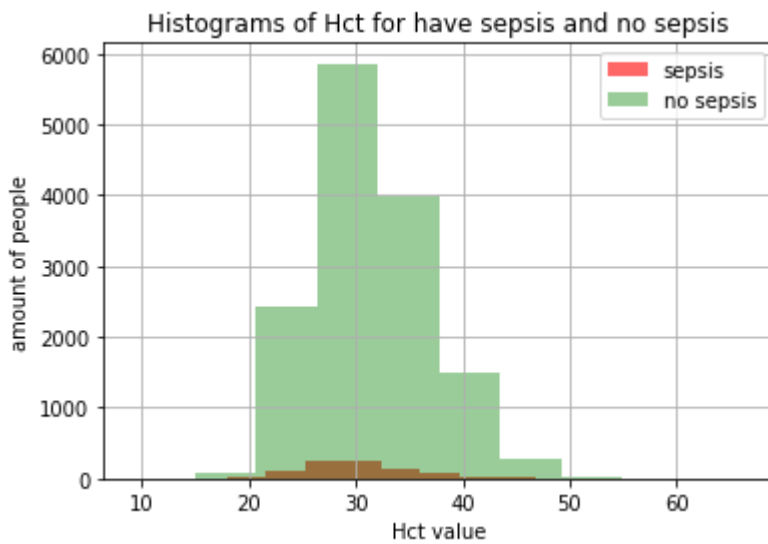p-value for two tailed test is 0.319926
Conclusion n Since p-value(=0.319926) > alpha(=0.05) We do not reject the
null hypothesis H0 for TroponinI parameter.

  Wilcoxon - Check TroponinI parameter in wilcoxon test:
Test statistic is 56783.500000
p-value for two tailed test is 0.120123
Conclusion n Since p-value(=0.120123) > alpha(=0.05) We do not reject the
null hypothesis H0 for TroponinI parameter.

Histograms of Hct for have sepsis and no sepsis

 Ttest - Check Hct parameter:
Test statistic is -4.849774
p-value for two tailed test is 0.000001
Conclusion n Since p-value(=0.000001) < alpha(=0.05) We reject the null hy
pothesis H0 for Hct parameter. at 0.05 level of significance.

 Wilcoxon - Check Hct parameter in wilcoxon test:
Test statistic is 5660863.500000
p-value for two tailed test is 0.000001
Conclusion n Since p-value(=0.000001) < alpha(=0.05) We reject the null hy
pothesis H0 for Hct parameter. at 0.05 level of significance.

Histograms of Hgb for have sepsis and no sepsis

  Ttest - Check Hgb parameter:
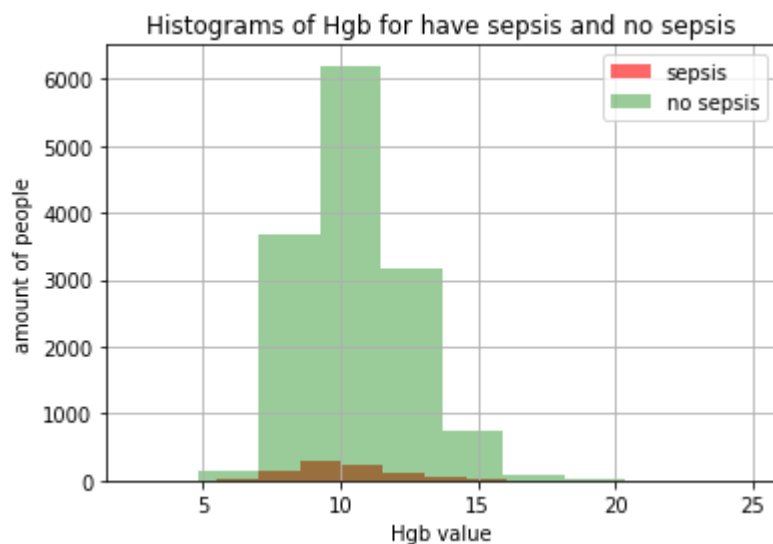Test statistic is -5.020884
p-value for two tailed test is 0.000001
Conclusion n Since p-value(=0.000001) < alpha(=0.05) We reject the null hy
pothesis H0 for Hgb parameter. at 0.05 level of significance.

  Wilcoxon - Check Hgb parameter in wilcoxon test:
Test statistic is 5386141.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Hgb parameter. at 0.05 level of significance.

Histograms of PTT for have sepsis and no sepsis
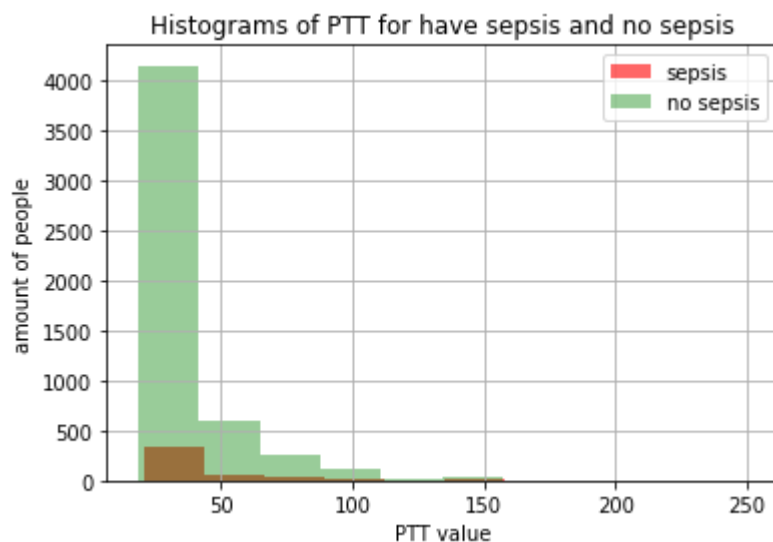
 Ttest - Check PTT parameter:
Test statistic is 3.570346
p-value for two tailed test is 0.000359
Conclusion n Since p-value(=0.000359) < alpha(=0.05) We reject the null hy
pothesis H0 for PTT parameter. at 0.05 level of significance.

 Wilcoxon - Check PTT parameter in wilcoxon test:
Test statistic is 1283426.500000
p-value for two tailed test is 0.001086
Conclusion n Since p-value(=0.001086) < alpha(=0.05) We reject the null hy
pothesis H0 for PTT parameter. at 0.05 level of significance.

Histograms of WBC for have sepsis and no sepsis

```
 Ttest - Check WBC parameter:
Test statistic is 8.924324
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for WBC parameter. at 0.05 level of significance.

 Wilcoxon  - Check WBC parameter in wilcoxon test:
Test statistic is 6963512.500000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for WBC parameter. at 0.05 level of significance.
```
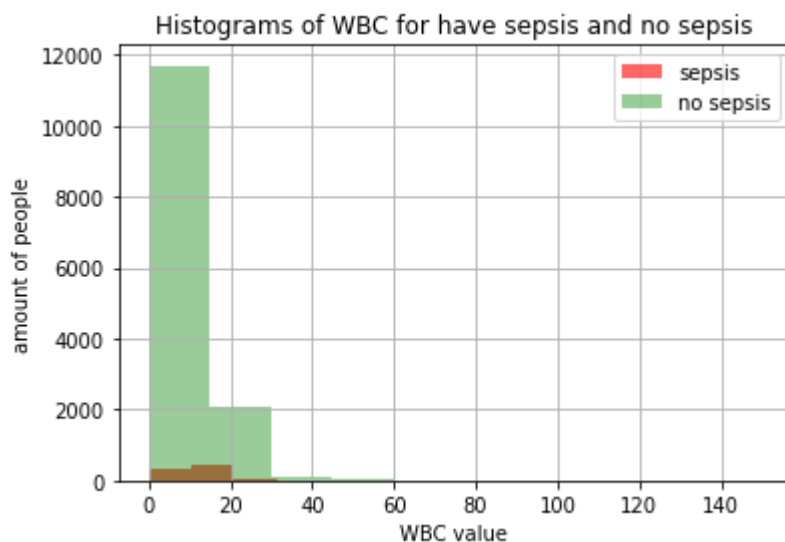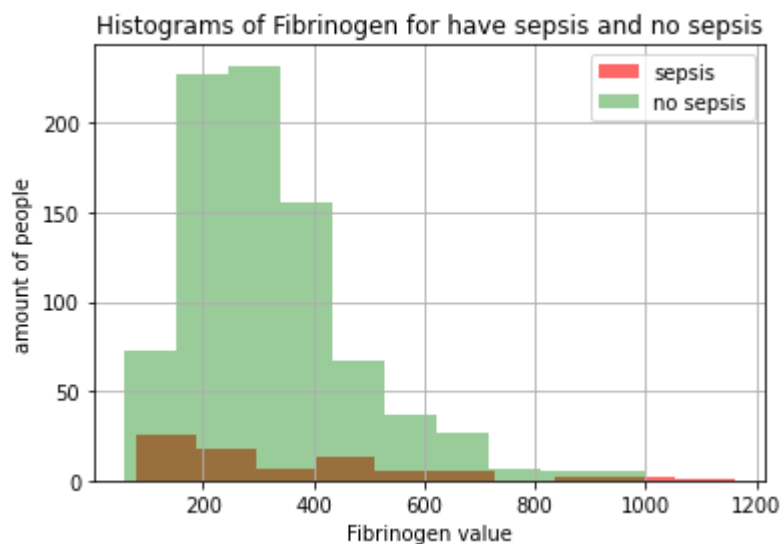
Histograms of Fibrinogen for have sepsis and no sepsis


```
 Ttest - Check Fibrinogen parameter:
Test statistic is 1.298629
p-value for two tailed test is 0.194399
Conclusion n Since p-value(=0.194399) > alpha(=0.05) We do not reject the
null hypothesis H0 for Fibrinogen parameter.

 Wilcoxon  - Check Fibrinogen parameter in wilcoxon test:
Test statistic is 31559.500000
p-value for two tailed test is 0.514956
Conclusion n Since p-value(=0.514956) > alpha(=0.05) We do not reject the
null hypothesis H0 for Fibrinogen parameter.
```
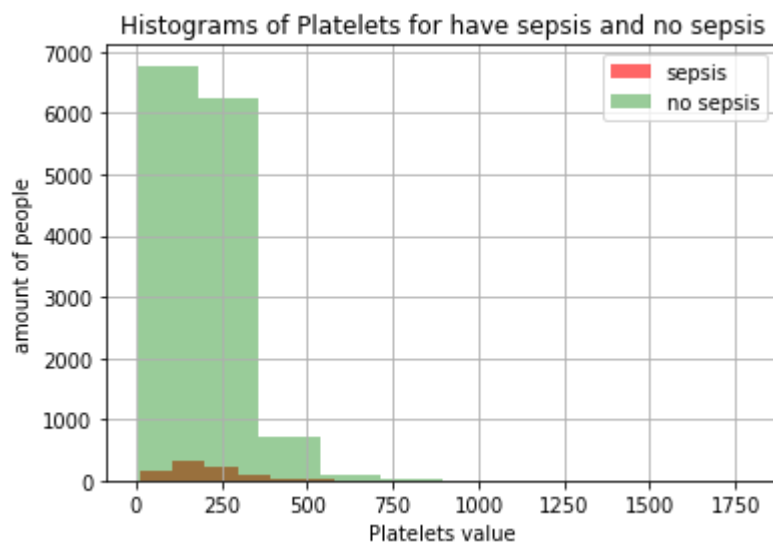
Histograms of Platelets for have sepsis and no sepsis

 Ttest - Check Platelets parameter:
Test statistic is 2.126074
p-value for two tailed test is 0.033514
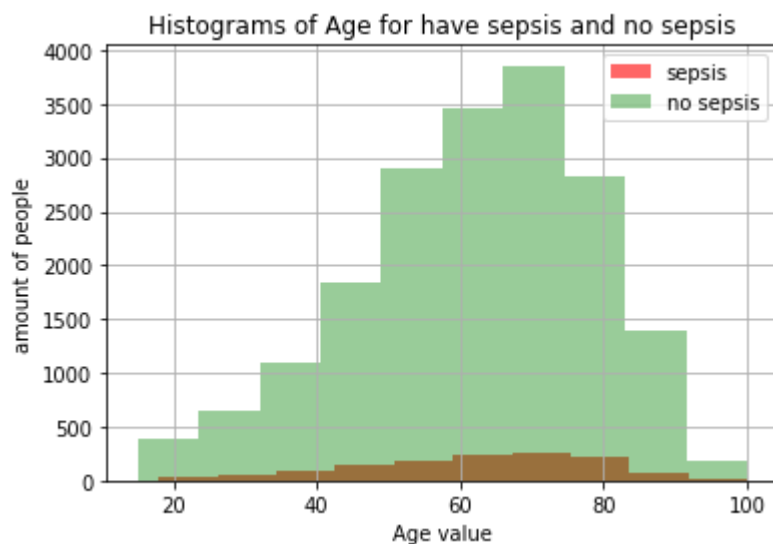Conclusion n Since p-value(=0.033514) < alpha(=0.05) We reject the null hy
pothesis H0 for Platelets parameter. at 0.05 level of significance.

 Wilcoxon - Check Platelets parameter in wilcoxon test:
Test statistic is 5973839.500000
p-value for two tailed test is 0.515377
Conclusion n Since p-value(=0.515377) > alpha(=0.05) We do not reject the
null hypothesis H0 for Platelets parameter.

Histograms of Age for have sepsis and no sepsis

 Ttest - Check Age parameter:
Test statistic is 1.440456
p-value for two tailed test is 0.149754
Conclusion n Since p-value(=0.149754) > alpha(=0.05) We do not reject the
null hypothesis H0 for Age parameter.

 Wilcoxon - Check Age parameter in wilcoxon test:
Test statistic is 12306554.000000
p-value for two tailed test is 0.131686
Conclusion n Since p-value(=0.131686) > alpha(=0.05) We do not reject the
null hypothesis H0 for Age parameter.

Histograms of Gender for have sepsis and no sepsis

 Ttest - Check Gender parameter:
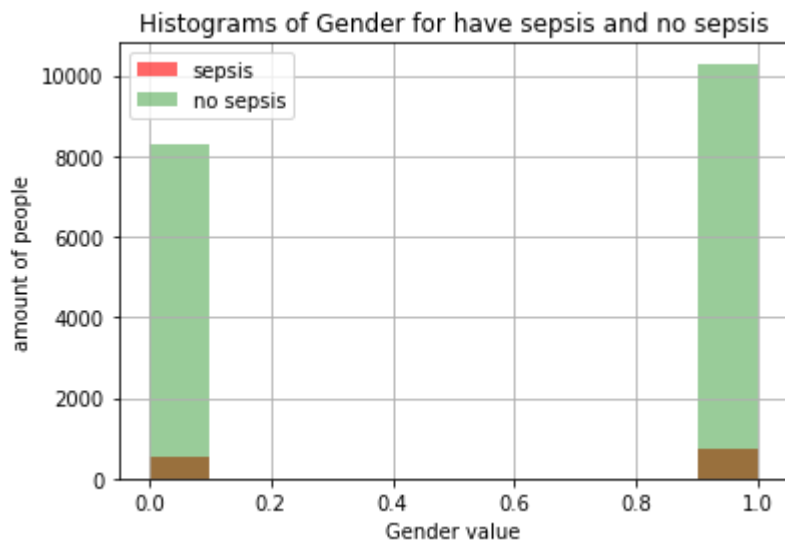Test statistic is 1.667015
p-value for two tailed test is 0.095527
Conclusion n Since p-value(=0.095527) > alpha(=0.05) We do not reject the
null hypothesis H0 for Gender parameter.

 Wilcoxon - Check Gender parameter in wilcoxon test:
Test statistic is 12292067.000000
p-value for two tailed test is 0.095527
Conclusion n Since p-value(=0.095527) > alpha(=0.05) We do not reject the
null hypothesis H0 for Gender parameter.

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histograms, Ttest and Wilcoxon-Test results for std of each parameter
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Histograms of HR for have sepsis and no sepsis

 Ttest - Check HR parameter:
Test statistic is 2.325057
p-value for two tailed test is 0.020079
Conclusion n Since p-value(=0.020079) < alpha(=0.05) We reject the null hy
pothesis H0 for HR parameter. at 0.05 level of significance.

 Wilcoxon - Check HR parameter in wilcoxon test:
Test statistic is 12303692.500000
p-value for two tailed test is 0.000000
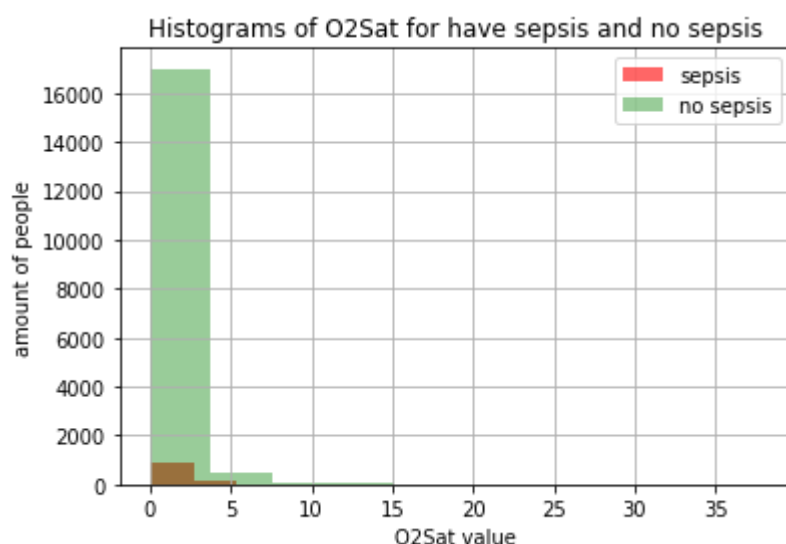Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for HR parameter. at 0.05 level of significance.

Histograms of O2Sat for have sepsis and no sepsis

 Ttest - Check O2Sat parameter:
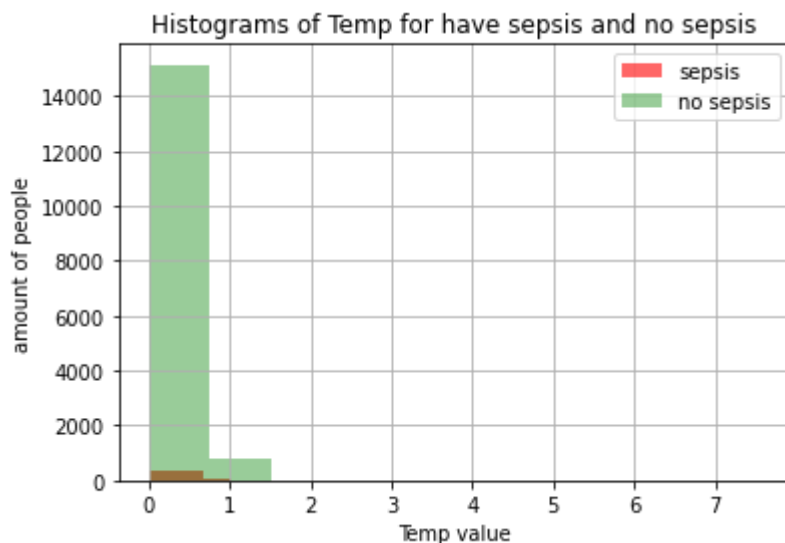Test statistic is -0.551322
p-value for two tailed test is 0.581419
Conclusion n Since p-value(=0.581419) > alpha(=0.05) We do not reject the
null hypothesis H0 for O2Sat parameter.

 Wilcoxon - Check O2Sat parameter in wilcoxon test:
Test statistic is 11078426.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for O2Sat parameter. at 0.05 level of significance.

 Ttest - Check Temp parameter:
Test statistic is 7.174218
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Temp parameter. at 0.05 level of significance.

 Wilcoxon - Check Temp parameter in wilcoxon test:
Test statistic is 10516195.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Temp parameter. at 0.05 level of significance.

Histograms of SBP for have sepsis and no sepsis

 Ttest - Check SBP parameter:
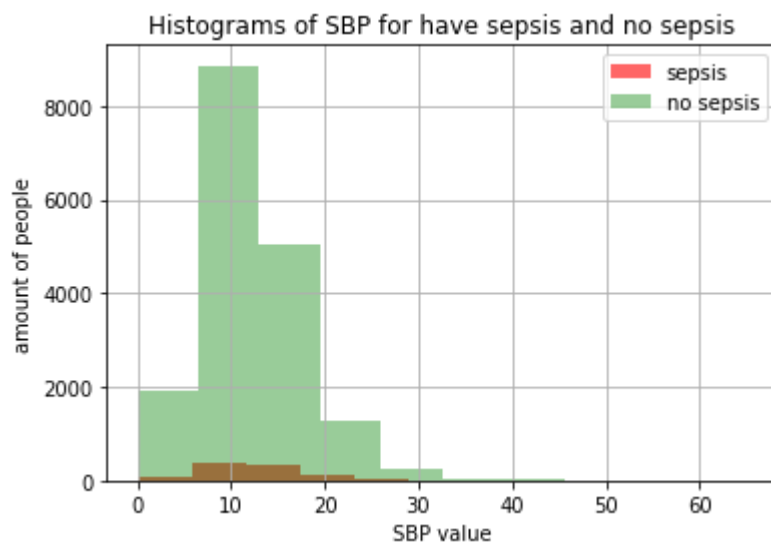Test statistic is 5.130554
p-value for two tailed test is 0.000000
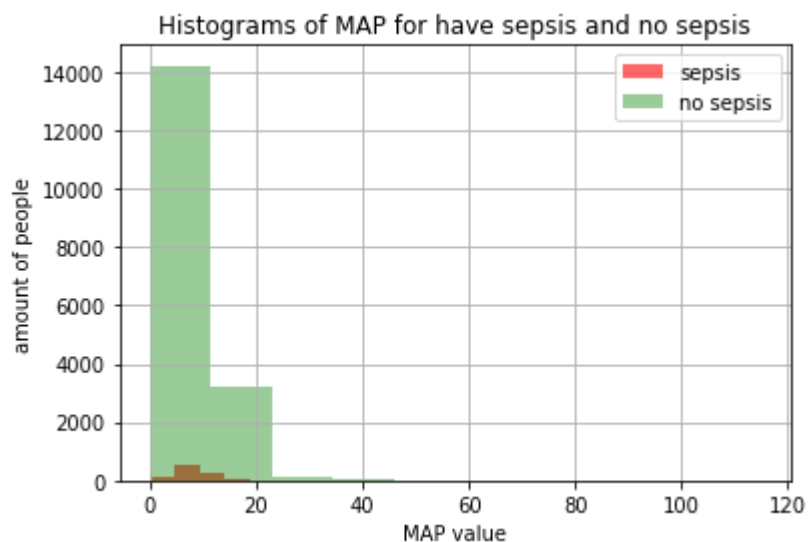Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for SBP parameter. at 0.05 level of significance.

 Wilcoxon - Check SBP parameter in wilcoxon test:
Test statistic is 8962797.000000
p-value for two tailed test is 0.036610
Conclusion n Since p-value(=0.036610) < alpha(=0.05) We reject the null hy
pothesis H0 for SBP parameter. at 0.05 level of significance.

Histograms of MAP for have sepsis and no sepsis

 Ttest - Check MAP parameter:
Test statistic is 1.587769
p-value for two tailed test is 0.112356
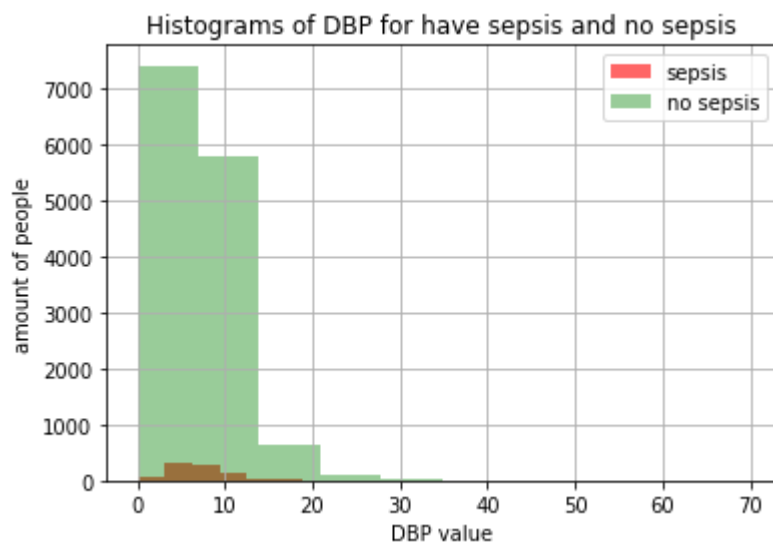Conclusion n Since p-value(=0.112356) > alpha(=0.05) We do not reject the
null hypothesis H0 for MAP parameter.

 Wilcoxon - Check MAP parameter in wilcoxon test:
Test statistic is 9505940.500000
p-value for two tailed test is 0.000583
Conclusion n Since p-value(=0.000583) < alpha(=0.05) We reject the null hy
pothesis H0 for MAP parameter. at 0.05 level of significance.

Histograms of DBP for have sepsis and no sepsis


```
 Ttest - Check DBP parameter:
Test statistic is -0.987084
p-value for two tailed test is 0.323618
Conclusion n Since p-value(=0.323618) > alpha(=0.05) We do not reject the
null hypothesis H0 for DBP parameter.

 Wilcoxon  - Check DBP parameter in wilcoxon test:
Test statistic is 5793612.000000
p-value for two tailed test is 0.000082
Conclusion n Since p-value(=0.000082) < alpha(=0.05) We reject the null hy
pothesis H0 for DBP parameter. at 0.05 level of significance.
```
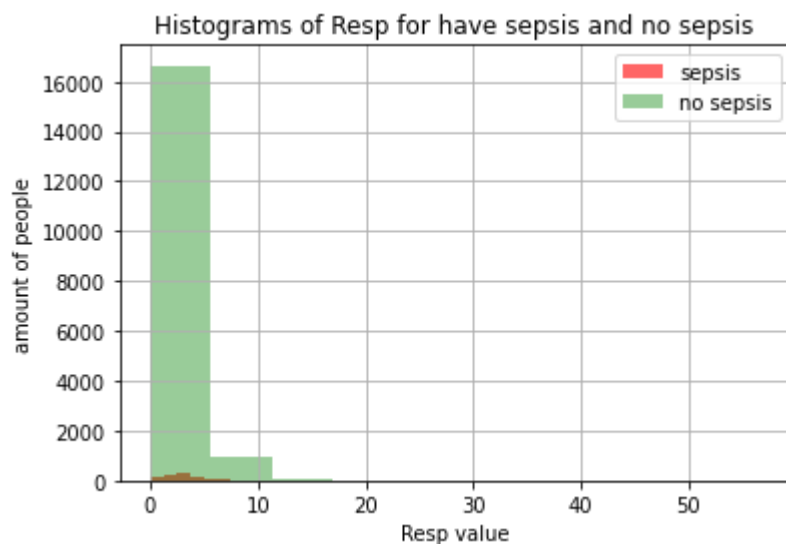
Histograms of Resp for have sepsis and no sepsis

 Ttest - Check Resp parameter:
Test statistic is 0.305411
p-value for two tailed test is 0.760057
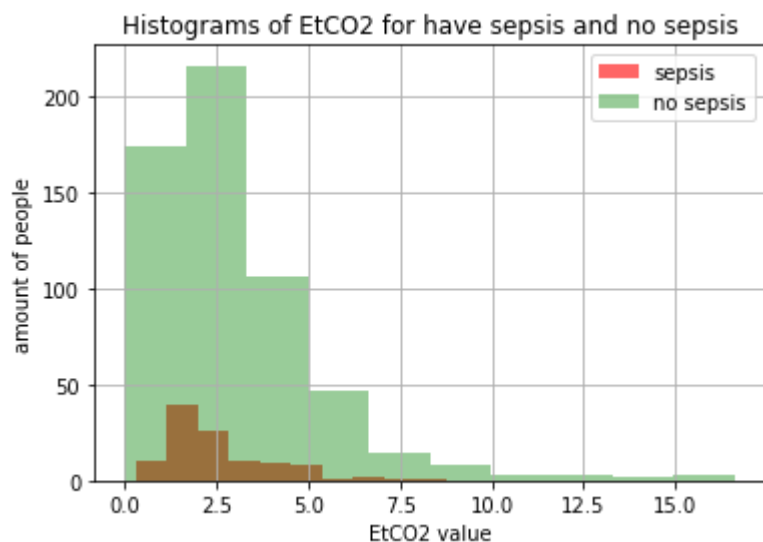Conclusion n Since p-value(=0.760057) > alpha(=0.05) We do not reject the
null hypothesis H0 for Resp parameter.

 Wilcoxon - Check Resp parameter in wilcoxon test:
Test statistic is 11674948.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Resp parameter. at 0.05 level of significance.

Histograms of EtCO2 for have sepsis and no sepsis

 Ttest - Check EtCO2 parameter:
Test statistic is -1.880876
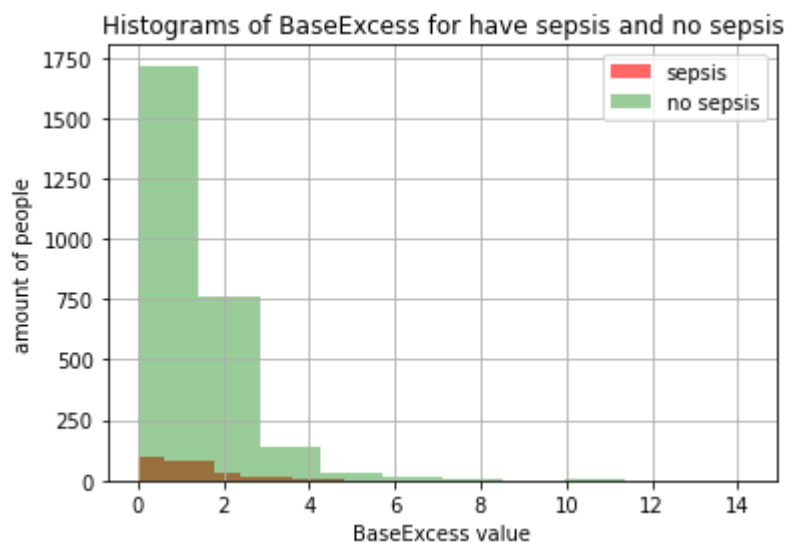p-value for two tailed test is 0.060415
Conclusion n Since p-value(=0.060415) > alpha(=0.05) We do not reject the
null hypothesis H0 for EtCO2 parameter.

 Wilcoxon - Check EtCO2 parameter in wilcoxon test:
Test statistic is 42594.500000
p-value for two tailed test is 0.664844
Conclusion n Since p-value(=0.664844) > alpha(=0.05) We do not reject the
null hypothesis H0 for EtCO2 parameter.

Histograms of BaseExcess for have sepsis and no sepsis

 Ttest - Check BaseExcess parameter:
Test statistic is -0.937824
p-value for two tailed test is 0.348410
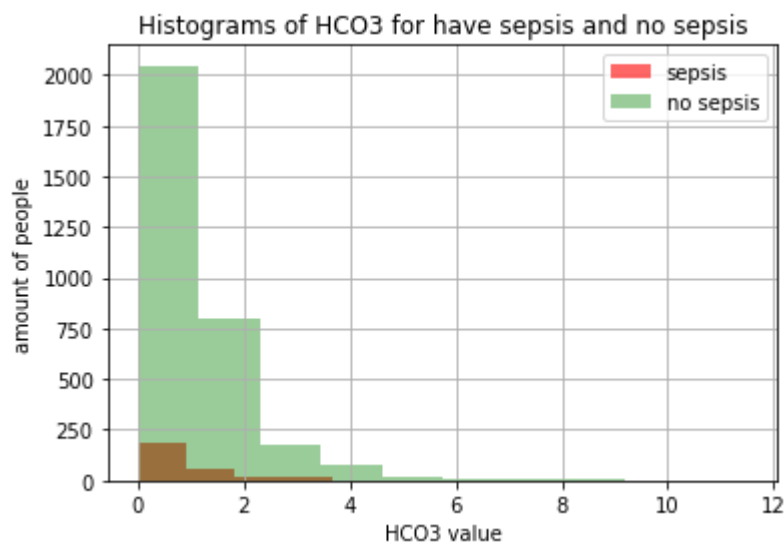Conclusion n Since p-value(=0.348410) > alpha(=0.05) We do not reject the
null hypothesis H0 for BaseExcess parameter.

 Wilcoxon - Check BaseExcess parameter in wilcoxon test:
Test statistic is 848686.500000
p-value for two tailed test is 0.019760
Conclusion n Since p-value(=0.019760) < alpha(=0.05) We reject the null hy
pothesis H0 for BaseExcess parameter. at 0.05 level of significance.

Histograms of HCO3 for have sepsis and no sepsis

 Ttest - Check HCO3 parameter:
Test statistic is -0.492043
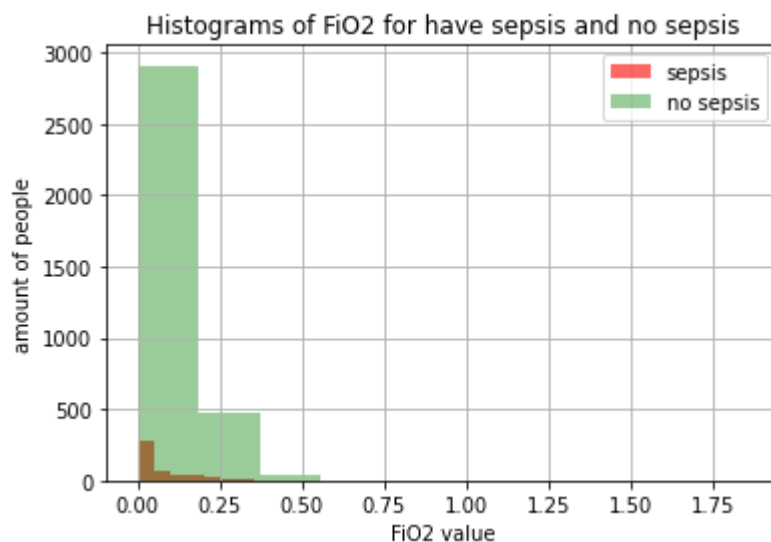p-value for two tailed test is 0.622721
Conclusion n Since p-value(=0.622721) > alpha(=0.05) We do not reject the
null hypothesis H0 for HCO3 parameter.

 Wilcoxon - Check HCO3 parameter in wilcoxon test:
Test statistic is 2013805.000000
p-value for two tailed test is 0.562284
Conclusion n Since p-value(=0.562284) > alpha(=0.05) We do not reject the
null hypothesis H0 for HCO3 parameter.

Histograms of FiO2 for have sepsis and no sepsis

```
 Ttest - Check FiO2 parameter:
Test statistic is -1.277696
p-value for two tailed test is 0.201433
Conclusion n Since p-value(=0.201433) > alpha(=0.05) We do not reject the
null hypothesis H0 for FiO2 parameter.

 Wilcoxon  - Check FiO2 parameter in wilcoxon test:
Test statistic is 1507641.000000
p-value for two tailed test is 0.000101
Conclusion n Since p-value(=0.000101) < alpha(=0.05) We reject the null hy
pothesis H0 for FiO2 parameter. at 0.05 level of significance.
```
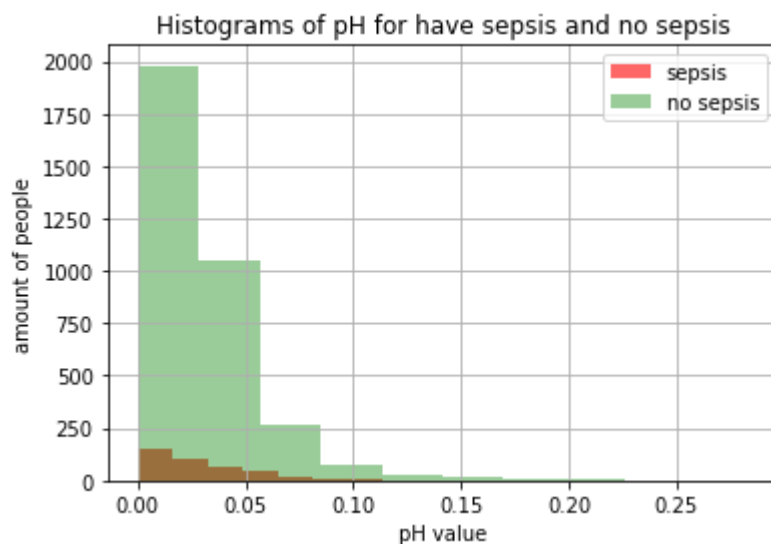
Histograms of pH for have sepsis and no sepsis

 Ttest - Check pH parameter:
Test statistic is -0.670696
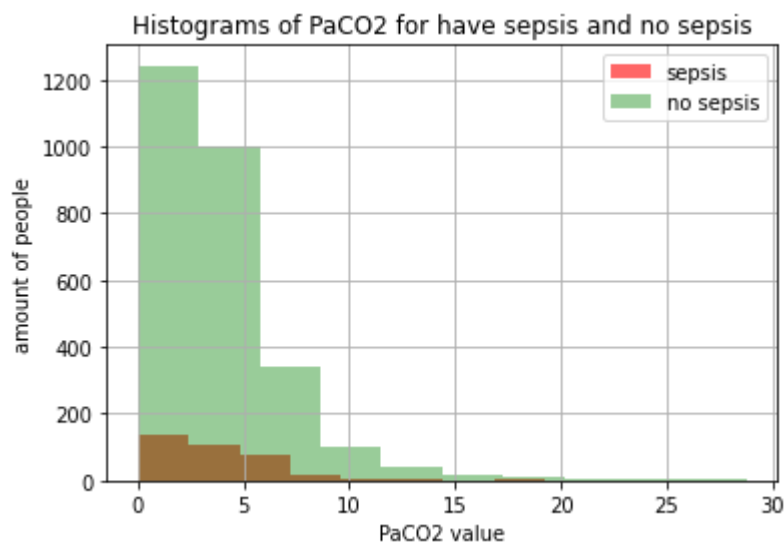p-value for two tailed test is 0.502455
Conclusion n Since p-value(=0.502455) > alpha(=0.05) We do not reject the
null hypothesis H0 for pH parameter.

 Wilcoxon - Check pH parameter in wilcoxon test:
Test statistic is 1465724.000000
p-value for two tailed test is 0.172022
Conclusion n Since p-value(=0.172022) > alpha(=0.05) We do not reject the
null hypothesis H0 for pH parameter.

Histograms of PaCO2 for have sepsis and no sepsis

 Ttest - Check PaCO2 parameter:
Test statistic is -0.364927
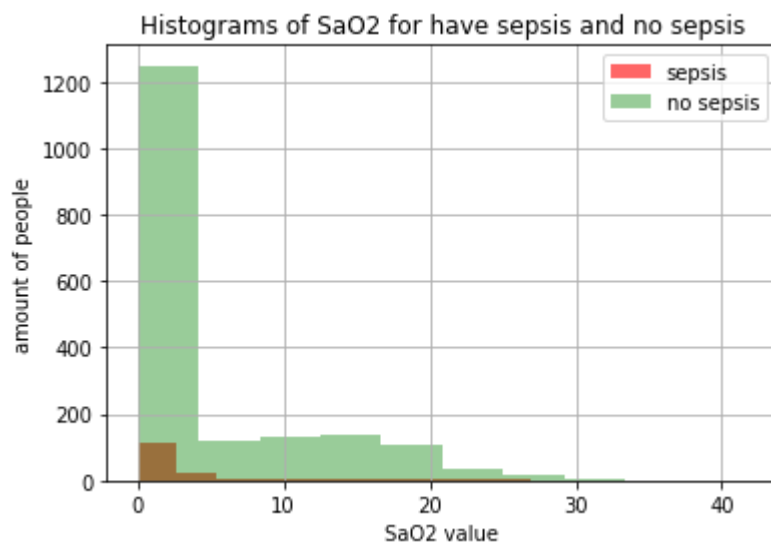p-value for two tailed test is 0.715191
Conclusion n Since p-value(=0.715191) > alpha(=0.05) We do not reject the
null hypothesis H0 for PaCO2 parameter.

 Wilcoxon - Check PaCO2 parameter in wilcoxon test:
Test statistic is 1191247.500000
p-value for two tailed test is 0.976337
Conclusion n Since p-value(=0.976337) > alpha(=0.05) We do not reject the
null hypothesis H0 for PaCO2 parameter.

Histograms of SaO2 for have sepsis and no sepsis


```
 Ttest - Check SaO2 parameter:
Test statistic is -2.043098
p-value for two tailed test is 0.041175
Conclusion n Since p-value(=0.041175) < alpha(=0.05) We reject the null hy
pothesis H0 for SaO2 parameter. at 0.05 level of significance.

 Wilcoxon  - Check SaO2 parameter in wilcoxon test:
Test statistic is 479035.500000
p-value for two tailed test is 0.001774
Conclusion n Since p-value(=0.001774) < alpha(=0.05) We reject the null hy
pothesis H0 for SaO2 parameter. at 0.05 level of significance.
```
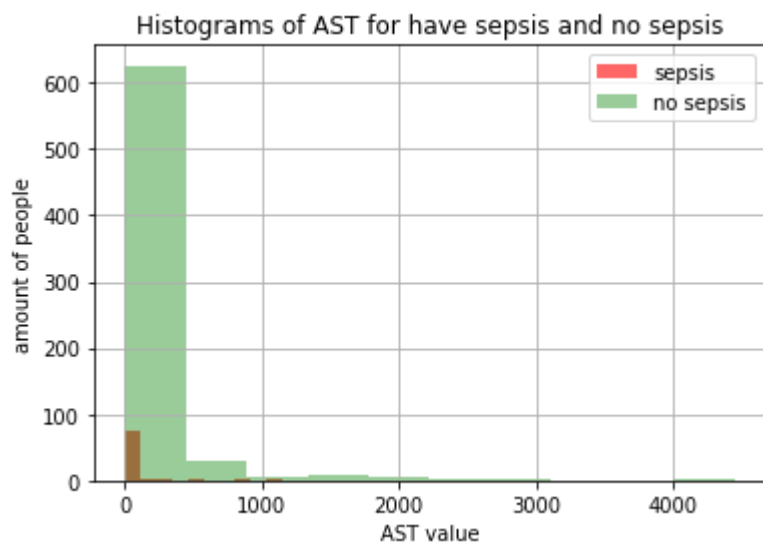
Histograms of AST for have sepsis and no sepsis

 Ttest - Check AST parameter:
Test statistic is -1.768992
p-value for two tailed test is 0.077297
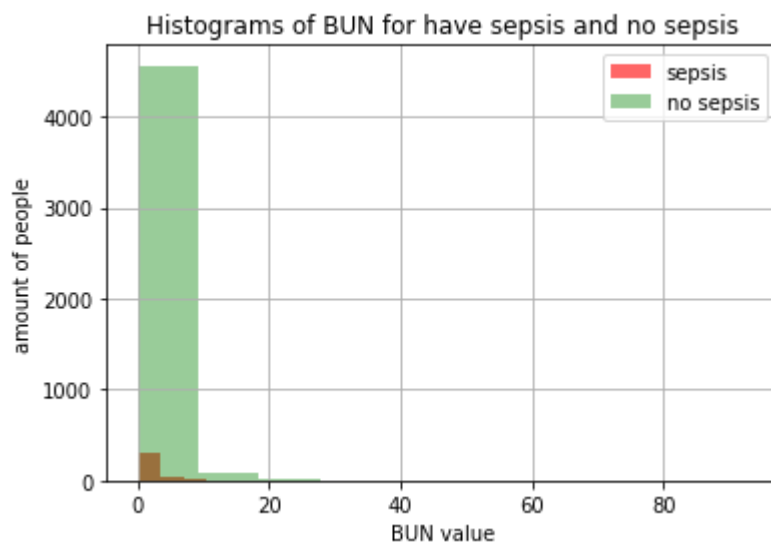Conclusion n Since p-value(=0.077297) > alpha(=0.05) We do not reject the
null hypothesis H0 for AST parameter.

 Wilcoxon - Check AST parameter in wilcoxon test:
Test statistic is 451343.000000
p-value for two tailed test is 0.011535
Conclusion n Since p-value(=0.011535) < alpha(=0.05) We reject the null hy
pothesis H0 for AST parameter. at 0.05 level of significance.

Histograms of BUN for have sepsis and no sepsis

 Ttest - Check BUN parameter:
Test statistic is 0.059888
p-value for two tailed test is 0.952247
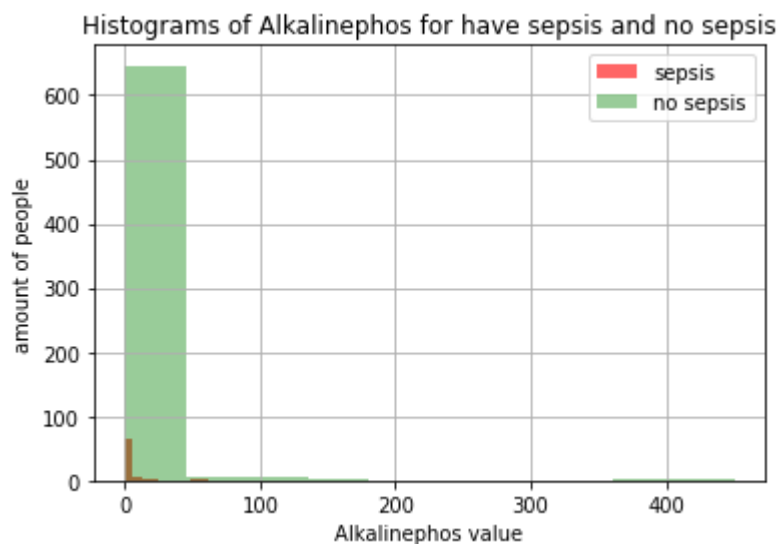Conclusion n Since p-value(=0.952247) > alpha(=0.05) We do not reject the
null hypothesis H0 for BUN parameter.

 Wilcoxon - Check BUN parameter in wilcoxon test:
Test statistic is 7187585.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for BUN parameter. at 0.05 level of significance.

Histograms of Alkalinephos for have sepsis and no sepsis

 Ttest - Check Alkalinephos parameter:
Test statistic is -1.338797
p-value for two tailed test is 0.181049
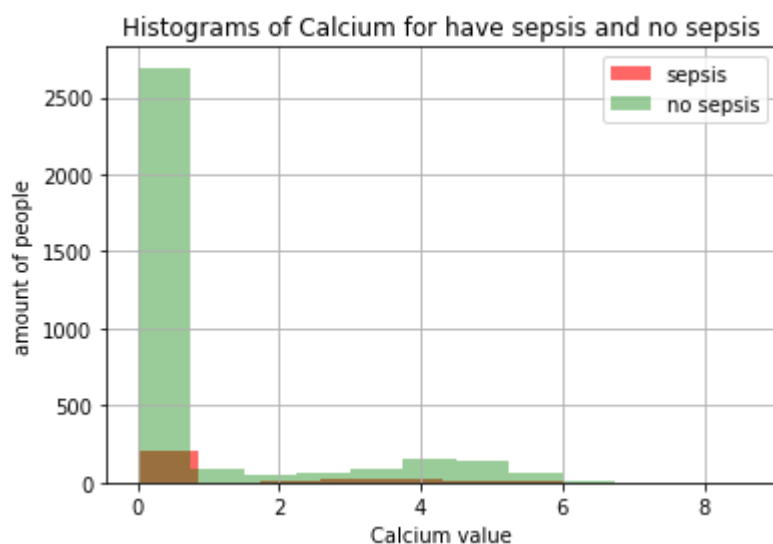Conclusion n Since p-value(=0.181049) > alpha(=0.05) We do not reject the
null hypothesis H0 for Alkalinephos parameter.

 Wilcoxon - Check Alkalinephos parameter in wilcoxon test:
Test statistic is 402449.500000
p-value for two tailed test is 0.458888
Conclusion n Since p-value(=0.458888) > alpha(=0.05) We do not reject the
null hypothesis H0 for Alkalinephos parameter.

Histograms of Calcium for have sepsis and no sepsis

 Ttest - Check Calcium parameter:
Test statistic is 3.608232
p-value for two tailed test is 0.000312
Conclusion n Since p-value(=0.000312) < alpha(=0.05) We reject the null hy
pothesis H0 for Calcium parameter. at 0.05 level of significance.

 Wilcoxon - Check Calcium parameter in wilcoxon test:
Test statistic is 4258344.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Calcium parameter. at 0.05 level of significance.

Histograms of Chloride for have sepsis and no sepsis

 Ttest - Check Chloride parameter:
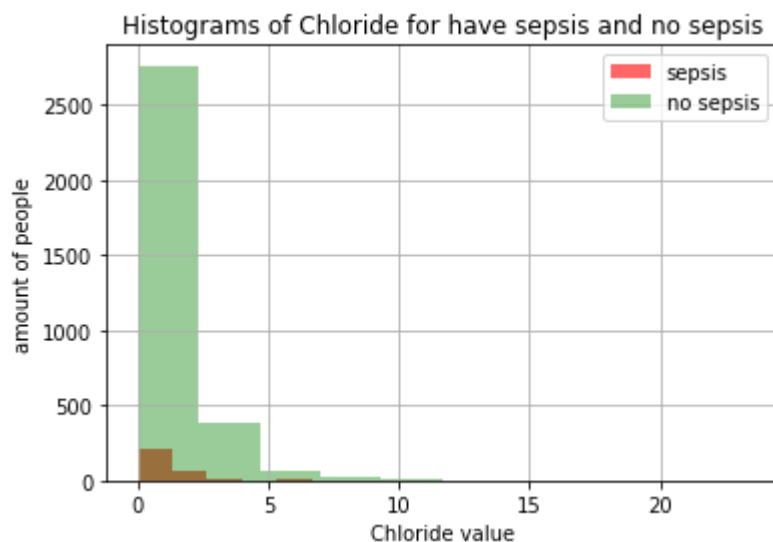Test statistic is -1.963334
p-value for two tailed test is 0.049686
Conclusion n Since p-value(=0.049686) < alpha(=0.05) We reject the null hy
pothesis H0 for Chloride parameter. at 0.05 level of significance.

 Wilcoxon - Check Chloride parameter in wilcoxon test:
Test statistic is 2347707.500000
p-value for two tailed test is 0.081692
Conclusion n Since p-value(=0.081692) > alpha(=0.05) We do not reject the
null hypothesis H0 for Chloride parameter.

Histograms of Creatinine for have sepsis and no sepsis


```
 Ttest - Check Creatinine parameter:
Test statistic is 0.031483
p-value for two tailed test is 0.974886
Conclusion n Since p-value(=0.974886) > alpha(=0.05) We do not reject the
null hypothesis H0 for Creatinine parameter.

 Wilcoxon  - Check Creatinine parameter in wilcoxon test:
Test statistic is 6310030.500000
p-value for two tailed test is 0.014732
Conclusion n Since p-value(=0.014732) < alpha(=0.05) We reject the null hy
pothesis H0 for Creatinine parameter. at 0.05 level of significance.
```
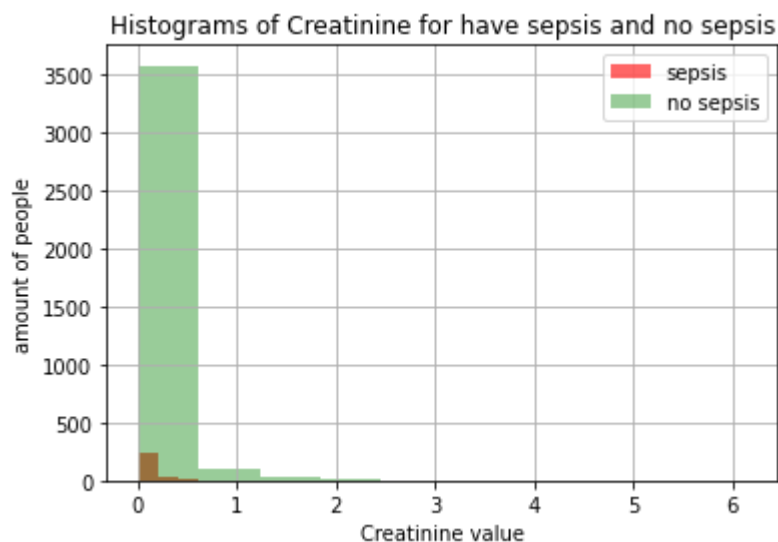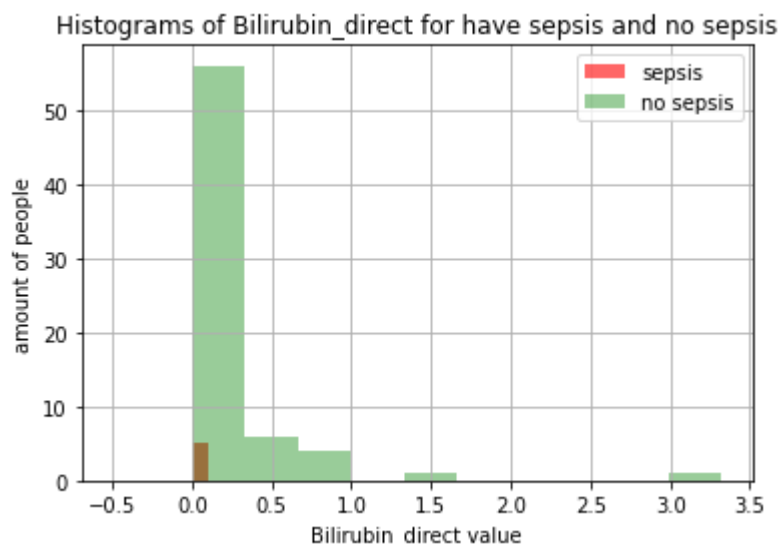
Histograms of Bilirubin_direct for have sepsis and no sepsis

Ttest - Check Bilirubin_direct parameter:
Test statistic is -1.081785
p-value for two tailed test is 0.283009
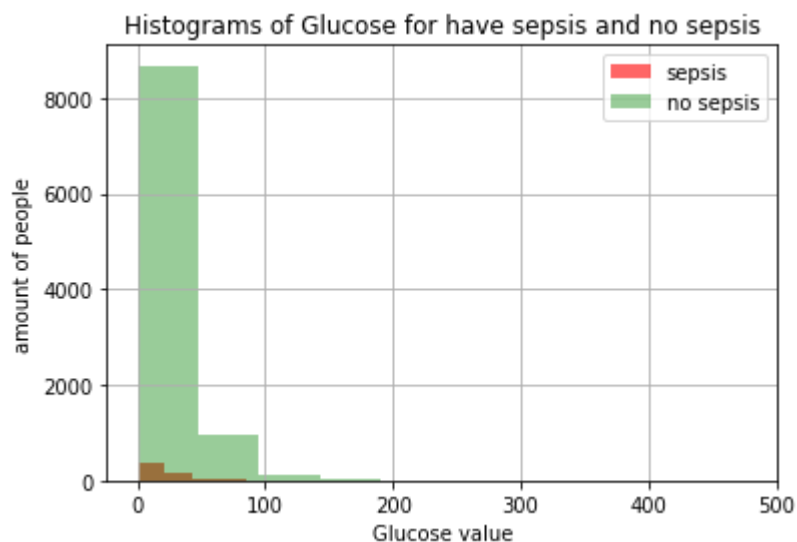Conclusion n Since p-value(=0.283009) > alpha(=0.05) We do not reject the
null hypothesis H0 for Bilirubin_direct parameter.

Wilcoxon - Check Bilirubin_direct parameter in wilcoxon test:
Test statistic is 8312.000000
p-value for two tailed test is 0.006469
Conclusion n Since p-value(=0.006469) < alpha(=0.05) We reject the null hy
pothesis H0 for Bilirubin_direct parameter. at 0.05 level of significance.

Histograms of Glucose for have sepsis and no sepsis

 Ttest - Check Glucose parameter:
Test statistic is -0.472219
p-value for two tailed test is 0.636780
Conclusion n Since p-value(=0.636780) > alpha(=0.05) We do not reject the
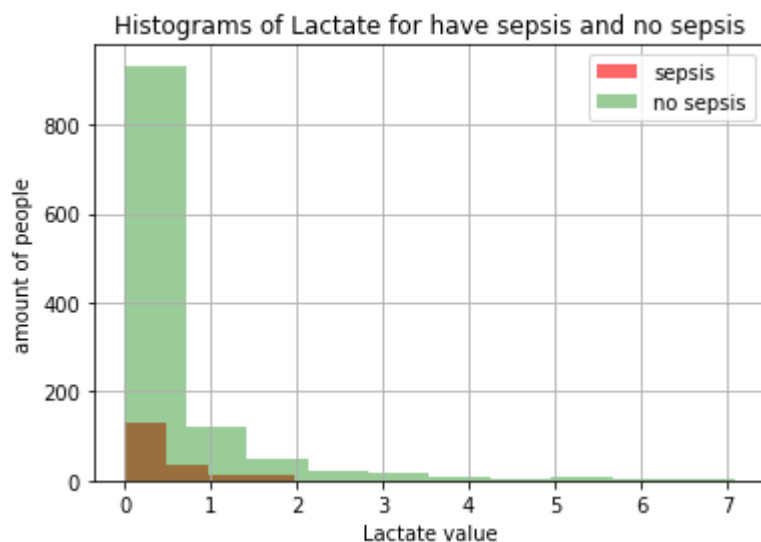null hypothesis H0 for Glucose parameter.

 Wilcoxon - Check Glucose parameter in wilcoxon test:
Test statistic is 7982248.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Glucose parameter. at 0.05 level of significance.

Histograms of Lactate for have sepsis and no sepsis

 Ttest - Check Lactate parameter:
Test statistic is -0.974763
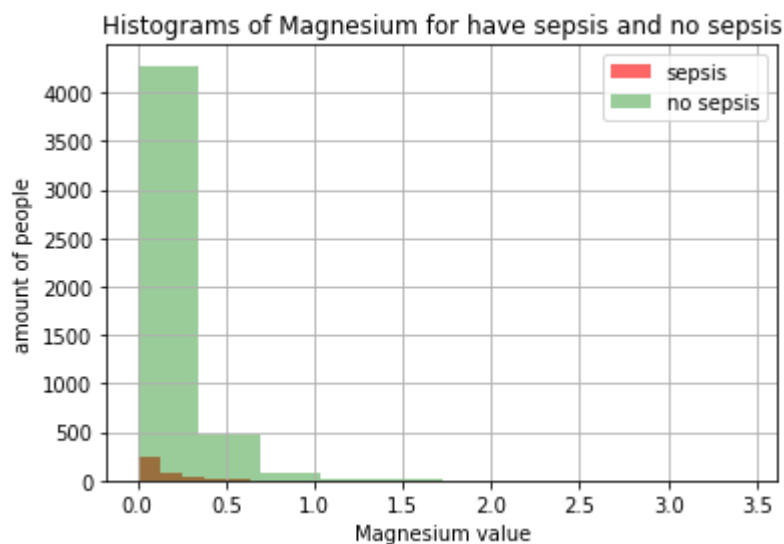p-value for two tailed test is 0.329851
Conclusion n Since p-value(=0.329851) > alpha(=0.05) We do not reject the
null hypothesis H0 for Lactate parameter.

 Wilcoxon - Check Lactate parameter in wilcoxon test:
Test statistic is 410670.000000
p-value for two tailed test is 0.105473
Conclusion n Since p-value(=0.105473) > alpha(=0.05) We do not reject the
null hypothesis H0 for Lactate parameter.

Histograms of Magnesium for have sepsis and no sepsis

Ttest - Check Magnesium parameter:
Test statistic is -1.482512
p-value for two tailed test is 0.138264
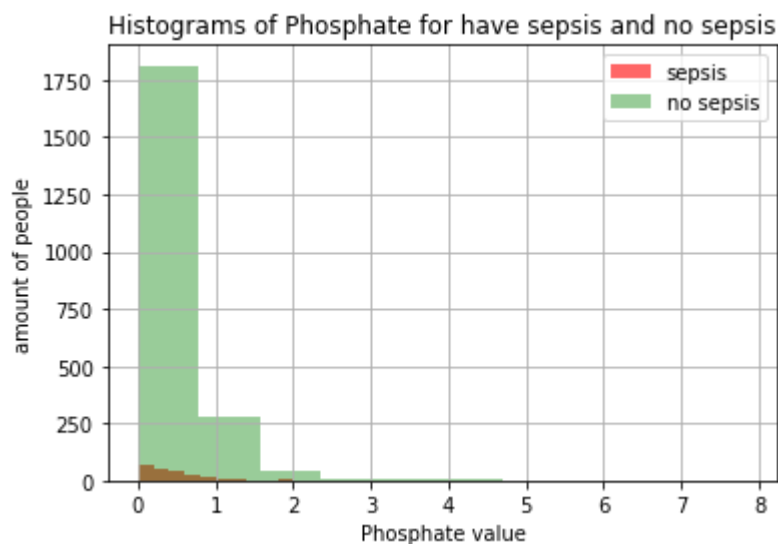Conclusion n Since p-value(=0.138264) > alpha(=0.05) We do not reject the
null hypothesis H0 for Magnesium parameter.

Wilcoxon - Check Magnesium parameter in wilcoxon test:
Test statistic is 5599809.500000
p-value for two tailed test is 0.000240
Conclusion n Since p-value(=0.000240) < alpha(=0.05) We reject the null hy
pothesis H0 for Magnesium parameter. at 0.05 level of significance.

Histograms of Phosphate for have sepsis and no sepsis

 Ttest - Check Phosphate parameter:
Test statistic is -0.975695
p-value for two tailed test is 0.329315
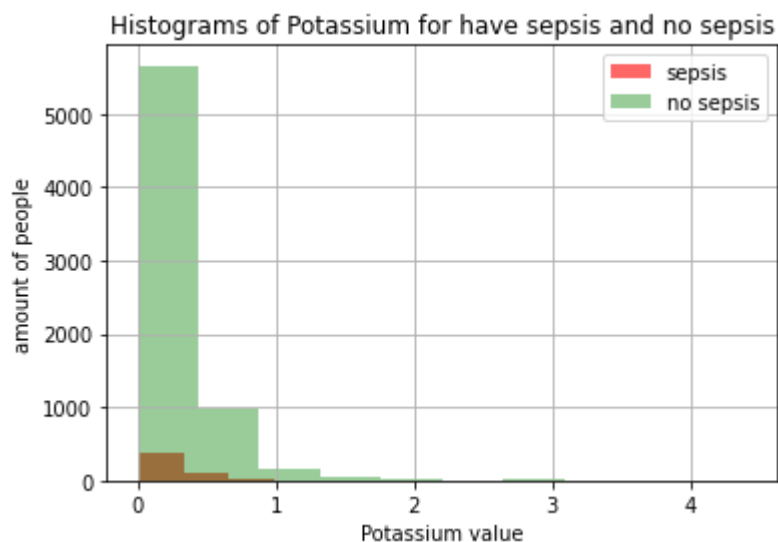Conclusion n Since p-value(=0.329315) > alpha(=0.05) We do not reject the
null hypothesis H0 for Phosphate parameter.

 Wilcoxon - Check Phosphate parameter in wilcoxon test:
Test statistic is 3459569.000000
p-value for two tailed test is 0.356921
Conclusion n Since p-value(=0.356921) > alpha(=0.05) We do not reject the
null hypothesis H0 for Phosphate parameter.

Histograms of Potassium for have sepsis and no sepsis


```
 Ttest - Check Potassium parameter:
Test statistic is -1.016060
p-value for two tailed test is 0.309634
Conclusion n Since p-value(=0.309634) > alpha(=0.05) We do not reject the
null hypothesis H0 for Potassium parameter.

 Wilcoxon  - Check Potassium parameter in wilcoxon test:
Test statistic is 6053364.500000
p-value for two tailed test is 0.006588
Conclusion n Since p-value(=0.006588) < alpha(=0.05) We reject the null hy
pothesis H0 for Potassium parameter. at 0.05 level of significance.
```
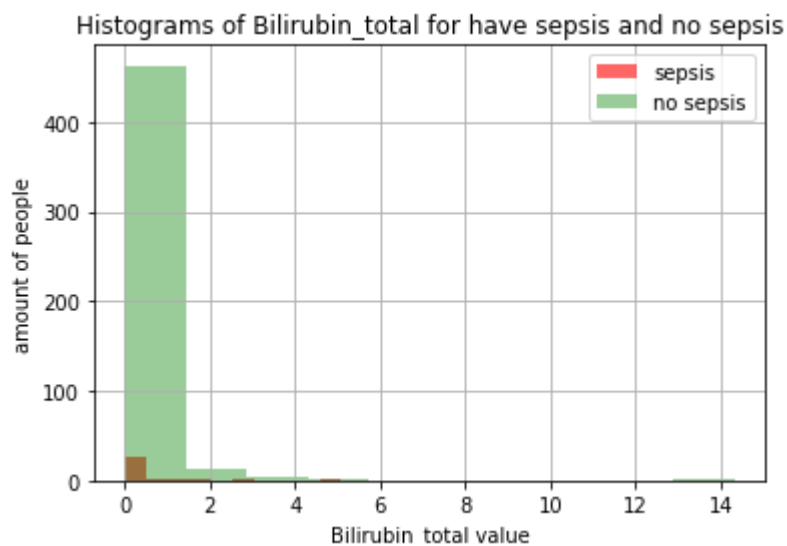
Histograms of Bilirubin_total for have sepsis and no sepsis

 Ttest - Check Bilirubin_total parameter:
Test statistic is 1.356339
p-value for two tailed test is 0.175585
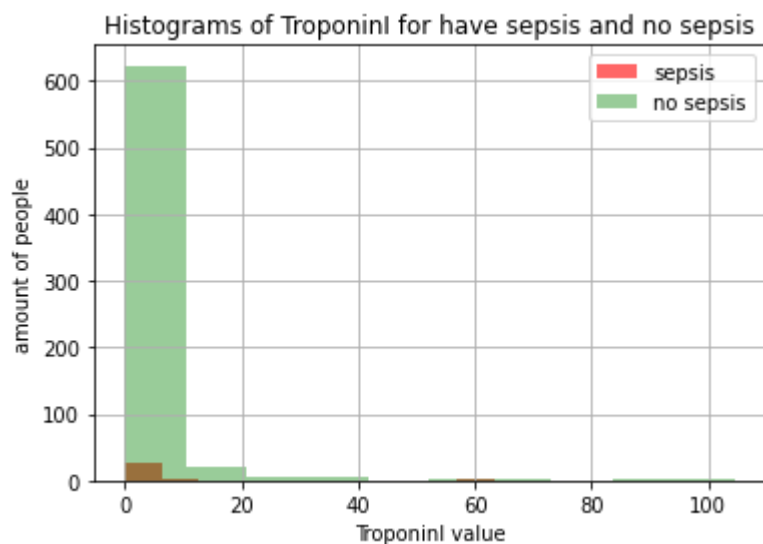Conclusion n Since p-value(=0.175585) > alpha(=0.05) We do not reject the
null hypothesis H0 for Bilirubin_total parameter.

 Wilcoxon - Check Bilirubin_total parameter in wilcoxon test:
Test statistic is 438778.000000
p-value for two tailed test is 0.055420
Conclusion n Since p-value(=0.055420) > alpha(=0.05) We do not reject the
null hypothesis H0 for Bilirubin_total parameter.

Histograms of TroponinI for have sepsis and no sepsis

 Ttest - Check TroponinI parameter:
Test statistic is 0.845728
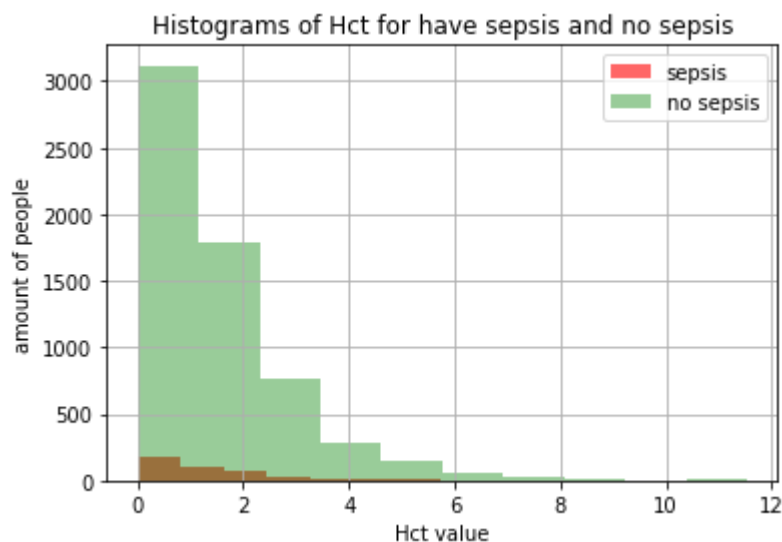p-value for two tailed test is 0.398000
Conclusion n Since p-value(=0.398000) > alpha(=0.05) We do not reject the
null hypothesis H0 for TroponinI parameter.

 Wilcoxon - Check TroponinI parameter in wilcoxon test:
Test statistic is 56783.500000
p-value for two tailed test is 0.120123
Conclusion n Since p-value(=0.120123) > alpha(=0.05) We do not reject the
null hypothesis H0 for TroponinI parameter.

Histograms of Hct for have sepsis and no sepsis

 Ttest - Check Hct parameter:
Test statistic is -2.490797
p-value for two tailed test is 0.012770
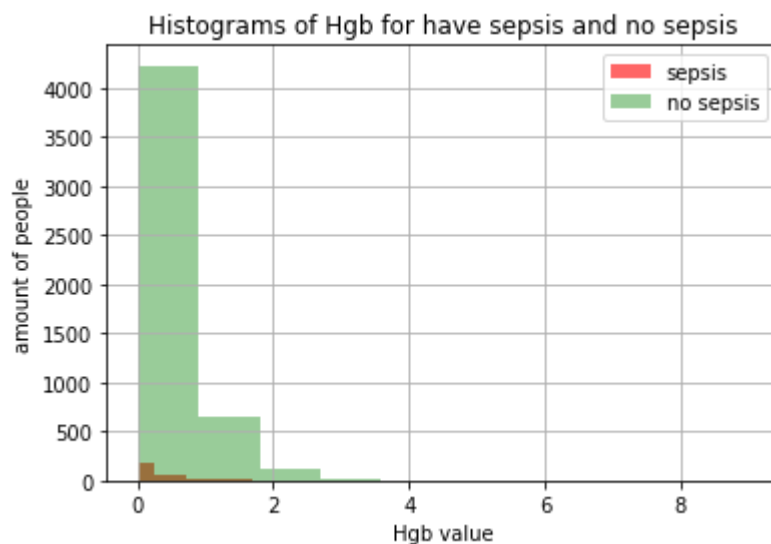Conclusion n Since p-value(=0.012770) < alpha(=0.05) We reject the null hy
pothesis H0 for Hct parameter. at 0.05 level of significance.

 Wilcoxon - Check Hct parameter in wilcoxon test:
Test statistic is 5660863.500000
p-value for two tailed test is 0.000001
Conclusion n Since p-value(=0.000001) < alpha(=0.05) We reject the null hy
pothesis H0 for Hct parameter. at 0.05 level of significance.

Histograms of Hgb for have sepsis and no sepsis

 Ttest - Check Hgb parameter:
Test statistic is -3.031266
p-value for two tailed test is 0.002447
Conclusion n Since p-value(=0.002447) < alpha(=0.05) We reject the null hy
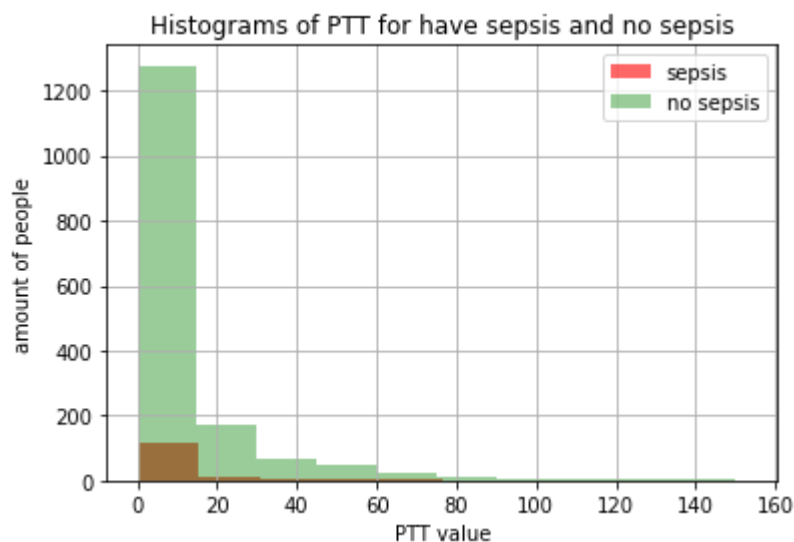pothesis H0 for Hgb parameter. at 0.05 level of significance.

 Wilcoxon - Check Hgb parameter in wilcoxon test:
Test statistic is 5386141.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Hgb parameter. at 0.05 level of significance.

Histograms of PTT for have sepsis and no sepsis

 Ttest - Check PTT parameter:
Test statistic is 0.589803
p-value for two tailed test is 0.555398
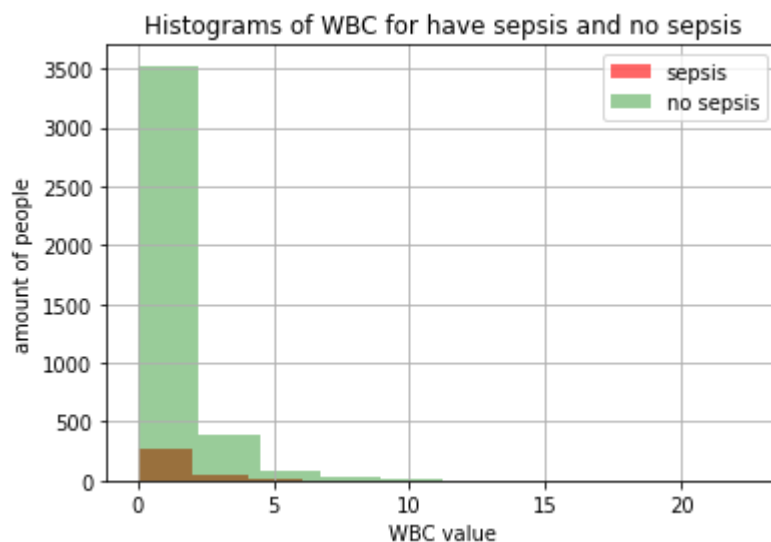Conclusion n Since p-value(=0.555398) > alpha(=0.05) We do not reject the
null hypothesis H0 for PTT parameter.

 Wilcoxon - Check PTT parameter in wilcoxon test:
Test statistic is 1283426.500000
p-value for two tailed test is 0.001086
Conclusion n Since p-value(=0.001086) < alpha(=0.05) We reject the null hy
pothesis H0 for PTT parameter. at 0.05 level of significance.

Histograms of WBC for have sepsis and no sepsis

 Ttest - Check WBC parameter:
Test statistic is 0.988276
p-value for two tailed test is 0.323072
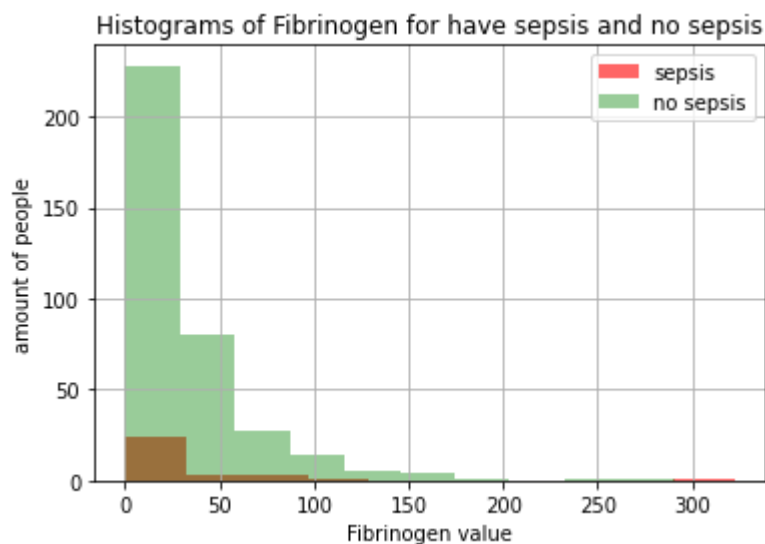Conclusion n Since p-value(=0.323072) > alpha(=0.05) We do not reject the
null hypothesis H0 for WBC parameter.

 Wilcoxon - Check WBC parameter in wilcoxon test:
Test statistic is 6963512.500000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for WBC parameter. at 0.05 level of significance.

Histograms of Fibrinogen for have sepsis and no sepsis

 Ttest - Check Fibrinogen parameter:
Test statistic is 0.265016
p-value for two tailed test is 0.791136
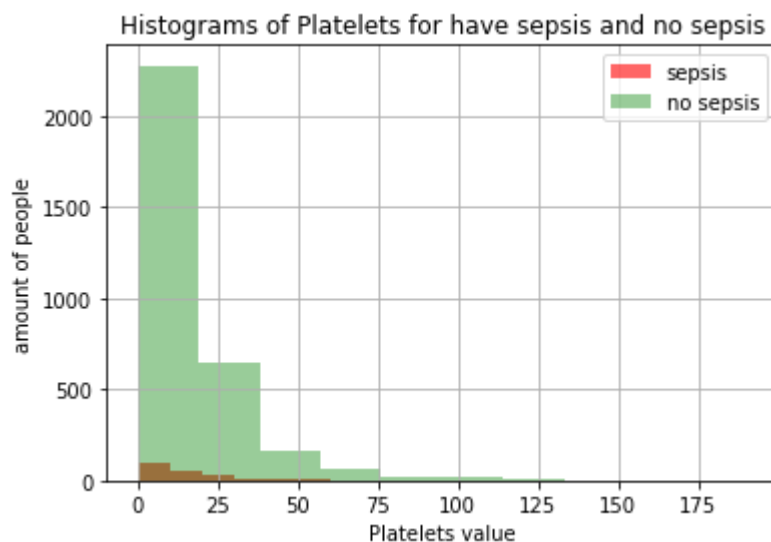Conclusion n Since p-value(=0.791136) > alpha(=0.05) We do not reject the
null hypothesis H0 for Fibrinogen parameter.

 Wilcoxon - Check Fibrinogen parameter in wilcoxon test:
Test statistic is 31559.500000
p-value for two tailed test is 0.514956
Conclusion n Since p-value(=0.514956) > alpha(=0.05) We do not reject the
null hypothesis H0 for Fibrinogen parameter.

Histograms of Platelets for have sepsis and no sepsis

 Ttest - Check Platelets parameter:
Test statistic is 0.680175
p-value for two tailed test is 0.496440
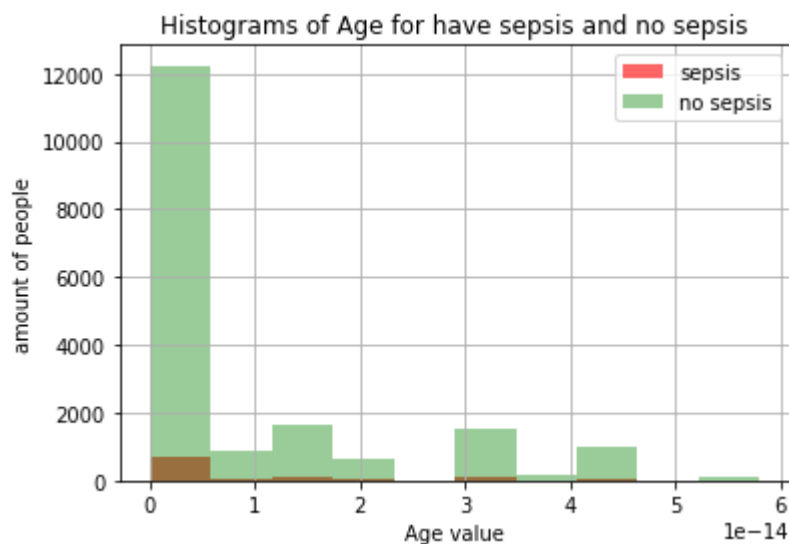Conclusion n Since p-value(=0.496440) > alpha(=0.05) We do not reject the
null hypothesis H0 for Platelets parameter.

 Wilcoxon - Check Platelets parameter in wilcoxon test:
Test statistic is 5973839.500000
p-value for two tailed test is 0.515377
Conclusion n Since p-value(=0.515377) > alpha(=0.05) We do not reject the
null hypothesis H0 for Platelets parameter.

Histograms of Age for have sepsis and no sepsis

 Ttest - Check Age parameter:
Test statistic is 1.837905
p-value for two tailed test is 0.066092
Conclusion n Since p-value(=0.066092) > alpha(=0.05) We do not reject the
null hypothesis H0 for Age parameter.

 Wilcoxon - Check Age parameter in wilcoxon test:
Test statistic is 12306554.000000
p-value for two tailed test is 0.131686
Conclusion n Since p-value(=0.131686) > alpha(=0.05) We do not reject the
null hypothesis H0 for Age parameter.

Histograms of Gender for have sepsis and no sepsis

 Ttest - Check Gender parameter:
Test statistic is nan
p-value for two tailed test is nan
Conclusion n Since p-value(=nan) > alpha(=0.05) We do not reject the null
hypothesis H0 for Gender parameter.

 Wilcoxon - Check Gender parameter in wilcoxon test:
Test statistic is 12292067.000000
p-value for two tailed test is 0.095527
Conclusion n Since p-value(=0.095527) > alpha(=0.05) We do not reject the
null hypothesis H0 for Gender parameter.

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histograms, Ttest and Wilcoxon-Test results for max of each parameter
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Histograms of HR for have sepsis and no sepsis

 Ttest - Check HR parameter:
Test statistic is 10.106475
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for HR parameter. at 0.05 level of significance.
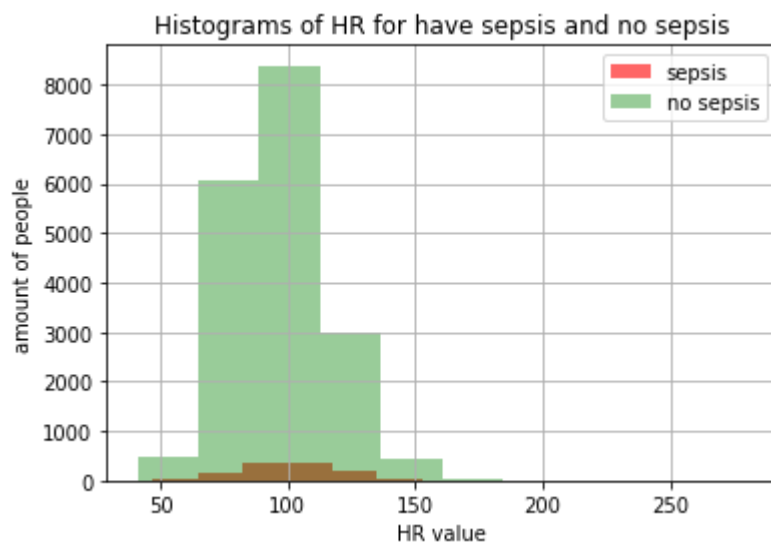
 Wilcoxon - Check HR parameter in wilcoxon test:
Test statistic is 12303692.500000
p-value for two tailed test is 0.000000
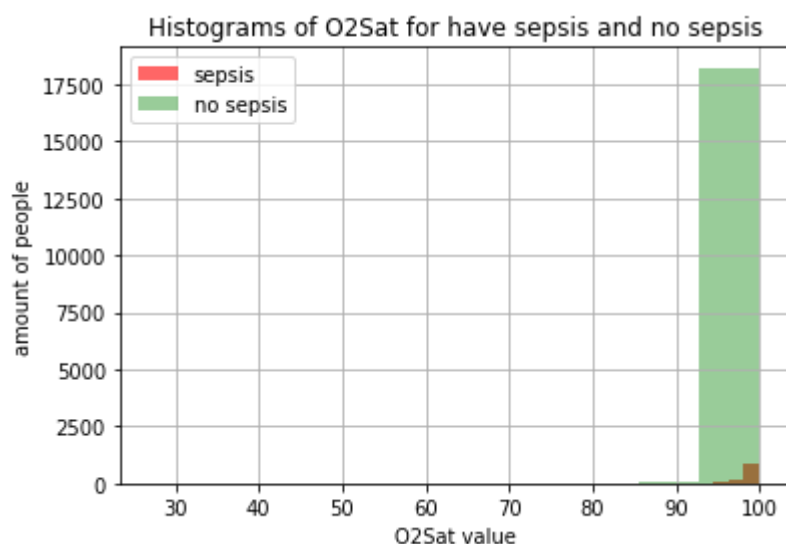Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for HR parameter. at 0.05 level of significance.

Histograms of O2Sat for have sepsis and no sepsis

 Ttest - Check O2Sat parameter:
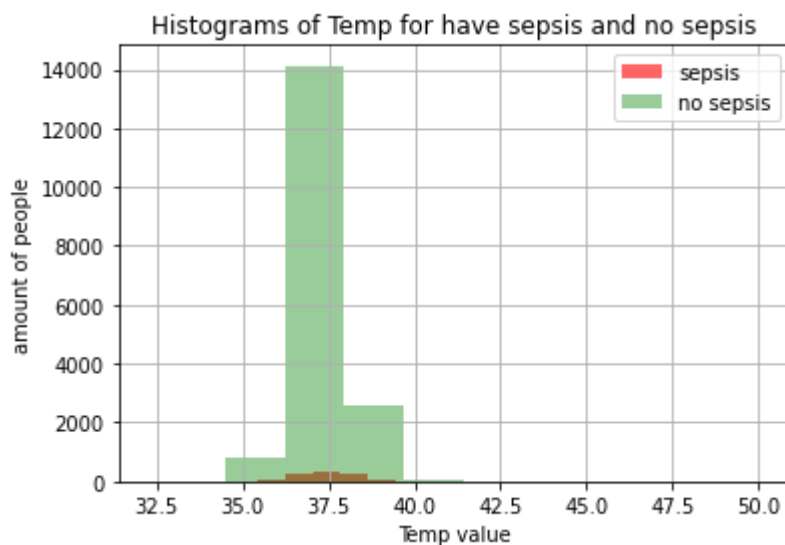Test statistic is 0.859936
p-value for two tailed test is 0.389835
Conclusion n Since p-value(=0.389835) > alpha(=0.05) We do not reject the
null hypothesis H0 for O2Sat parameter.

 Wilcoxon - Check O2Sat parameter in wilcoxon test:
Test statistic is 11078426.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for O2Sat parameter. at 0.05 level of significance.

Histograms of Temp for have sepsis and no sepsis

 Ttest - Check Temp parameter:
Test statistic is 10.502447
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
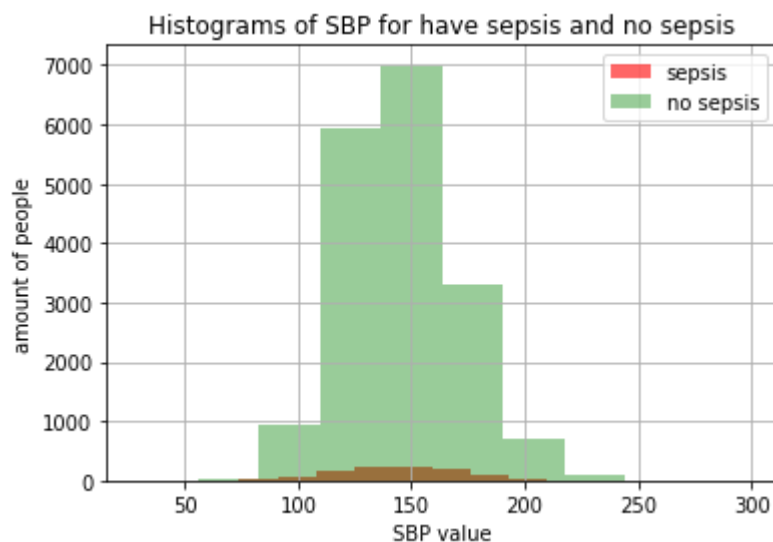pothesis H0 for Temp parameter. at 0.05 level of significance.

 Wilcoxon - Check Temp parameter in wilcoxon test:
Test statistic is 10516195.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Temp parameter. at 0.05 level of significance.

Histograms of SBP for have sepsis and no sepsis

Ttest - Check SBP parameter:
Test statistic is -0.376188
p-value for two tailed test is 0.706781
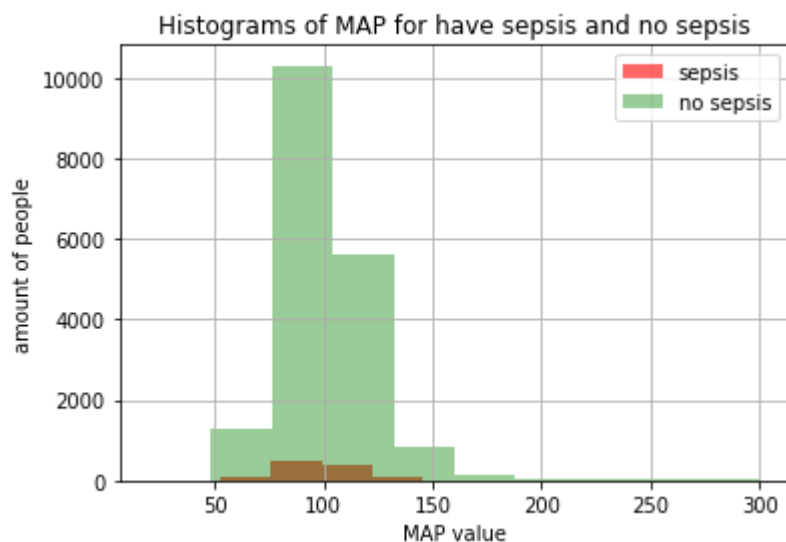Conclusion n Since p-value(=0.706781) > alpha(=0.05) We do not reject the
null hypothesis H0 for SBP parameter.

Wilcoxon - Check SBP parameter in wilcoxon test:
Test statistic is 8962797.000000
p-value for two tailed test is 0.036610
Conclusion n Since p-value(=0.036610) < alpha(=0.05) We reject the null hy
pothesis H0 for SBP parameter. at 0.05 level of significance.

Histograms of MAP for have sepsis and no sepsis

```
 Ttest - Check MAP parameter:
Test statistic is -2.257014
p-value for two tailed test is 0.024018
Conclusion n Since p-value(=0.024018) < alpha(=0.05) We reject the null hy
pothesis H0 for MAP parameter. at 0.05 level of significance.

 Wilcoxon  - Check MAP parameter in wilcoxon test:
Test statistic is 9505940.500000
p-value for two tailed test is 0.000583
Conclusion n Since p-value(=0.000583) < alpha(=0.05) We reject the null hy
pothesis H0 for MAP parameter. at 0.05 level of significance.
```

Histograms of DBP for have sepsis and no sepsis

```
 Ttest - Check DBP parameter:
Test statistic is -3.538892
p-value for two tailed test is 0.000403
Conclusion n Since p-value(=0.000403) < alpha(=0.05) We reject the null hy
pothesis H0 for DBP parameter. at 0.05 level of significance.

 Wilcoxon  - Check DBP parameter in wilcoxon test:
Test statistic is 5793612.000000
p-value for two tailed test is 0.000082
Conclusion n Since p-value(=0.000082) < alpha(=0.05) We reject the null hy
pothesis H0 for DBP parameter. at 0.05 level of significance.
```
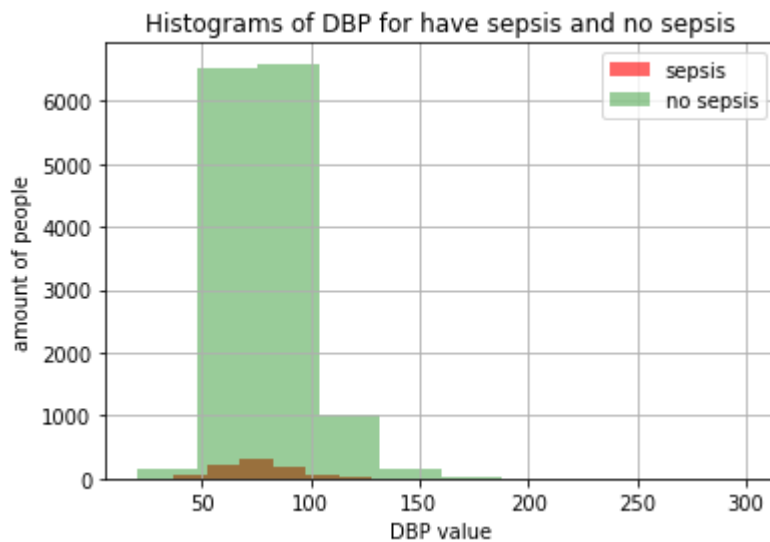
Histograms of Resp for have sepsis and no sepsis


```
 Ttest - Check Resp parameter:
Test statistic is 5.390396
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Resp parameter. at 0.05 level of significance.

 Wilcoxon  - Check Resp parameter in wilcoxon test:
Test statistic is 11674948.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Resp parameter. at 0.05 level of significance.
```
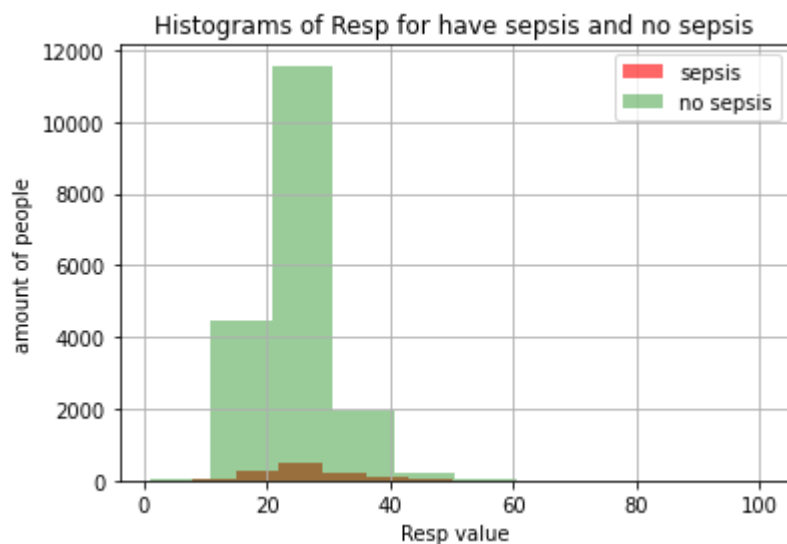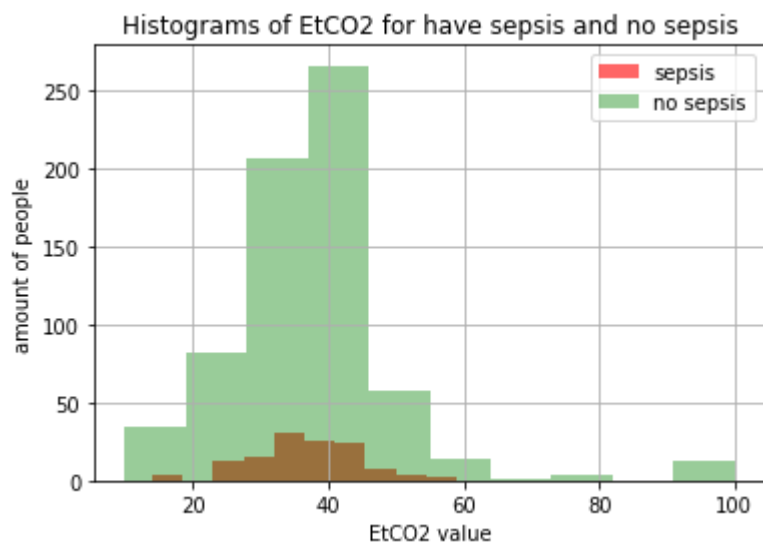
Histograms of EtCO2 for have sepsis and no sepsis

 Ttest - Check EtCO2 parameter:
Test statistic is -0.490838
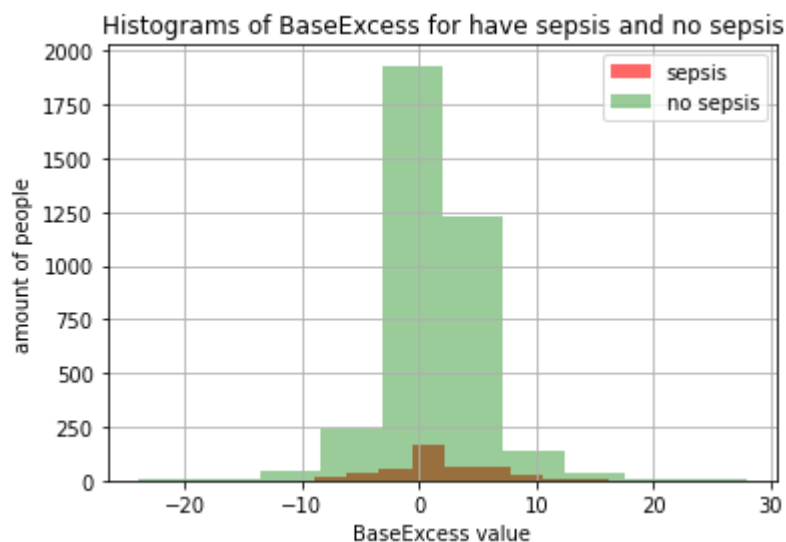p-value for two tailed test is 0.623676
Conclusion n Since p-value(=0.623676) > alpha(=0.05) We do not reject the
null hypothesis H0 for EtCO2 parameter.

 Wilcoxon - Check EtCO2 parameter in wilcoxon test:
Test statistic is 42594.500000
p-value for two tailed test is 0.664844
Conclusion n Since p-value(=0.664844) > alpha(=0.05) We do not reject the
null hypothesis H0 for EtCO2 parameter.

Histograms of BaseExcess for have sepsis and no sepsis


```
 Ttest - Check BaseExcess parameter:
Test statistic is 2.430488
p-value for two tailed test is 0.015121
Conclusion n Since p-value(=0.015121) < alpha(=0.05) We reject the null hy
pothesis H0 for BaseExcess parameter. at 0.05 level of significance.

 Wilcoxon  - Check BaseExcess parameter in wilcoxon test:
Test statistic is 848686.500000
p-value for two tailed test is 0.019760
Conclusion n Since p-value(=0.019760) < alpha(=0.05) We reject the null hy
pothesis H0 for BaseExcess parameter. at 0.05 level of significance.
```
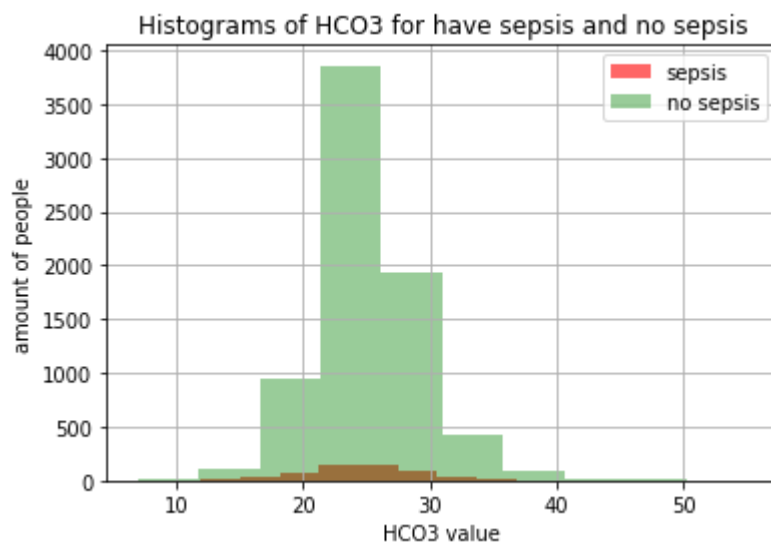
Histograms of HCO3 for have sepsis and no sepsis

 Ttest - Check HCO3 parameter:
Test statistic is 0.298310
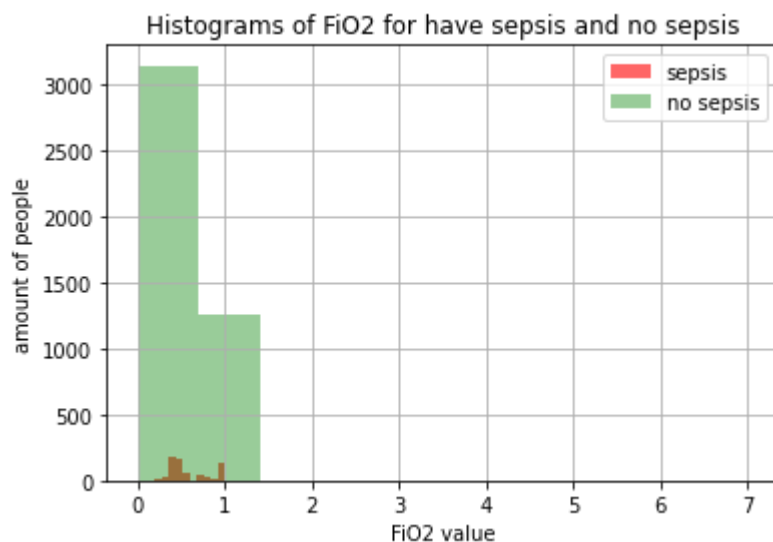p-value for two tailed test is 0.765474
Conclusion n Since p-value(=0.765474) > alpha(=0.05) We do not reject the
null hypothesis H0 for HCO3 parameter.

 Wilcoxon - Check HCO3 parameter in wilcoxon test:
Test statistic is 2013805.000000
p-value for two tailed test is 0.562284
Conclusion n Since p-value(=0.562284) > alpha(=0.05) We do not reject the
null hypothesis H0 for HCO3 parameter.

Histograms of FiO2 for have sepsis and no sepsis

 Ttest - Check FiO2 parameter:
Test statistic is 2.863184
p-value for two tailed test is 0.004211
Conclusion n Since p-value(=0.004211) < alpha(=0.05) We reject the null hy
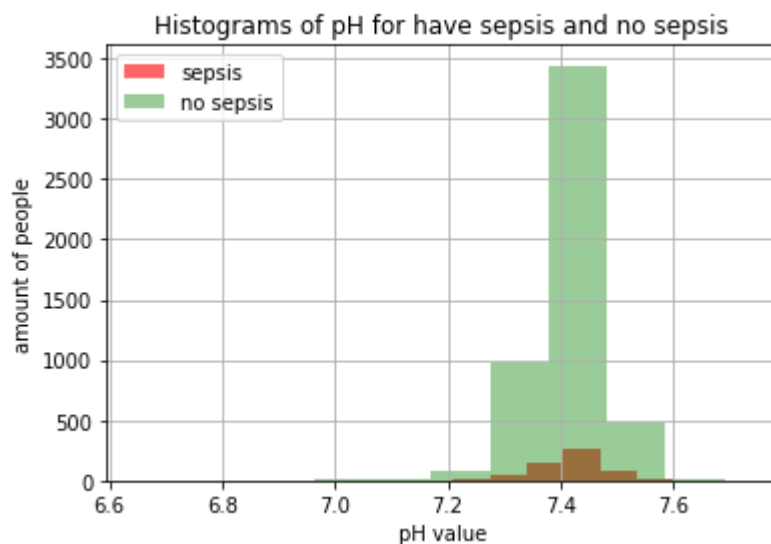pothesis H0 for FiO2 parameter. at 0.05 level of significance.

 Wilcoxon - Check FiO2 parameter in wilcoxon test:
Test statistic is 1507641.000000
p-value for two tailed test is 0.000101
Conclusion n Since p-value(=0.000101) < alpha(=0.05) We reject the null hy
pothesis H0 for FiO2 parameter. at 0.05 level of significance.

Histograms of pH for have sepsis and no sepsis

```
  Ttest - Check pH parameter:
Test statistic is 1.100844
p-value for two tailed test is 0.271012
Conclusion n Since p-value(=0.271012) > alpha(=0.05) We do not reject the
null hypothesis H0 for pH parameter.

  Wilcoxon  - Check pH parameter in wilcoxon test:
Test statistic is 1465724.000000
p-value for two tailed test is 0.172022
Conclusion n Since p-value(=0.172022) > alpha(=0.05) We do not reject the
null hypothesis H0 for pH parameter.
```

Histograms of PaCO2 for have sepsis and no sepsis

 Ttest - Check PaCO2 parameter:
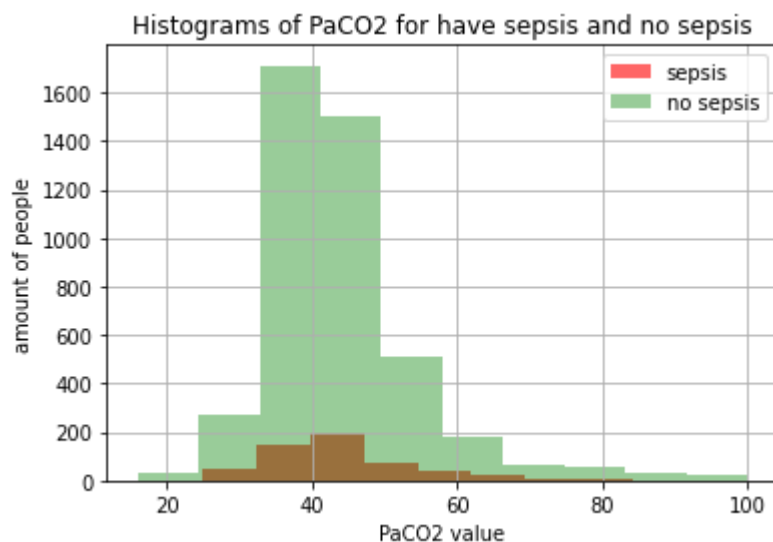Test statistic is 0.362376
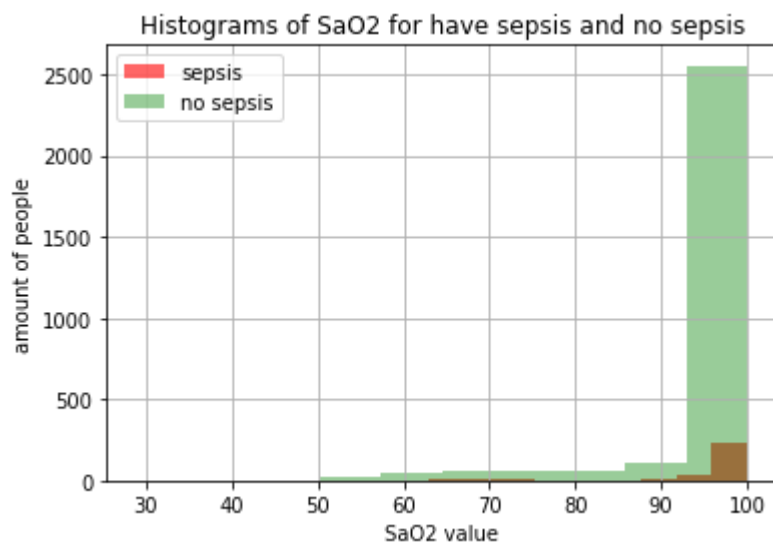p-value for two tailed test is 0.717087
Conclusion n Since p-value(=0.717087) > alpha(=0.05) We do not reject the
null hypothesis H0 for PaCO2 parameter.

 Wilcoxon - Check PaCO2 parameter in wilcoxon test:
Test statistic is 1191247.500000
p-value for two tailed test is 0.976337
Conclusion n Since p-value(=0.976337) > alpha(=0.05) We do not reject the
null hypothesis H0 for PaCO2 parameter.

Histograms of SaO2 for have sepsis and no sepsis

 Ttest - Check SaO2 parameter:
Test statistic is 1.619892
p-value for two tailed test is 0.105354
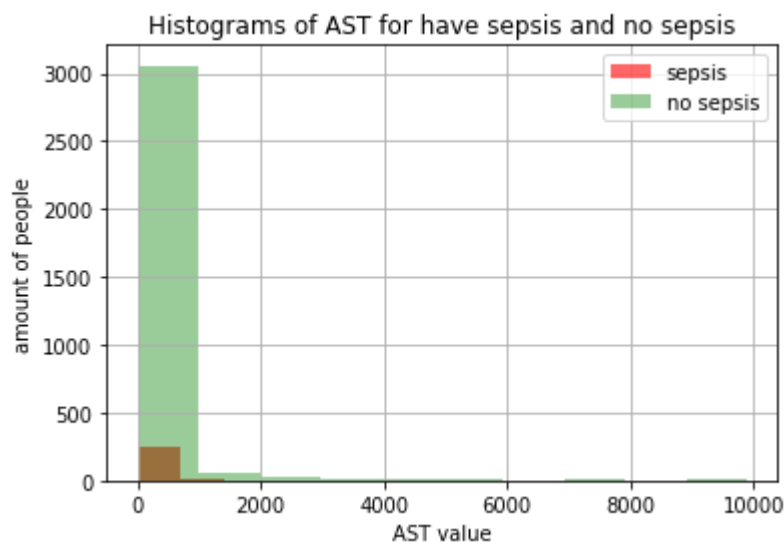Conclusion n Since p-value(=0.105354) > alpha(=0.05) We do not reject the
null hypothesis H0 for SaO2 parameter.

 Wilcoxon - Check SaO2 parameter in wilcoxon test:
Test statistic is 479035.500000
p-value for two tailed test is 0.001774
Conclusion n Since p-value(=0.001774) < alpha(=0.05) We reject the null hy
pothesis H0 for SaO2 parameter. at 0.05 level of significance.

Histograms of AST for have sepsis and no sepsis


```
 Ttest - Check AST parameter:
Test statistic is -0.198352
p-value for two tailed test is 0.842782
Conclusion n Since p-value(=0.842782) > alpha(=0.05) We do not reject the
null hypothesis H0 for AST parameter.

 Wilcoxon  - Check AST parameter in wilcoxon test:
Test statistic is 451343.000000
p-value for two tailed test is 0.011535
Conclusion n Since p-value(=0.011535) < alpha(=0.05) We reject the null hy
pothesis H0 for AST parameter. at 0.05 level of significance.
```
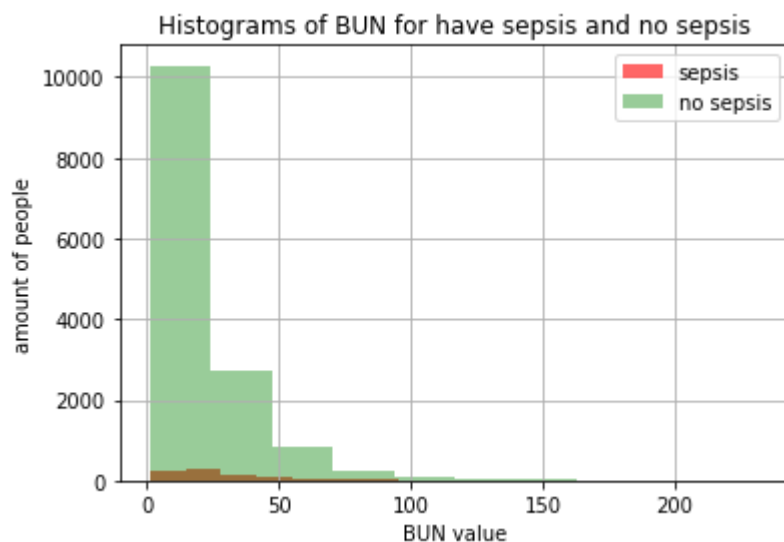
Histograms of BUN for have sepsis and no sepsis

Ttest - Check BUN parameter:
Test statistic is 8.112748
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for BUN parameter. at 0.05 level of significance.

Wilcoxon - Check BUN parameter in wilcoxon test:
Test statistic is 7187585.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for BUN parameter. at 0.05 level of significance.

Histograms of Alkalinephos for have sepsis and no sepsis


```
 Ttest - Check Alkalinephos parameter:
Test statistic is -0.532656
p-value for two tailed test is 0.594307
Conclusion n Since p-value(=0.594307) > alpha(=0.05) We do not reject the
null hypothesis H0 for Alkalinephos parameter.

 Wilcoxon  - Check Alkalinephos parameter in wilcoxon test:
Test statistic is 402449.500000
p-value for two tailed test is 0.458888
Conclusion n Since p-value(=0.458888) > alpha(=0.05) We do not reject the
null hypothesis H0 for Alkalinephos parameter.
```

Histograms of Calcium for have sepsis and no sepsis

```
  Ttest - Check Calcium parameter:
Test statistic is -5.689790
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Calcium parameter. at 0.05 level of significance.

  Wilcoxon  - Check Calcium parameter in wilcoxon test:
Test statistic is 4258344.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Calcium parameter. at 0.05 level of significance.
```
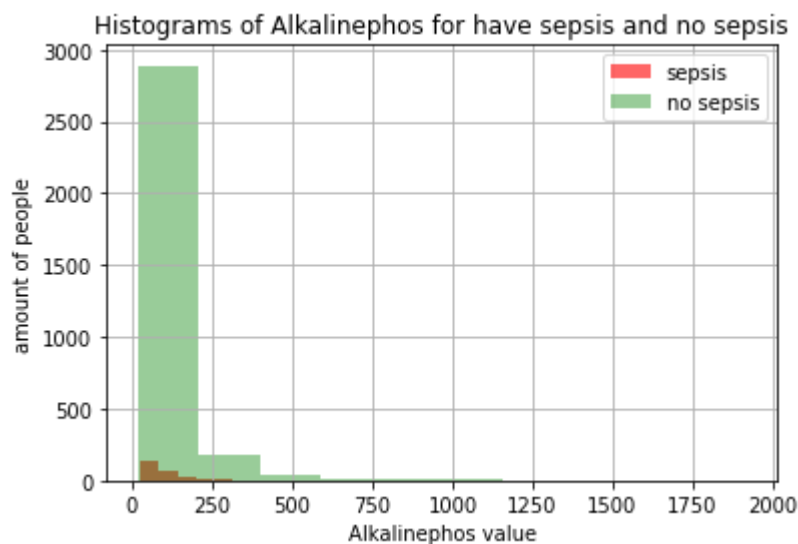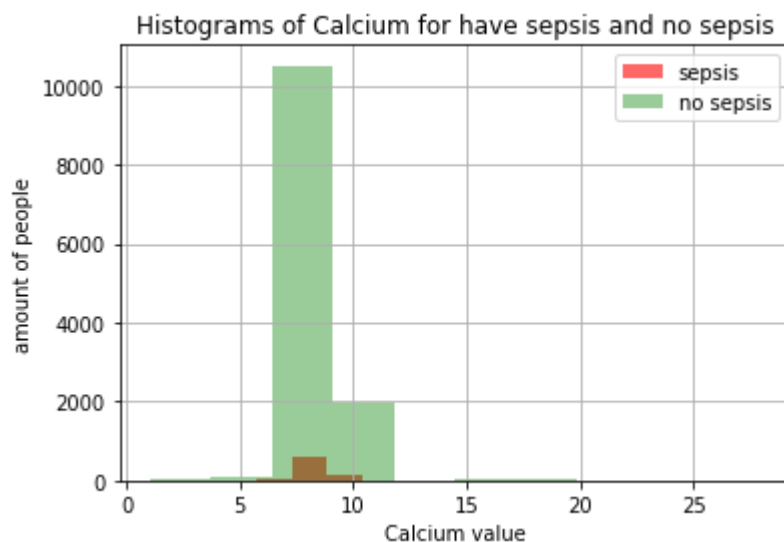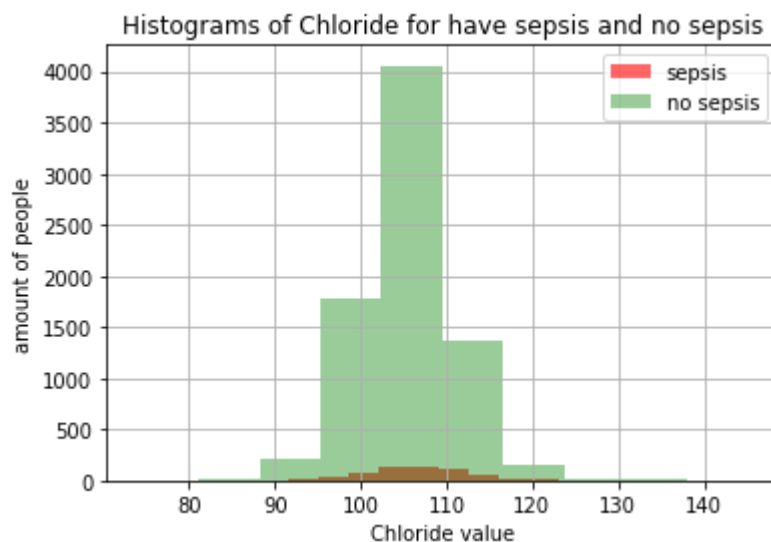
Histograms of Chloride for have sepsis and no sepsis

 Ttest - Check Chloride parameter:
Test statistic is 1.664018
p-value for two tailed test is 0.096147
Conclusion n Since p-value(=0.096147) > alpha(=0.05) We do not reject the
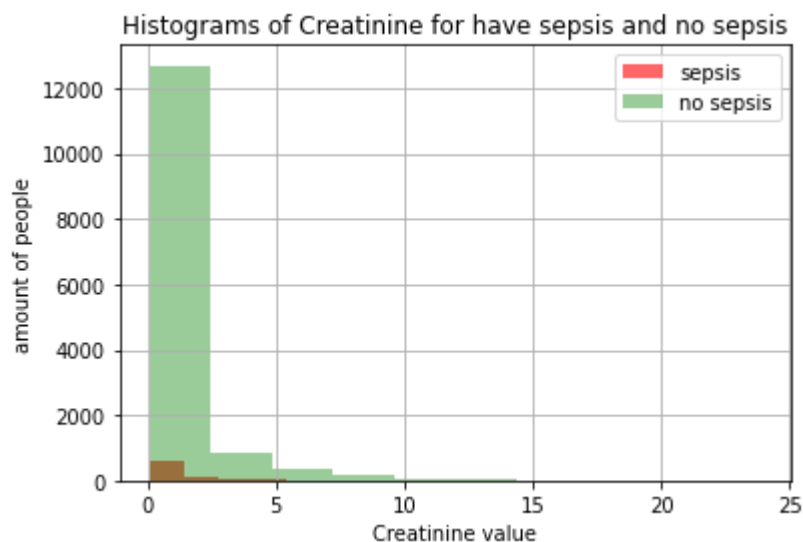null hypothesis H0 for Chloride parameter.

 Wilcoxon - Check Chloride parameter in wilcoxon test:
Test statistic is 2347707.500000
p-value for two tailed test is 0.081692
Conclusion n Since p-value(=0.081692) > alpha(=0.05) We do not reject the
null hypothesis H0 for Chloride parameter.

Histograms of Creatinine for have sepsis and no sepsis


```
 Ttest - Check Creatinine parameter:
Test statistic is 2.046044
p-value for two tailed test is 0.040769
Conclusion n Since p-value(=0.040769) < alpha(=0.05) We reject the null hy
pothesis H0 for Creatinine parameter. at 0.05 level of significance.

 Wilcoxon  - Check Creatinine parameter in wilcoxon test:
Test statistic is 6310030.500000
p-value for two tailed test is 0.014732
Conclusion n Since p-value(=0.014732) < alpha(=0.05) We reject the null hy
pothesis H0 for Creatinine parameter. at 0.05 level of significance.
```
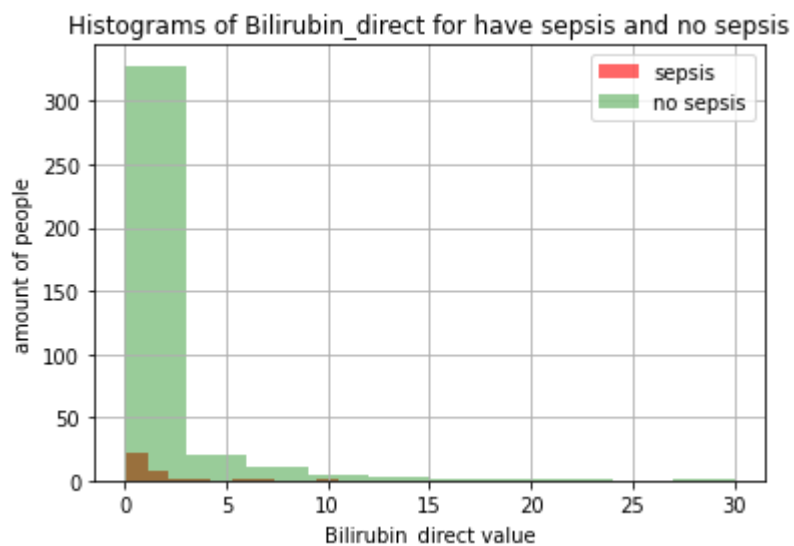
Histograms of Bilirubin_direct for have sepsis and no sepsis

 Ttest - Check Bilirubin_direct parameter:
Test statistic is 0.424867
p-value for two tailed test is 0.671159
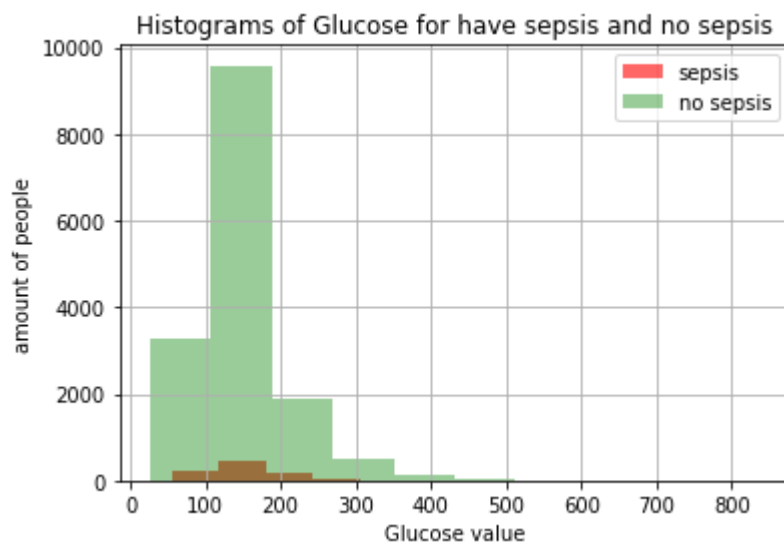Conclusion n Since p-value(=0.671159) > alpha(=0.05) We do not reject the
null hypothesis H0 for Bilirubin_direct parameter.

 Wilcoxon - Check Bilirubin_direct parameter in wilcoxon test:
Test statistic is 8312.000000
p-value for two tailed test is 0.006469
Conclusion n Since p-value(=0.006469) < alpha(=0.05) We reject the null hy
pothesis H0 for Bilirubin_direct parameter. at 0.05 level of significance.

Histograms of Glucose for have sepsis and no sepsis

 Ttest - Check Glucose parameter:
Test statistic is 3.245779
p-value for two tailed test is 0.001174
Conclusion n Since p-value(=0.001174) < alpha(=0.05) We reject the null hy
pothesis H0 for Glucose parameter. at 0.05 level of significance.

 Wilcoxon - Check Glucose parameter in wilcoxon test:
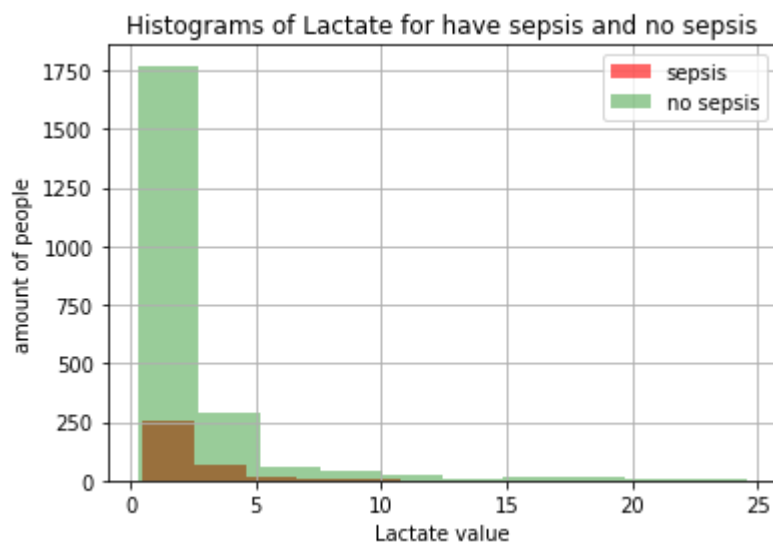Test statistic is 7982248.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Glucose parameter. at 0.05 level of significance.

Histograms of Lactate for have sepsis and no sepsis

 Ttest - Check Lactate parameter:
Test statistic is -0.190207
p-value for two tailed test is 0.849162
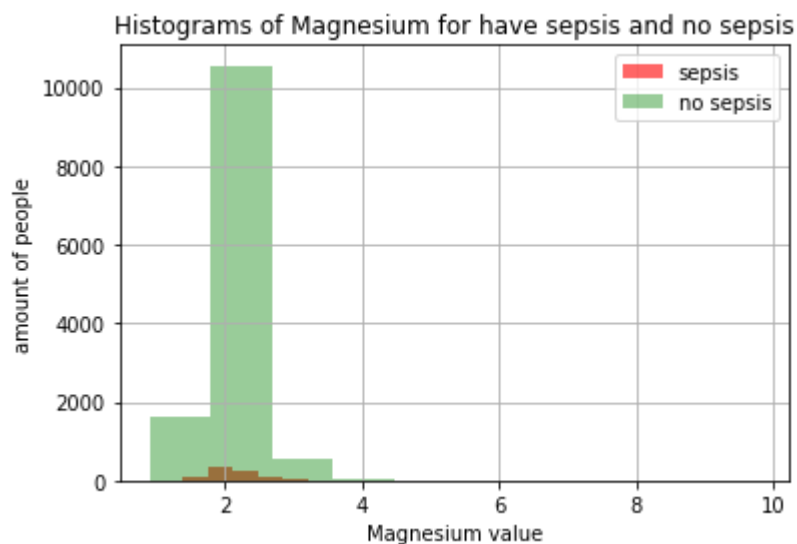Conclusion n Since p-value(=0.849162) > alpha(=0.05) We do not reject the
null hypothesis H0 for Lactate parameter.

 Wilcoxon - Check Lactate parameter in wilcoxon test:
Test statistic is 410670.000000
p-value for two tailed test is 0.105473
Conclusion n Since p-value(=0.105473) > alpha(=0.05) We do not reject the
null hypothesis H0 for Lactate parameter.

Histograms of Magnesium for have sepsis and no sepsis

 Ttest - Check Magnesium parameter:
Test statistic is 3.346365
p-value for two tailed test is 0.000821
Conclusion n Since p-value(=0.000821) < alpha(=0.05) We reject the null hy
pothesis H0 for Magnesium parameter. at 0.05 level of significance.

 Wilcoxon - Check Magnesium parameter in wilcoxon test:
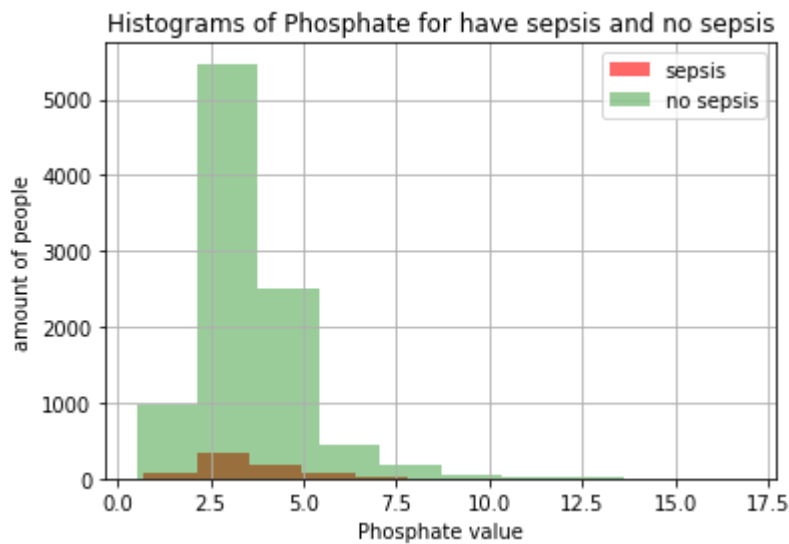Test statistic is 5599809.500000
p-value for two tailed test is 0.000240
Conclusion n Since p-value(=0.000240) < alpha(=0.05) We reject the null hy
pothesis H0 for Magnesium parameter. at 0.05 level of significance.

Histograms of Phosphate for have sepsis and no sepsis


```
 Ttest - Check Phosphate parameter:
Test statistic is 1.564374
p-value for two tailed test is 0.117760
Conclusion n Since p-value(=0.117760) > alpha(=0.05) We do not reject the
null hypothesis H0 for Phosphate parameter.

 Wilcoxon  - Check Phosphate parameter in wilcoxon test:
Test statistic is 3459569.000000
p-value for two tailed test is 0.356921
Conclusion n Since p-value(=0.356921) > alpha(=0.05) We do not reject the
null hypothesis H0 for Phosphate parameter.
```
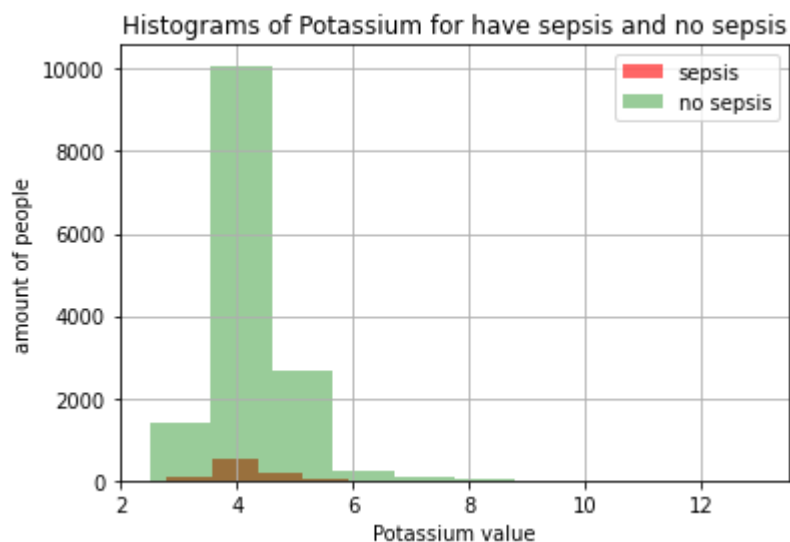
Histograms of Potassium for have sepsis and no sepsis

 Ttest - Check Potassium parameter:
Test statistic is 0.029304
p-value for two tailed test is 0.976623
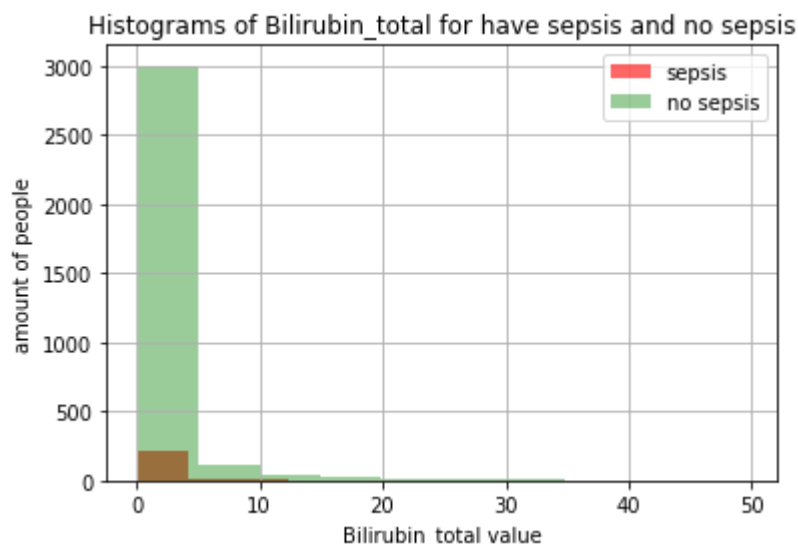Conclusion n Since p-value(=0.976623) > alpha(=0.05) We do not reject the
null hypothesis H0 for Potassium parameter.

 Wilcoxon - Check Potassium parameter in wilcoxon test:
Test statistic is 6053364.500000
p-value for two tailed test is 0.006588
Conclusion n Since p-value(=0.006588) < alpha(=0.05) We reject the null hy
pothesis H0 for Potassium parameter. at 0.05 level of significance.

Histograms of Bilirubin_total for have sepsis and no sepsis

 Ttest - Check Bilirubin_total parameter:
Test statistic is 3.109004
p-value for two tailed test is 0.001892
Conclusion n Since p-value(=0.001892) < alpha(=0.05) We reject the null hy
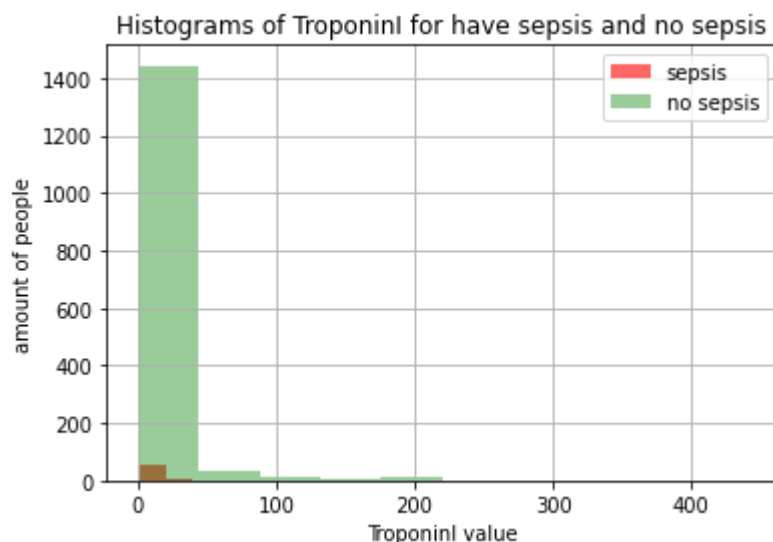pothesis H0 for Bilirubin_total parameter. at 0.05 level of significance.

 Wilcoxon - Check Bilirubin_total parameter in wilcoxon test:
Test statistic is 438778.000000
p-value for two tailed test is 0.055420
Conclusion n Since p-value(=0.055420) > alpha(=0.05) We do not reject the
null hypothesis H0 for Bilirubin_total parameter.

Histograms of TroponinI for have sepsis and no sepsis

Ttest - Check TroponinI parameter:
Test statistic is 1.130453
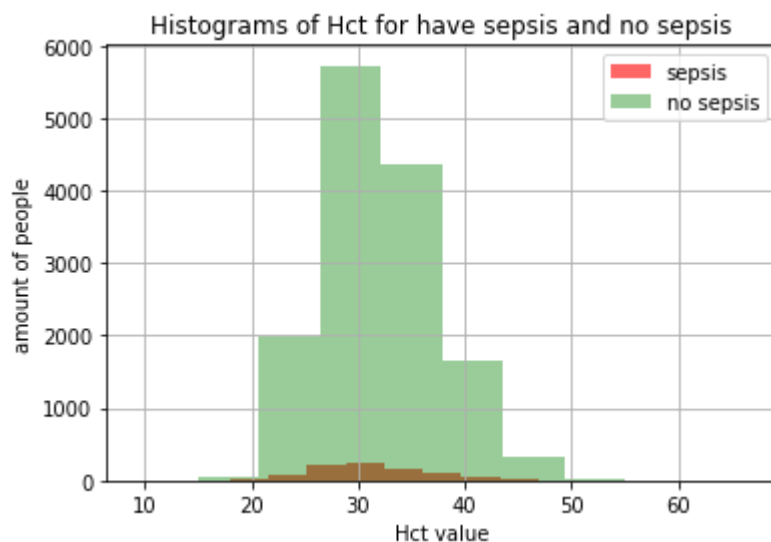p-value for two tailed test is 0.258458
Conclusion n Since p-value(=0.258458) > alpha(=0.05) We do not reject the
null hypothesis H0 for TroponinI parameter.

Wilcoxon - Check TroponinI parameter in wilcoxon test:
Test statistic is 56783.500000
p-value for two tailed test is 0.120123
Conclusion n Since p-value(=0.120123) > alpha(=0.05) We do not reject the
null hypothesis H0 for TroponinI parameter.

Histograms of Hct for have sepsis and no sepsis

 Ttest - Check Hct parameter:
Test statistic is -4.974794
p-value for two tailed test is 0.000001
Conclusion n Since p-value(=0.000001) < alpha(=0.05) We reject the null hy
pothesis H0 for Hct parameter. at 0.05 level of significance.

 Wilcoxon - Check Hct parameter in wilcoxon test:
Test statistic is 5660863.500000
p-value for two tailed test is 0.000001
Conclusion n Since p-value(=0.000001) < alpha(=0.05) We reject the null hy
pothesis H0 for Hct parameter. at 0.05 level of significance.

Histograms of Hgb for have sepsis and no sepsis

  Ttest - Check Hgb parameter:
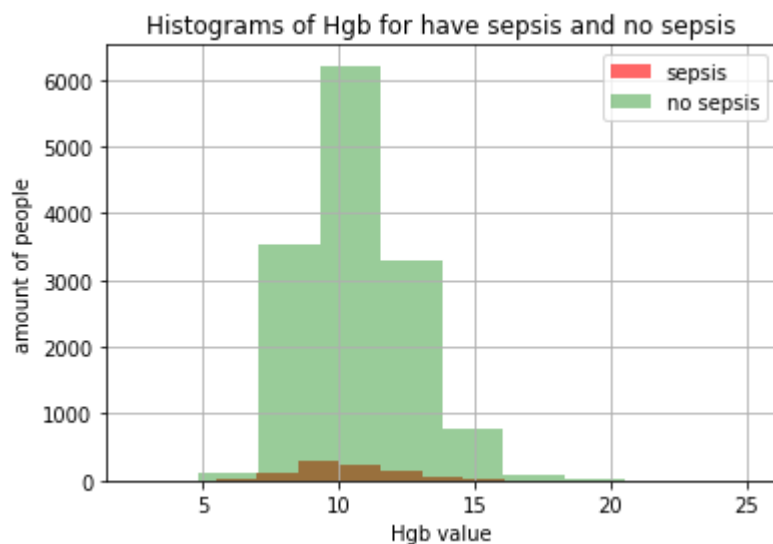Test statistic is -5.100564
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Hgb parameter. at 0.05 level of significance.

  Wilcoxon - Check Hgb parameter in wilcoxon test:
Test statistic is 5386141.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Hgb parameter. at 0.05 level of significance.

Ttest - Check PTT parameter:
Test statistic is 2.848379
p-value for two tailed test is 0.004410
Conclusion n Since p-value(=0.004410) < alpha(=0.05) We reject the null hy
pothesis H0 for PTT parameter. at 0.05 level of significance.

 Wilcoxon - Check PTT parameter in wilcoxon test:
Test statistic is 1283426.500000
p-value for two tailed test is 0.001086
Conclusion n Since p-value(=0.001086) < alpha(=0.05) We reject the null hy
pothesis H0 for PTT parameter. at 0.05 level of significance.

Histograms of WBC for have sepsis and no sepsis

```
 Ttest - Check WBC parameter:
Test statistic is 9.047368
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for WBC parameter. at 0.05 level of significance.

 Wilcoxon  - Check WBC parameter in wilcoxon test:
Test statistic is 6963512.500000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for WBC parameter. at 0.05 level of significance.
```
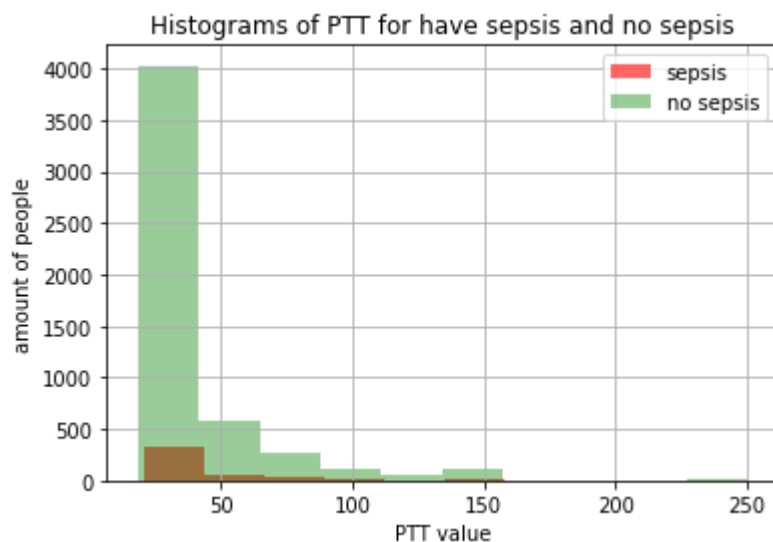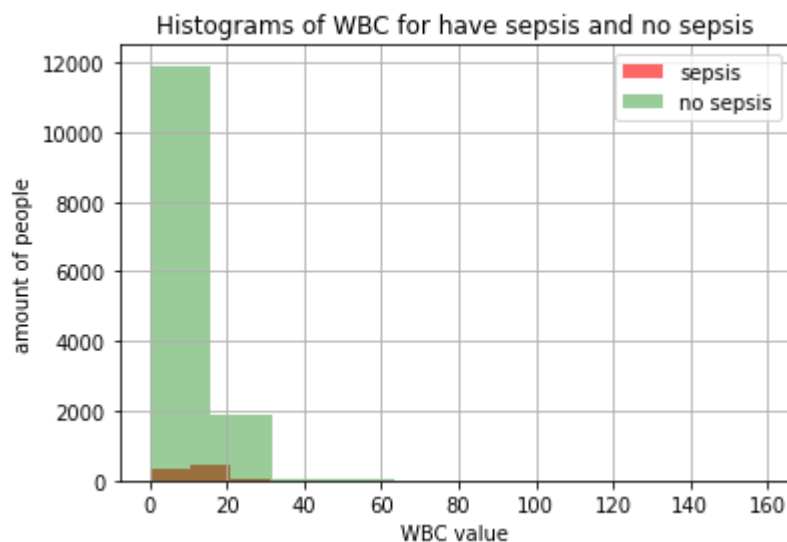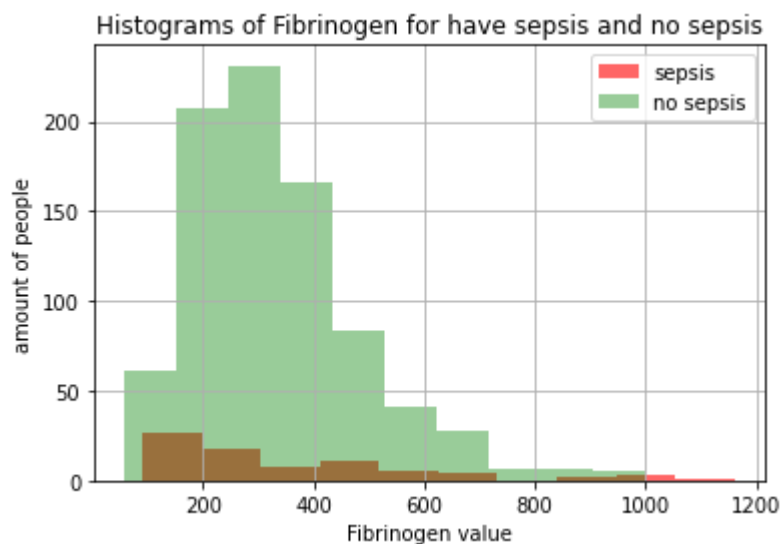
Histograms of Fibrinogen for have sepsis and no sepsis

 Ttest - Check Fibrinogen parameter:
Test statistic is 1.257858
p-value for two tailed test is 0.208765
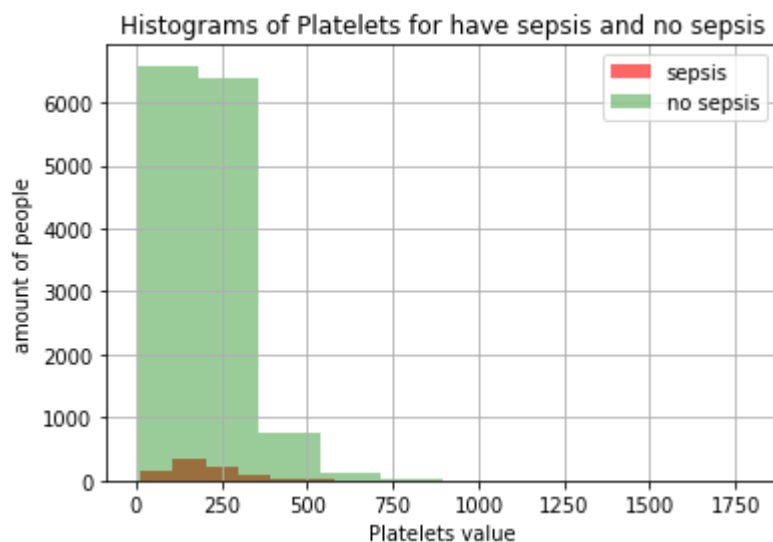Conclusion n Since p-value(=0.208765) > alpha(=0.05) We do not reject the
null hypothesis H0 for Fibrinogen parameter.

 Wilcoxon - Check Fibrinogen parameter in wilcoxon test:
Test statistic is 31559.500000
p-value for two tailed test is 0.514956
Conclusion n Since p-value(=0.514956) > alpha(=0.05) We do not reject the
null hypothesis H0 for Fibrinogen parameter.

Histograms of Platelets for have sepsis and no sepsis

 Ttest - Check Platelets parameter:
Test statistic is 2.276670
p-value for two tailed test is 0.022820
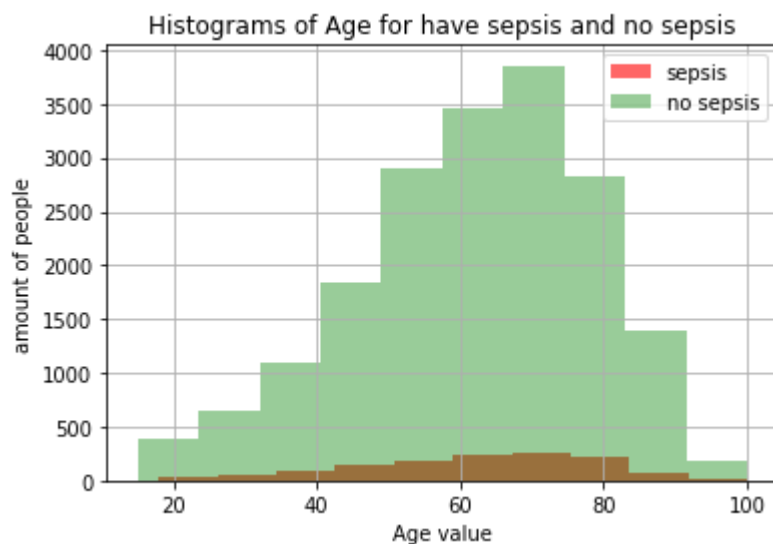Conclusion n Since p-value(=0.022820) < alpha(=0.05) We reject the null hy
pothesis H0 for Platelets parameter. at 0.05 level of significance.

 Wilcoxon - Check Platelets parameter in wilcoxon test:
Test statistic is 5973839.500000
p-value for two tailed test is 0.515377
Conclusion n Since p-value(=0.515377) > alpha(=0.05) We do not reject the
null hypothesis H0 for Platelets parameter.

Histograms of Age for have sepsis and no sepsis

 Ttest - Check Age parameter:
Test statistic is 1.440456
p-value for two tailed test is 0.149754
Conclusion n Since p-value(=0.149754) > alpha(=0.05) We do not reject the
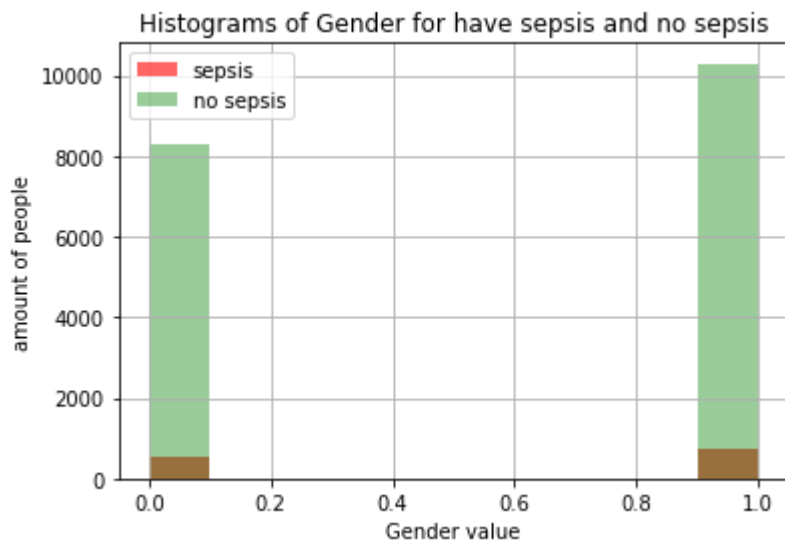null hypothesis H0 for Age parameter.

 Wilcoxon - Check Age parameter in wilcoxon test:
Test statistic is 12306554.000000
p-value for two tailed test is 0.131686
Conclusion n Since p-value(=0.131686) > alpha(=0.05) We do not reject the
null hypothesis H0 for Age parameter.

Histograms of Gender for have sepsis and no sepsis

```
 Ttest - Check Gender parameter:
Test statistic is 1.667015
p-value for two tailed test is 0.095527
Conclusion n Since p-value(=0.095527) > alpha(=0.05) We do not reject the
null hypothesis H0 for Gender parameter.

 Wilcoxon  - Check Gender parameter in wilcoxon test:
Test statistic is 12292067.000000
p-value for two tailed test is 0.095527
Conclusion n Since p-value(=0.095527) > alpha(=0.05) We do not reject the
null hypothesis H0 for Gender parameter.


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histograms, Ttest and Wilcoxon-Test results for min of each parameter
----------------------------------------------------------
```
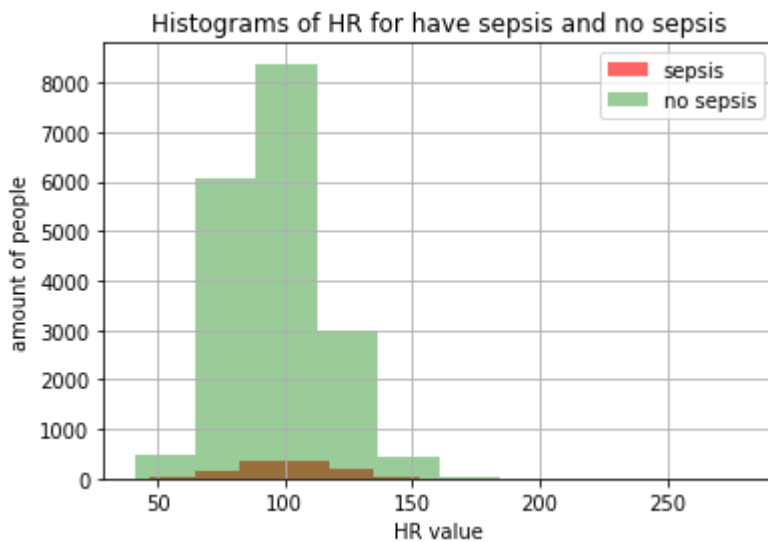
Histograms of HR for have sepsis and no sepsis

 Ttest - Check HR parameter:
Test statistic is 10.106475
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for HR parameter. at 0.05 level of significance.

 Wilcoxon - Check HR parameter in wilcoxon test:
Test statistic is 12303692.500000
p-value for two tailed test is 0.000000
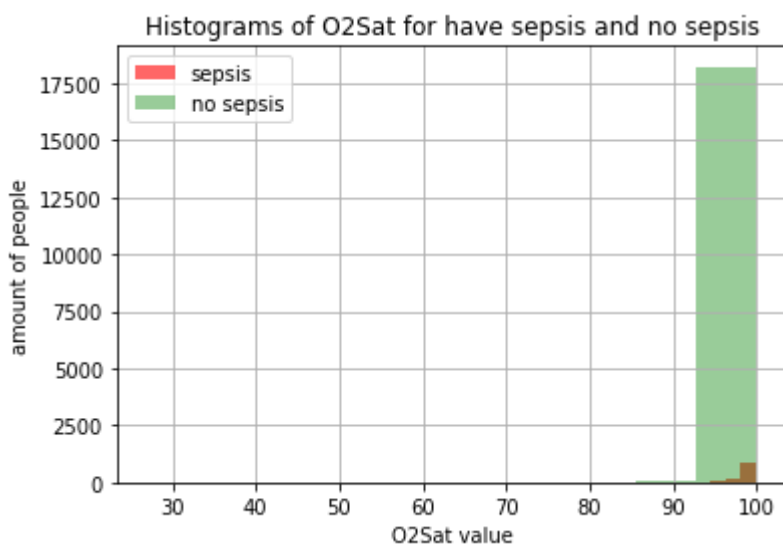Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for HR parameter. at 0.05 level of significance.

Histograms of O2Sat for have sepsis and no sepsis

 Ttest - Check O2Sat parameter:
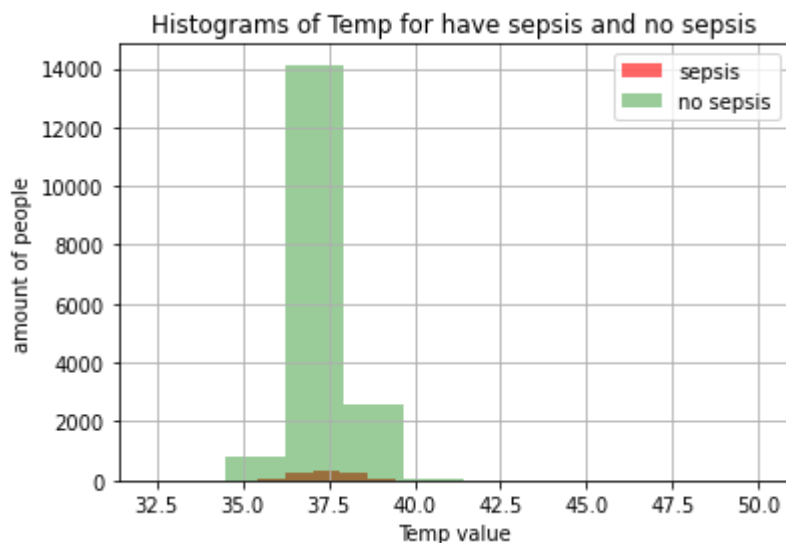Test statistic is 0.859936
p-value for two tailed test is 0.389835
Conclusion n Since p-value(=0.389835) > alpha(=0.05) We do not reject the
null hypothesis H0 for O2Sat parameter.

 Wilcoxon - Check O2Sat parameter in wilcoxon test:
Test statistic is 11078426.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for O2Sat parameter. at 0.05 level of significance.

Histograms of Temp for have sepsis and no sepsis

 Ttest - Check Temp parameter:
Test statistic is 10.502447
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Temp parameter. at 0.05 level of significance.

 Wilcoxon - Check Temp parameter in wilcoxon test:
Test statistic is 10516195.000000
p-value for two tailed test is 0.000000
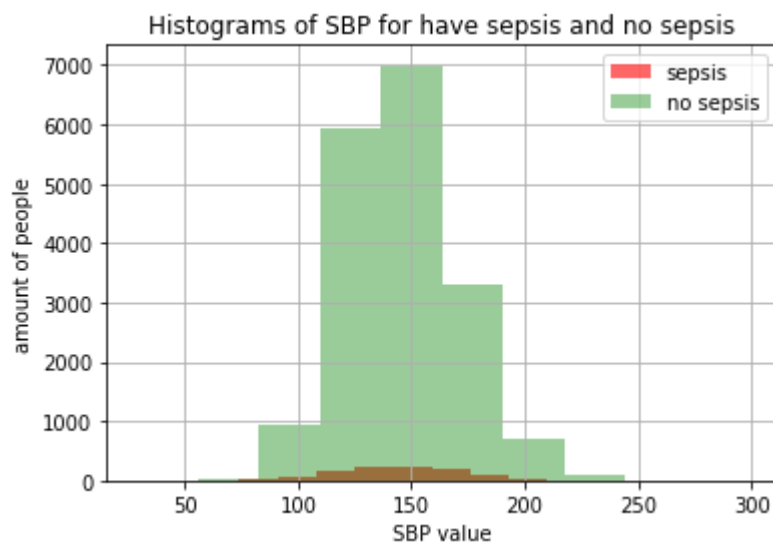Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Temp parameter. at 0.05 level of significance.

Histograms of SBP for have sepsis and no sepsis

```
 Ttest - Check SBP parameter:
Test statistic is -0.376188
p-value for two tailed test is 0.706781
Conclusion n Since p-value(=0.706781) > alpha(=0.05) We do not reject the
null hypothesis H0 for SBP parameter.

 Wilcoxon  - Check SBP parameter in wilcoxon test:
Test statistic is 8962797.000000
p-value for two tailed test is 0.036610
Conclusion n Since p-value(=0.036610) < alpha(=0.05) We reject the null hy
pothesis H0 for SBP parameter. at 0.05 level of significance.
```
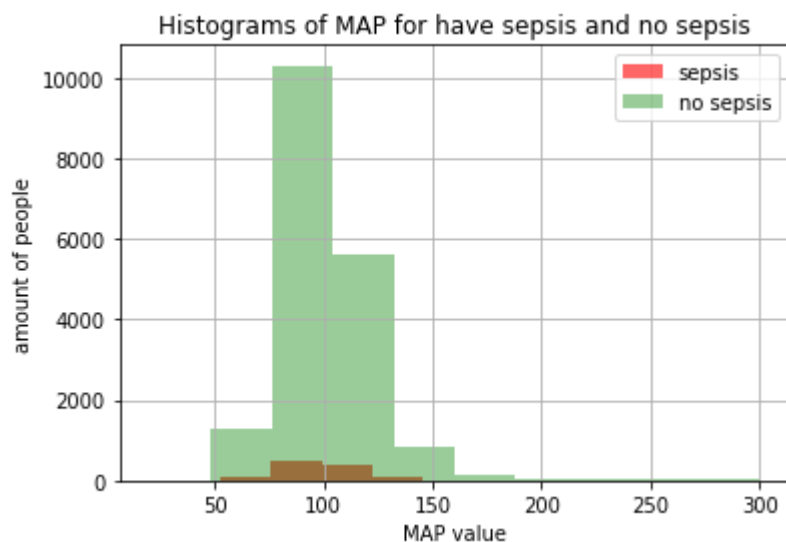
Histograms of MAP for have sepsis and no sepsis


```
 Ttest - Check MAP parameter:
Test statistic is -2.257014
p-value for two tailed test is 0.024018
Conclusion n Since p-value(=0.024018) < alpha(=0.05) We reject the null hy
pothesis H0 for MAP parameter. at 0.05 level of significance.

 Wilcoxon  - Check MAP parameter in wilcoxon test:
Test statistic is 9505940.500000
p-value for two tailed test is 0.000583
Conclusion n Since p-value(=0.000583) < alpha(=0.05) We reject the null hy
pothesis H0 for MAP parameter. at 0.05 level of significance.
```

Histograms of DBP for have sepsis and no sepsis


```
 Ttest - Check DBP parameter:
Test statistic is -3.538892
p-value for two tailed test is 0.000403
Conclusion n Since p-value(=0.000403) < alpha(=0.05) We reject the null hy
pothesis H0 for DBP parameter. at 0.05 level of significance.

 Wilcoxon  - Check DBP parameter in wilcoxon test:
Test statistic is 5793612.000000
p-value for two tailed test is 0.000082
Conclusion n Since p-value(=0.000082) < alpha(=0.05) We reject the null hy
pothesis H0 for DBP parameter. at 0.05 level of significance.
```
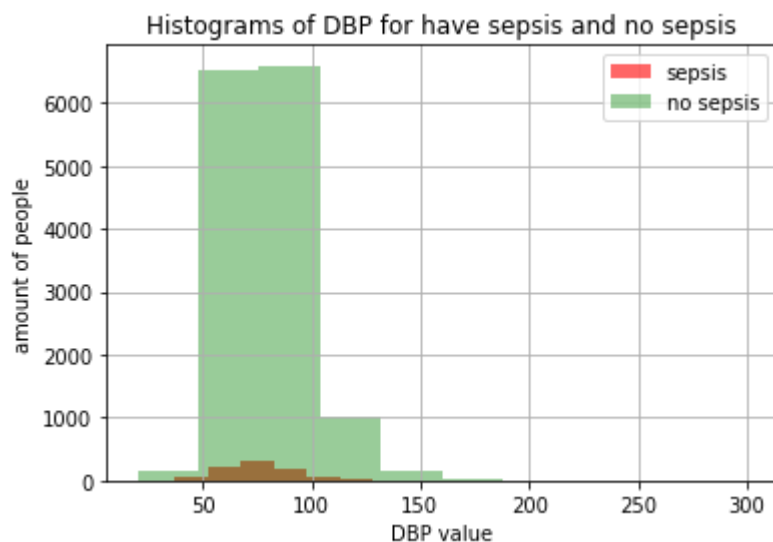
Histograms of Resp for have sepsis and no sepsis

 Ttest - Check Resp parameter:
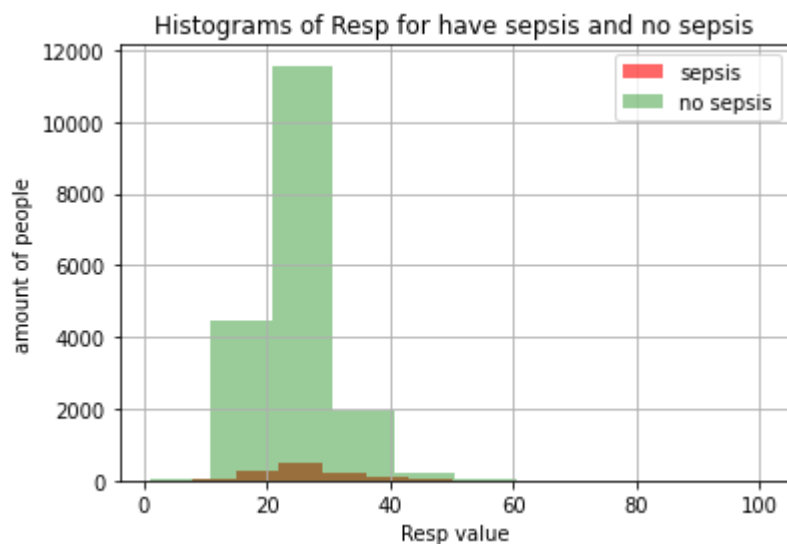Test statistic is 5.390396
p-value for two tailed test is 0.000000
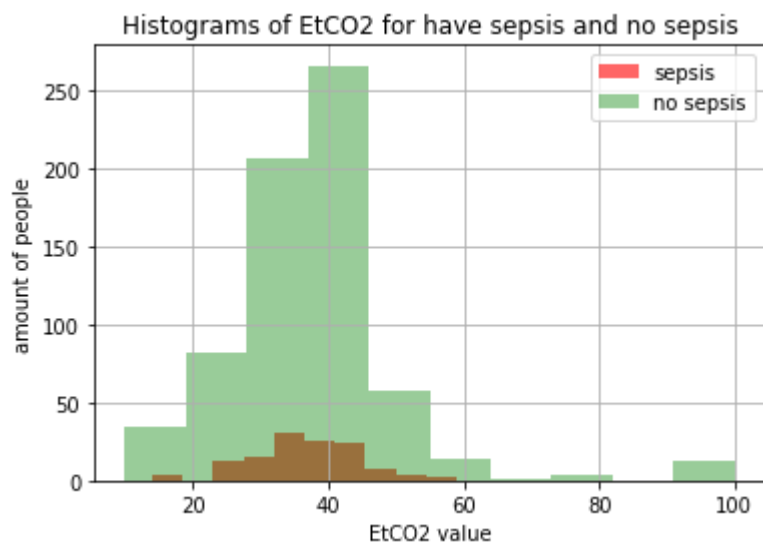Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Resp parameter. at 0.05 level of significance.

 Wilcoxon - Check Resp parameter in wilcoxon test:
Test statistic is 11674948.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Resp parameter. at 0.05 level of significance.

Histograms of EtCO2 for have sepsis and no sepsis

 Ttest - Check EtCO2 parameter:
Test statistic is -0.490838
p-value for two tailed test is 0.623676
Conclusion n Since p-value(=0.623676) > alpha(=0.05) We do not reject the
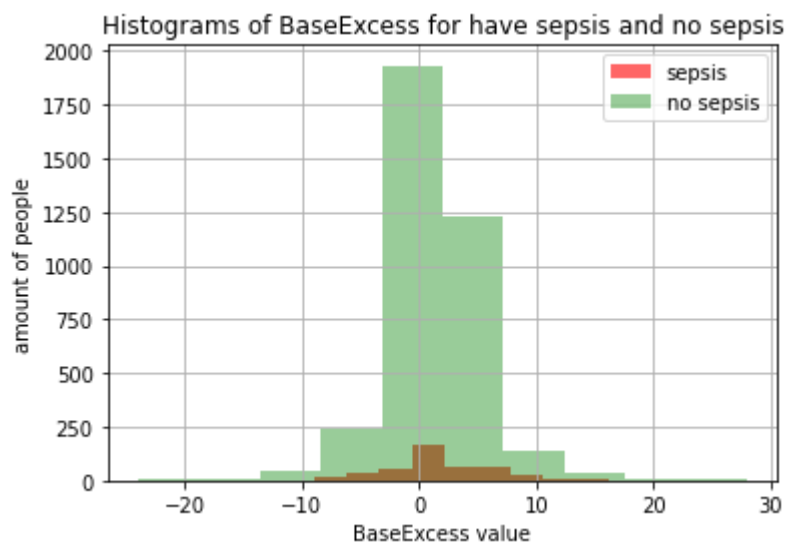null hypothesis H0 for EtCO2 parameter.

 Wilcoxon - Check EtCO2 parameter in wilcoxon test:
Test statistic is 42594.500000
p-value for two tailed test is 0.664844
Conclusion n Since p-value(=0.664844) > alpha(=0.05) We do not reject the
null hypothesis H0 for EtCO2 parameter.

Histograms of BaseExcess for have sepsis and no sepsis

```
 Ttest - Check BaseExcess parameter:
Test statistic is 2.430488
p-value for two tailed test is 0.015121
Conclusion n Since p-value(=0.015121) < alpha(=0.05) We reject the null hy
pothesis H0 for BaseExcess parameter. at 0.05 level of significance.

 Wilcoxon  - Check BaseExcess parameter in wilcoxon test:
Test statistic is 848686.500000
p-value for two tailed test is 0.019760
Conclusion n Since p-value(=0.019760) < alpha(=0.05) We reject the null hy
pothesis H0 for BaseExcess parameter. at 0.05 level of significance.
```
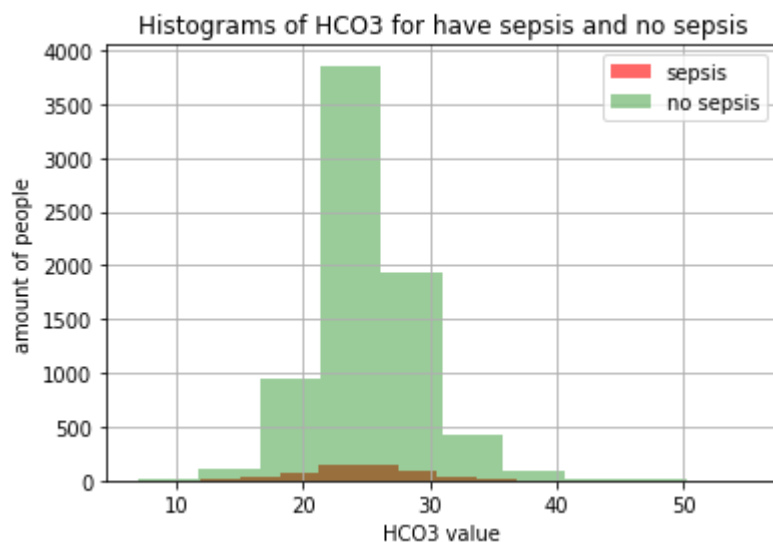
Histograms of HCO3 for have sepsis and no sepsis

 Ttest - Check HCO3 parameter:
Test statistic is 0.298310
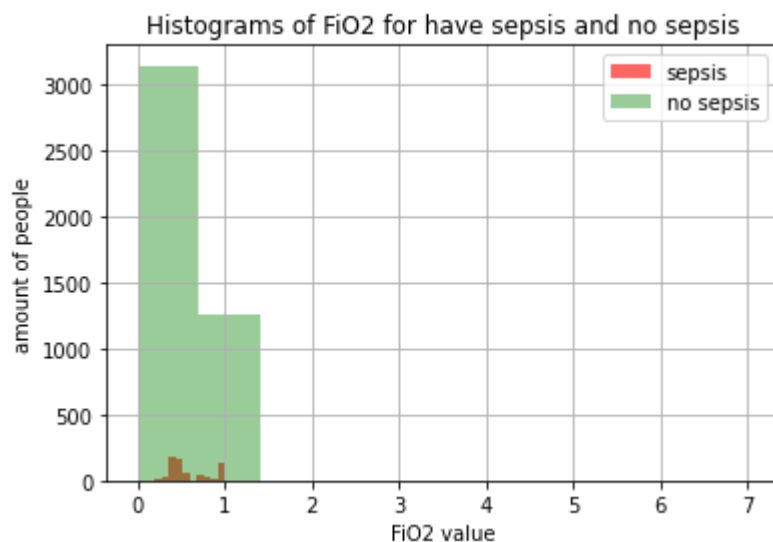p-value for two tailed test is 0.765474
Conclusion n Since p-value(=0.765474) > alpha(=0.05) We do not reject the
null hypothesis H0 for HCO3 parameter.

 Wilcoxon - Check HCO3 parameter in wilcoxon test:
Test statistic is 2013805.000000
p-value for two tailed test is 0.562284
Conclusion n Since p-value(=0.562284) > alpha(=0.05) We do not reject the
null hypothesis H0 for HCO3 parameter.

Histograms of FiO2 for have sepsis and no sepsis

 Ttest - Check FiO2 parameter:
Test statistic is 2.863184
p-value for two tailed test is 0.004211
Conclusion n Since p-value(=0.004211) < alpha(=0.05) We reject the null hy
pothesis H0 for FiO2 parameter. at 0.05 level of significance.

 Wilcoxon - Check FiO2 parameter in wilcoxon test:
Test statistic is 1507641.000000
p-value for two tailed test is 0.000101
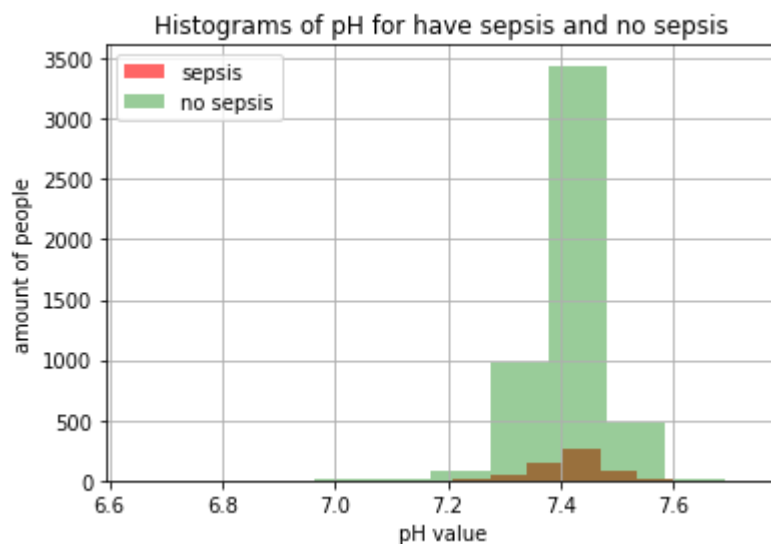Conclusion n Since p-value(=0.000101) < alpha(=0.05) We reject the null hy
pothesis H0 for FiO2 parameter. at 0.05 level of significance.

Histograms of pH for have sepsis and no sepsis

 Ttest - Check pH parameter:
Test statistic is 1.100844
p-value for two tailed test is 0.271012
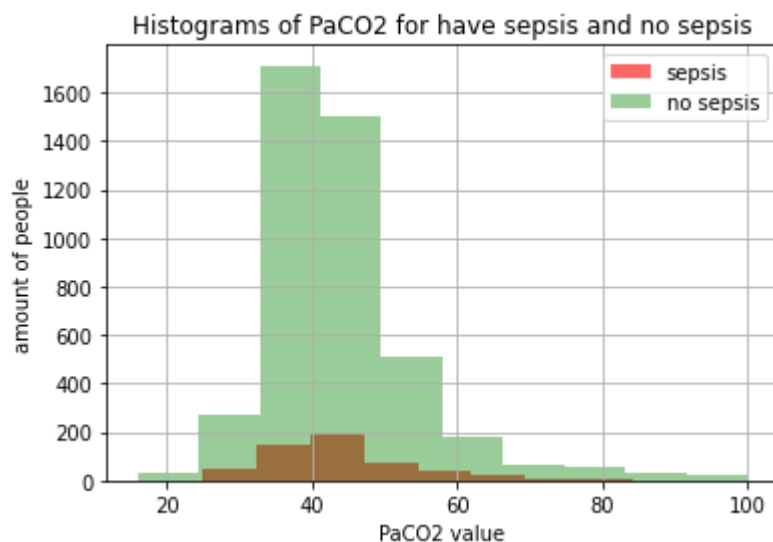Conclusion n Since p-value(=0.271012) > alpha(=0.05) We do not reject the
null hypothesis H0 for pH parameter.

 Wilcoxon - Check pH parameter in wilcoxon test:
Test statistic is 1465724.000000
p-value for two tailed test is 0.172022
Conclusion n Since p-value(=0.172022) > alpha(=0.05) We do not reject the
null hypothesis H0 for pH parameter.

Histograms of PaCO2 for have sepsis and no sepsis

 Ttest - Check PaCO2 parameter:
Test statistic is 0.362376
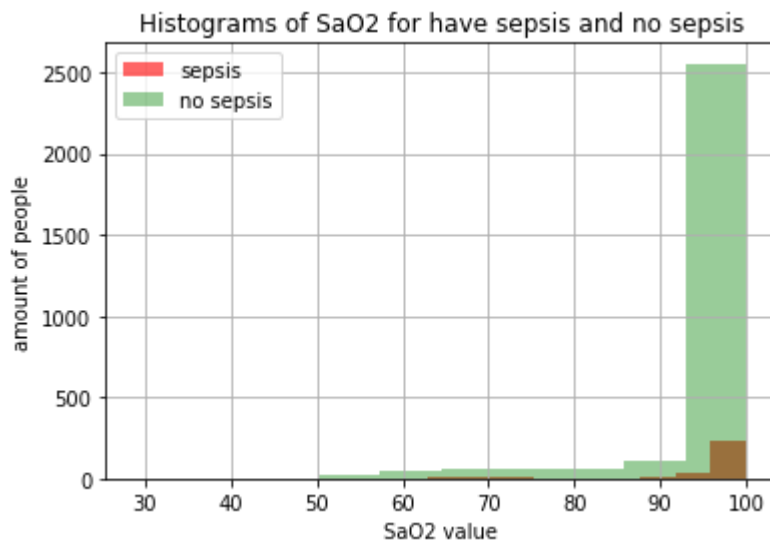p-value for two tailed test is 0.717087
Conclusion n Since p-value(=0.717087) > alpha(=0.05) We do not reject the
null hypothesis H0 for PaCO2 parameter.

 Wilcoxon - Check PaCO2 parameter in wilcoxon test:
Test statistic is 1191247.500000
p-value for two tailed test is 0.976337
Conclusion n Since p-value(=0.976337) > alpha(=0.05) We do not reject the
null hypothesis H0 for PaCO2 parameter.

Histograms of SaO2 for have sepsis and no sepsis

 Ttest - Check SaO2 parameter:
Test statistic is 1.619892
p-value for two tailed test is 0.105354
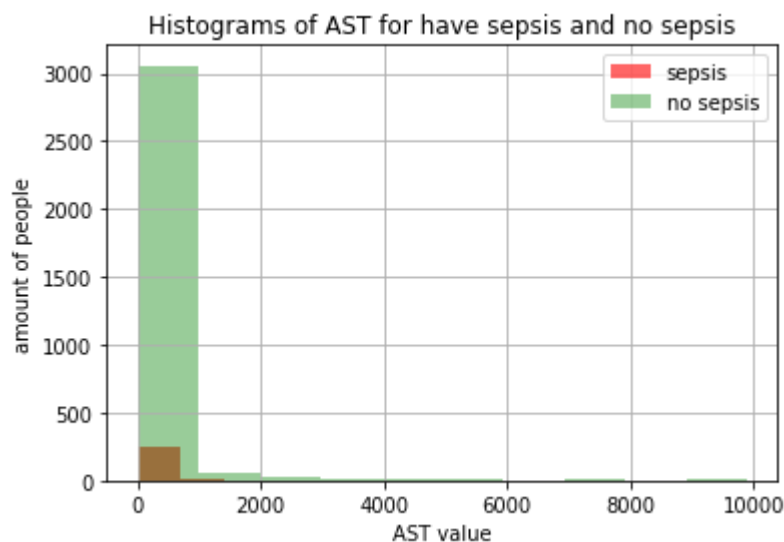Conclusion n Since p-value(=0.105354) > alpha(=0.05) We do not reject the
null hypothesis H0 for SaO2 parameter.

 Wilcoxon - Check SaO2 parameter in wilcoxon test:
Test statistic is 479035.500000
p-value for two tailed test is 0.001774
Conclusion n Since p-value(=0.001774) < alpha(=0.05) We reject the null hy
pothesis H0 for SaO2 parameter. at 0.05 level of significance.

Histograms of AST for have sepsis and no sepsis

```
 Ttest - Check AST parameter:
Test statistic is -0.198352
p-value for two tailed test is 0.842782
Conclusion n Since p-value(=0.842782) > alpha(=0.05) We do not reject the
null hypothesis H0 for AST parameter.

 Wilcoxon  - Check AST parameter in wilcoxon test:
Test statistic is 451343.000000
p-value for two tailed test is 0.011535
Conclusion n Since p-value(=0.011535) < alpha(=0.05) We reject the null hy
pothesis H0 for AST parameter. at 0.05 level of significance.
```
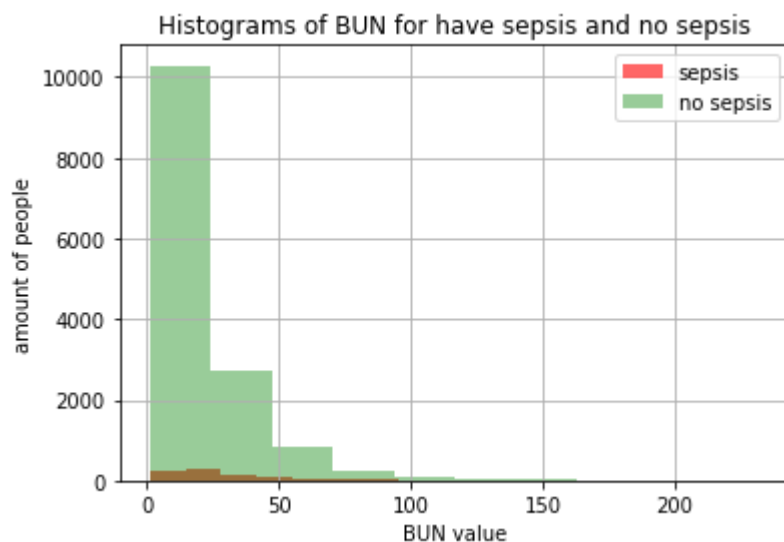
Histograms of BUN for have sepsis and no sepsis

 Ttest - Check BUN parameter:
Test statistic is 8.112748
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
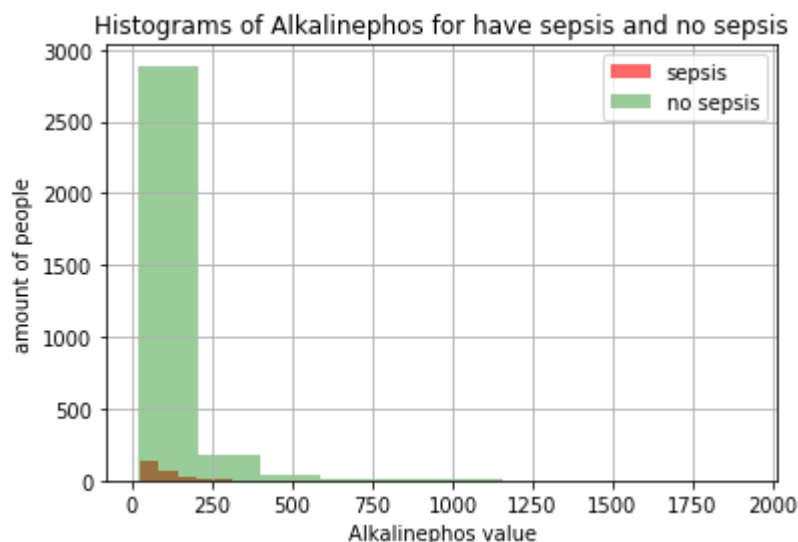pothesis H0 for BUN parameter. at 0.05 level of significance.

 Wilcoxon - Check BUN parameter in wilcoxon test:
Test statistic is 7187585.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for BUN parameter. at 0.05 level of significance.

Histograms of Alkalinephos for have sepsis and no sepsis

Ttest - Check Alkalinephos parameter:
Test statistic is -0.532656
p-value for two tailed test is 0.594307
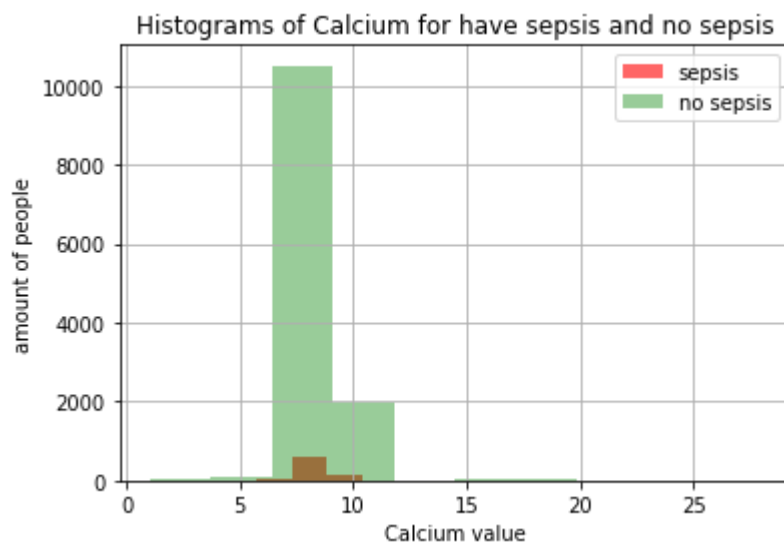Conclusion n Since p-value(=0.594307) > alpha(=0.05) We do not reject the
null hypothesis H0 for Alkalinephos parameter.

Wilcoxon - Check Alkalinephos parameter in wilcoxon test:
Test statistic is 402449.500000
p-value for two tailed test is 0.458888
Conclusion n Since p-value(=0.458888) > alpha(=0.05) We do not reject the
null hypothesis H0 for Alkalinephos parameter.

Histograms of Calcium for have sepsis and no sepsis

Ttest - Check Calcium parameter:
Test statistic is -5.689790
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Calcium parameter. at 0.05 level of significance.

 Wilcoxon - Check Calcium parameter in wilcoxon test:
Test statistic is 4258344.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Calcium parameter. at 0.05 level of significance.

Histograms of Chloride for have sepsis and no sepsis

 Ttest - Check Chloride parameter:
Test statistic is 1.664018
p-value for two tailed test is 0.096147
Conclusion n Since p-value(=0.096147) > alpha(=0.05) We do not reject the
null hypothesis H0 for Chloride parameter.

 Wilcoxon - Check Chloride parameter in wilcoxon test:
Test statistic is 2347707.500000
p-value for two tailed test is 0.081692
Conclusion n Since p-value(=0.081692) > alpha(=0.05) We do not reject the
null hypothesis H0 for Chloride parameter.

Histograms of Creatinine for have sepsis and no sepsis

 Ttest - Check Creatinine parameter:
Test statistic is 2.046044
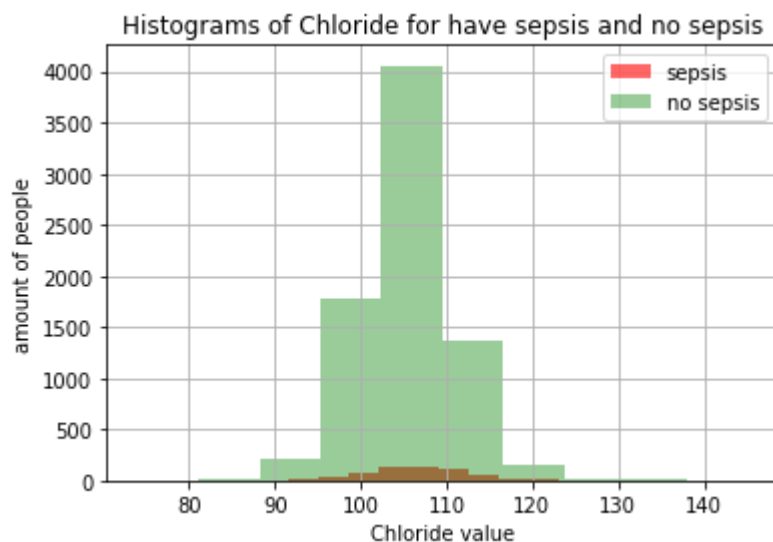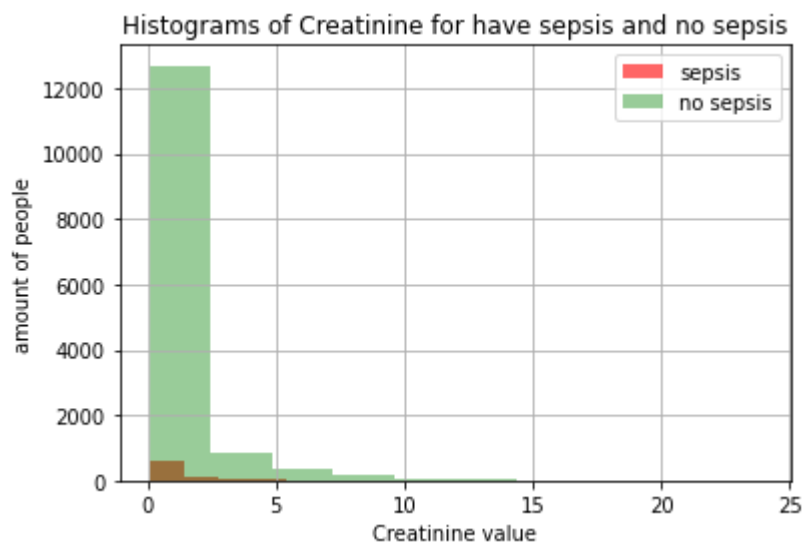p-value for two tailed test is 0.040769
Conclusion n Since p-value(=0.040769) < alpha(=0.05) We reject the null hy
pothesis H0 for Creatinine parameter. at 0.05 level of significance.

 Wilcoxon - Check Creatinine parameter in wilcoxon test:
Test statistic is 6310030.500000
p-value for two tailed test is 0.014732
Conclusion n Since p-value(=0.014732) < alpha(=0.05) We reject the null hy
pothesis H0 for Creatinine parameter. at 0.05 level of significance.

Histograms of Bilirubin_direct for have sepsis and no sepsis

 Ttest - Check Bilirubin_direct parameter:
Test statistic is 0.424867
p-value for two tailed test is 0.671159
Conclusion n Since p-value(=0.671159) > alpha(=0.05) We do not reject the
null hypothesis H0 for Bilirubin_direct parameter.

 Wilcoxon - Check Bilirubin_direct parameter in wilcoxon test:
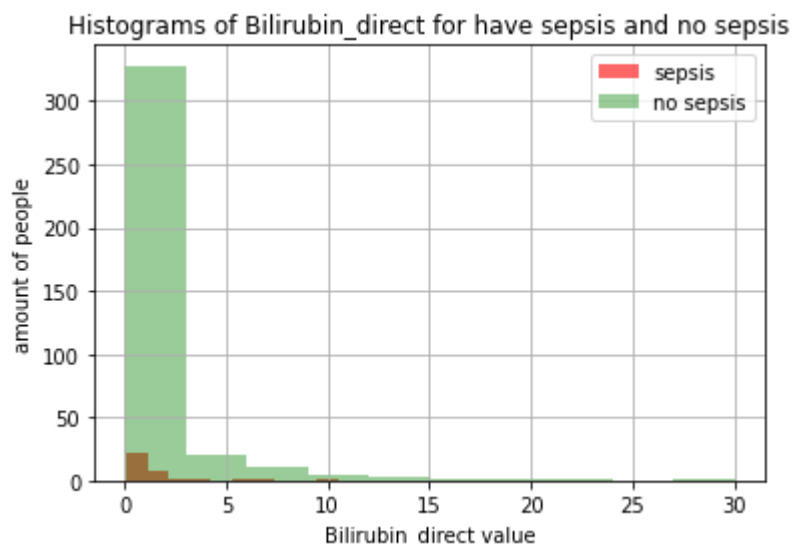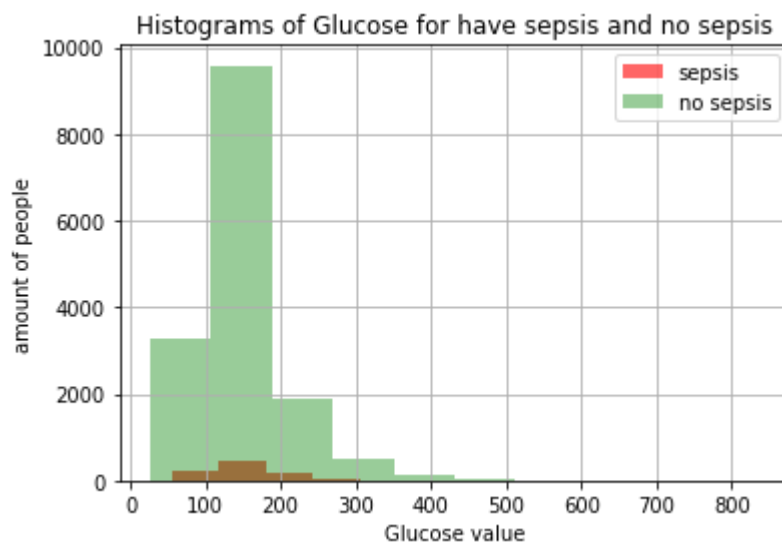Test statistic is 8312.000000
p-value for two tailed test is 0.006469
Conclusion n Since p-value(=0.006469) < alpha(=0.05) We reject the null hy
pothesis H0 for Bilirubin_direct parameter. at 0.05 level of significance.

Histograms of Glucose for have sepsis and no sepsis

```
 Ttest - Check Glucose parameter:
Test statistic is 3.245779
p-value for two tailed test is 0.001174
Conclusion n Since p-value(=0.001174) < alpha(=0.05) We reject the null hy
pothesis H0 for Glucose parameter. at 0.05 level of significance.

 Wilcoxon  - Check Glucose parameter in wilcoxon test:
Test statistic is 7982248.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Glucose parameter. at 0.05 level of significance.
```

Histograms of Lactate for have sepsis and no sepsis

```
 Ttest - Check Lactate parameter:
Test statistic is -0.190207
p-value for two tailed test is 0.849162
Conclusion n Since p-value(=0.849162) > alpha(=0.05) We do not reject the
null hypothesis H0 for Lactate parameter.

 Wilcoxon  - Check Lactate parameter in wilcoxon test:
Test statistic is 410670.000000
p-value for two tailed test is 0.105473
Conclusion n Since p-value(=0.105473) > alpha(=0.05) We do not reject the
null hypothesis H0 for Lactate parameter.
```

Histograms of Magnesium for have sepsis and no sepsis

 Ttest - Check Magnesium parameter:
Test statistic is 3.346365
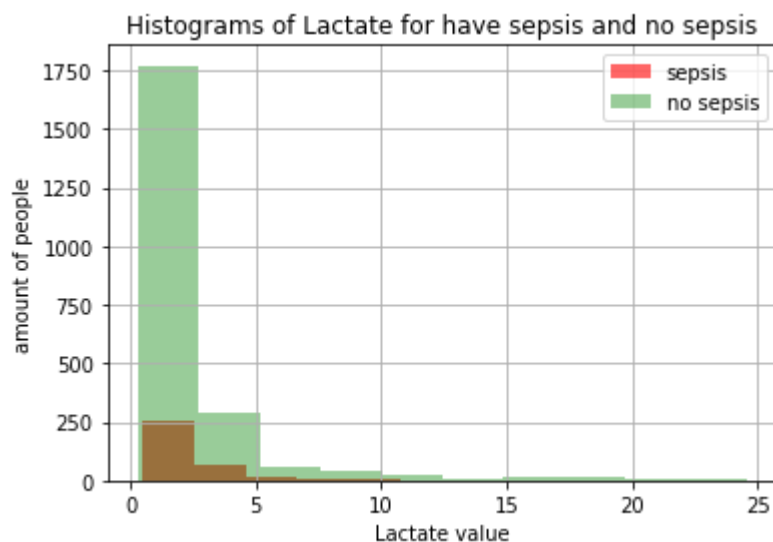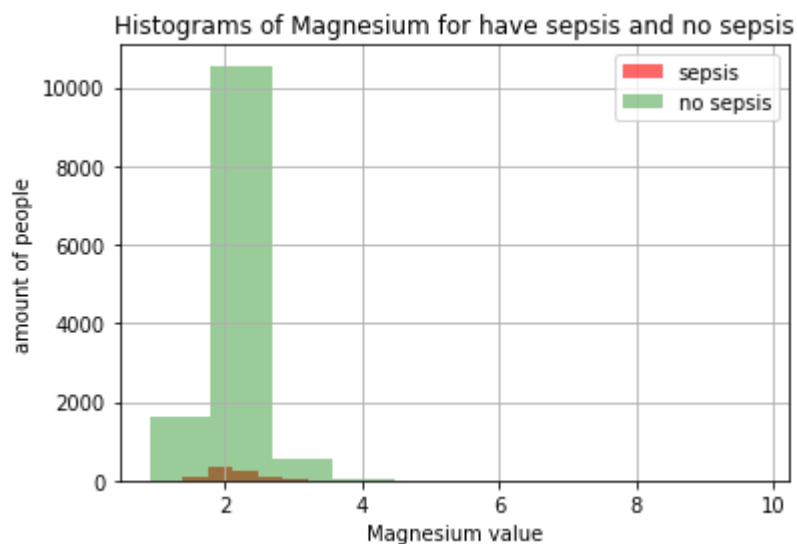p-value for two tailed test is 0.000821
Conclusion n Since p-value(=0.000821) < alpha(=0.05) We reject the null hy
pothesis H0 for Magnesium parameter. at 0.05 level of significance.
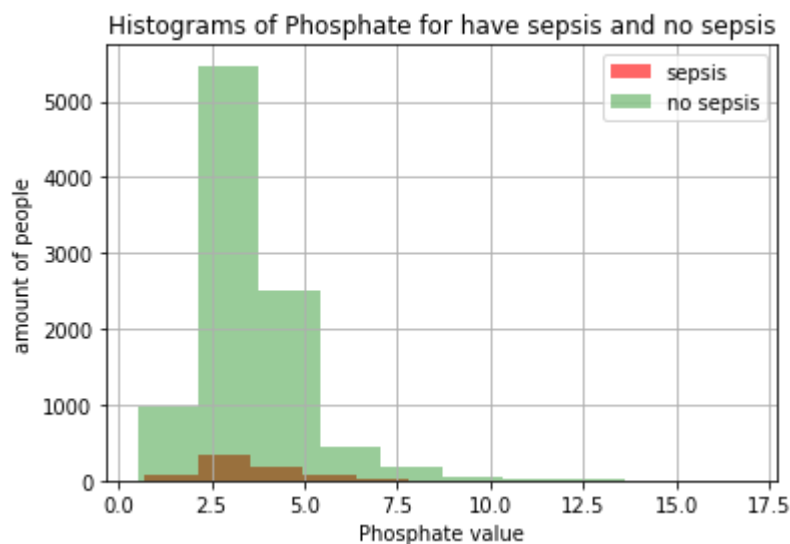
 Wilcoxon - Check Magnesium parameter in wilcoxon test:
Test statistic is 5599809.500000
p-value for two tailed test is 0.000240
Conclusion n Since p-value(=0.000240) < alpha(=0.05) We reject the null hy
pothesis H0 for Magnesium parameter. at 0.05 level of significance.

Histograms of Phosphate for have sepsis and no sepsis


```
 Ttest - Check Phosphate parameter:
Test statistic is 1.564374
p-value for two tailed test is 0.117760
Conclusion n Since p-value(=0.117760) > alpha(=0.05) We do not reject the
null hypothesis H0 for Phosphate parameter.

 Wilcoxon  - Check Phosphate parameter in wilcoxon test:
Test statistic is 3459569.000000
p-value for two tailed test is 0.356921
Conclusion n Since p-value(=0.356921) > alpha(=0.05) We do not reject the
null hypothesis H0 for Phosphate parameter.
```
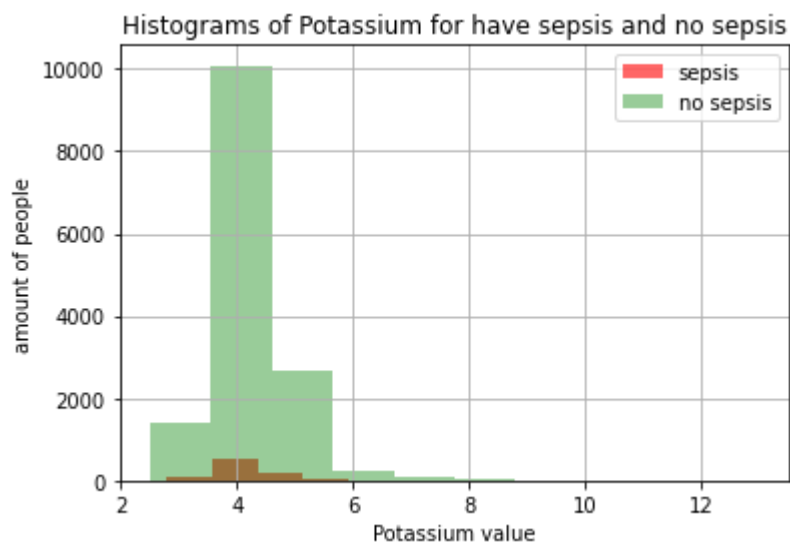
Histograms of Potassium for have sepsis and no sepsis


```
 Ttest - Check Potassium parameter:
Test statistic is 0.029304
p-value for two tailed test is 0.976623
Conclusion n Since p-value(=0.976623) > alpha(=0.05) We do not reject the
null hypothesis H0 for Potassium parameter.

 Wilcoxon  - Check Potassium parameter in wilcoxon test:
Test statistic is 6053364.500000
p-value for two tailed test is 0.006588
Conclusion n Since p-value(=0.006588) < alpha(=0.05) We reject the null hy
pothesis H0 for Potassium parameter. at 0.05 level of significance.
```
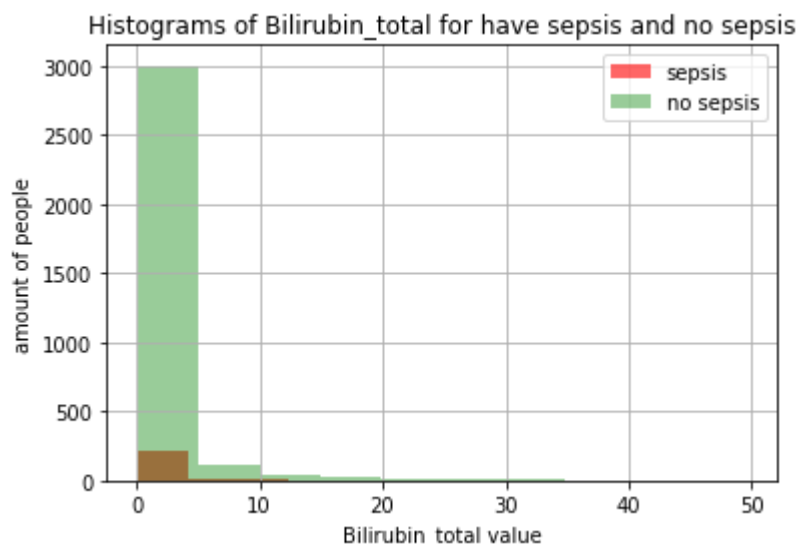
Histograms of Bilirubin_total for have sepsis and no sepsis


```
 Ttest - Check Bilirubin_total parameter:
Test statistic is 3.109004
p-value for two tailed test is 0.001892
Conclusion n Since p-value(=0.001892) < alpha(=0.05) We reject the null hy
pothesis H0 for Bilirubin_total parameter. at 0.05 level of significance.

 Wilcoxon  - Check Bilirubin_total parameter in wilcoxon test:
Test statistic is 438778.000000
p-value for two tailed test is 0.055420
Conclusion n Since p-value(=0.055420) > alpha(=0.05) We do not reject the
null hypothesis H0 for Bilirubin_total parameter.
```
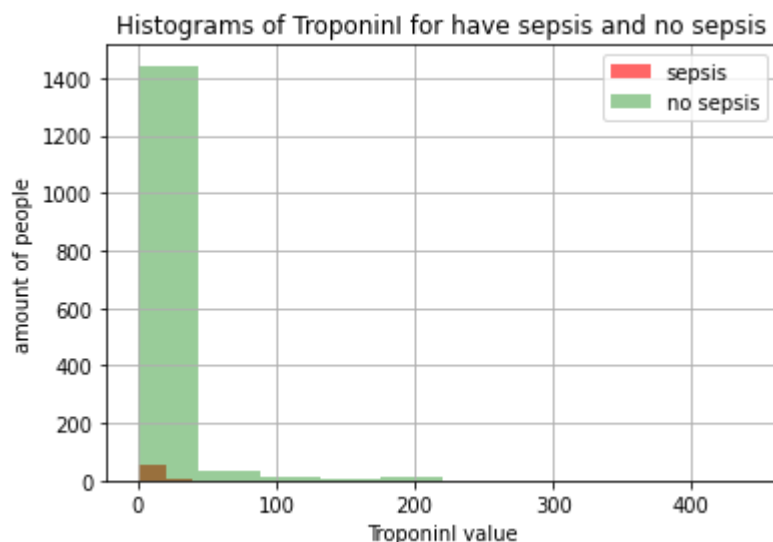
Histograms of TroponinI for have sepsis and no sepsis

 Ttest - Check TroponinI parameter:
Test statistic is 1.130453
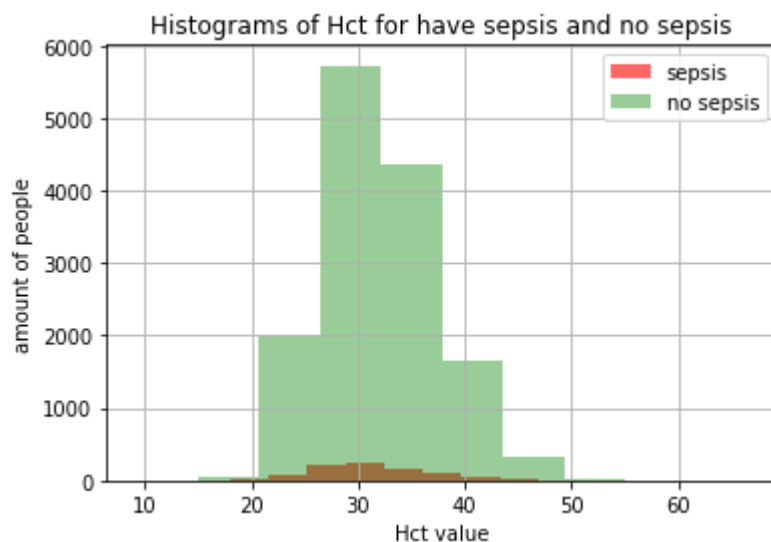p-value for two tailed test is 0.258458
Conclusion n Since p-value(=0.258458) > alpha(=0.05) We do not reject the
null hypothesis H0 for TroponinI parameter.

 Wilcoxon - Check TroponinI parameter in wilcoxon test:
Test statistic is 56783.500000
p-value for two tailed test is 0.120123
Conclusion n Since p-value(=0.120123) > alpha(=0.05) We do not reject the
null hypothesis H0 for TroponinI parameter.

Histograms of Hct for have sepsis and no sepsis

 Ttest - Check Hct parameter:
Test statistic is -4.974794
p-value for two tailed test is 0.000001
Conclusion n Since p-value(=0.000001) < alpha(=0.05) We reject the null hy
pothesis H0 for Hct parameter. at 0.05 level of significance.

 Wilcoxon - Check Hct parameter in wilcoxon test:
Test statistic is 5660863.500000
p-value for two tailed test is 0.000001
Conclusion n Since p-value(=0.000001) < alpha(=0.05) We reject the null hy
pothesis H0 for Hct parameter. at 0.05 level of significance.

Histograms of Hgb for have sepsis and no sepsis

 Ttest - Check Hgb parameter:
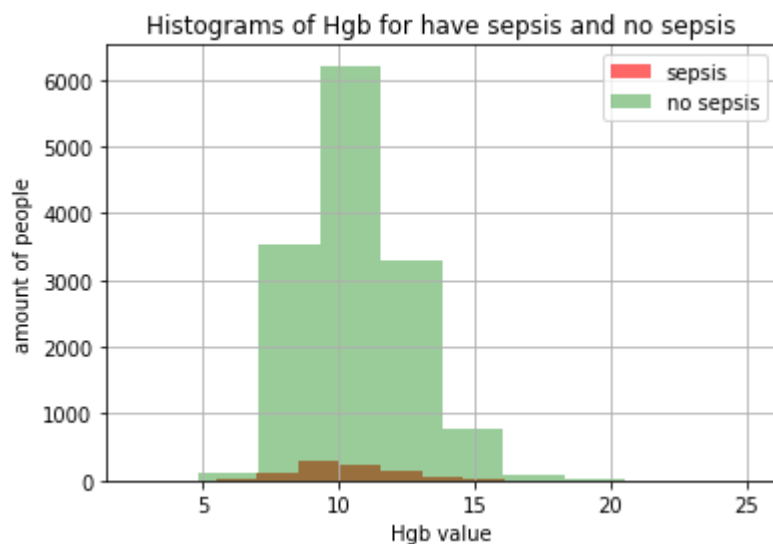Test statistic is -5.100564
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Hgb parameter. at 0.05 level of significance.

 Wilcoxon - Check Hgb parameter in wilcoxon test:
Test statistic is 5386141.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Hgb parameter. at 0.05 level of significance.

Histograms of PTT for have sepsis and no sepsis

 Ttest - Check PTT parameter:
Test statistic is 2.848379
p-value for two tailed test is 0.004410
Conclusion n Since p-value(=0.004410) < alpha(=0.05) We reject the null hy
pothesis H0 for PTT parameter. at 0.05 level of significance.

 Wilcoxon - Check PTT parameter in wilcoxon test:
Test statistic is 1283426.500000
p-value for two tailed test is 0.001086
Conclusion n Since p-value(=0.001086) < alpha(=0.05) We reject the null hy
pothesis H0 for PTT parameter. at 0.05 level of significance.

Histograms of WBC for have sepsis and no sepsis

 Ttest - Check WBC parameter:
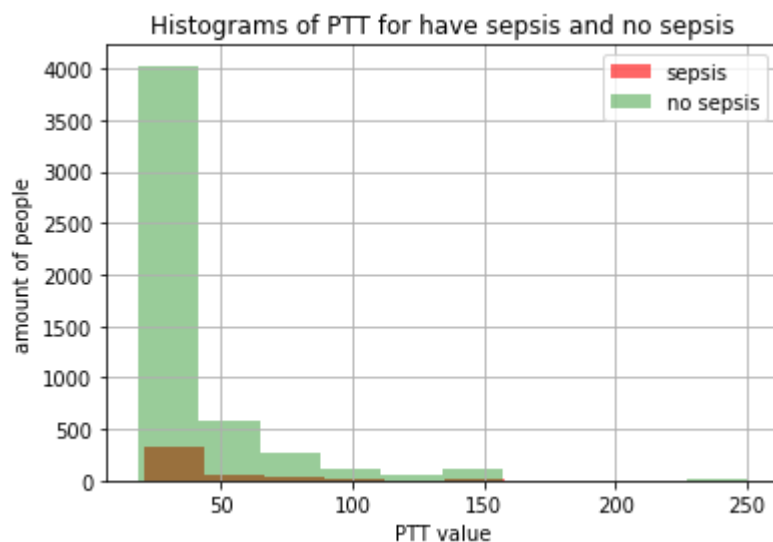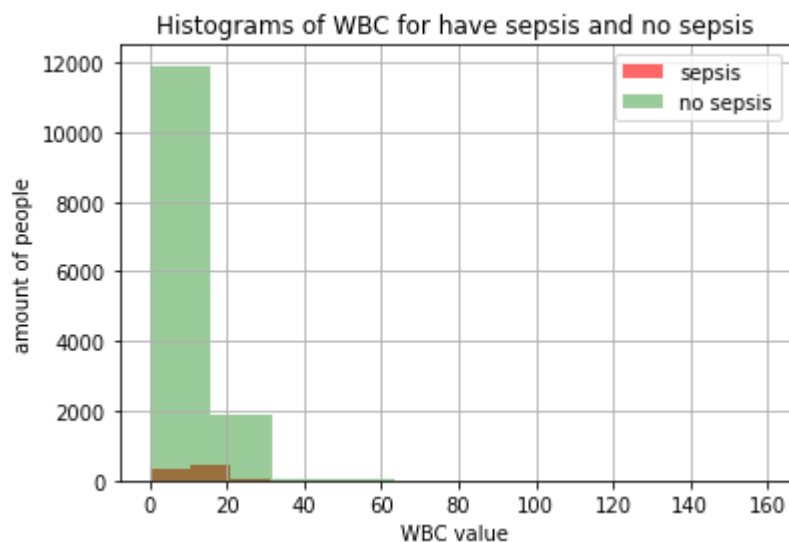Test statistic is 9.047368
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
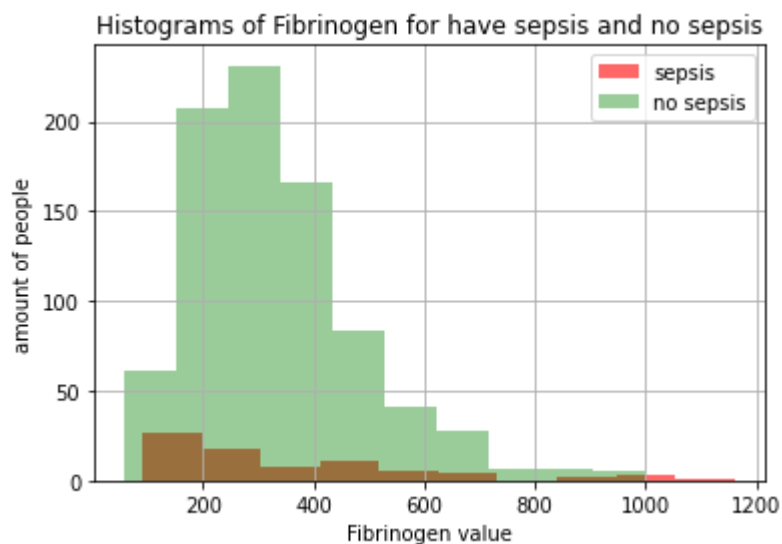pothesis H0 for WBC parameter. at 0.05 level of significance.

 Wilcoxon - Check WBC parameter in wilcoxon test:
Test statistic is 6963512.500000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for WBC parameter. at 0.05 level of significance.

Histograms of Fibrinogen for have sepsis and no sepsis

  Ttest - Check Fibrinogen parameter:
Test statistic is 1.257858
p-value for two tailed test is 0.208765
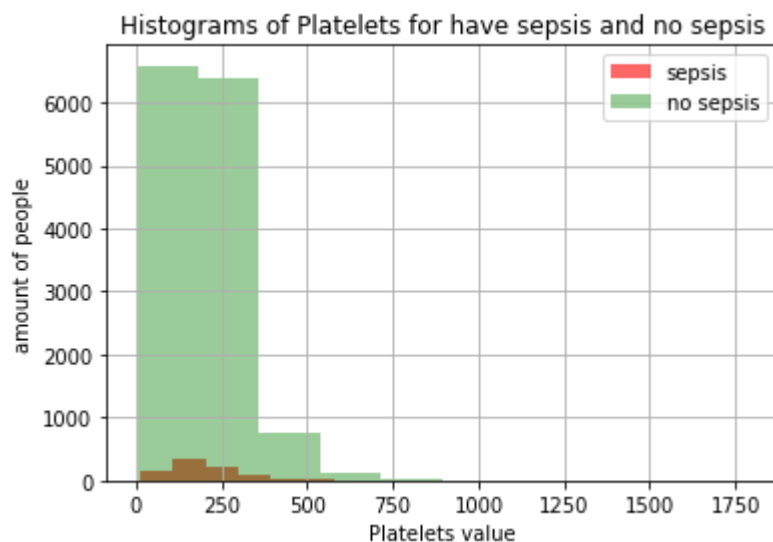Conclusion n Since p-value(=0.208765) > alpha(=0.05) We do not reject the
null hypothesis H0 for Fibrinogen parameter.

  Wilcoxon - Check Fibrinogen parameter in wilcoxon test:
Test statistic is 31559.500000
p-value for two tailed test is 0.514956
Conclusion n Since p-value(=0.514956) > alpha(=0.05) We do not reject the
null hypothesis H0 for Fibrinogen parameter.

Histograms of Platelets for have sepsis and no sepsis

```
 Ttest - Check Platelets parameter:
Test statistic is 2.276670
p-value for two tailed test is 0.022820
Conclusion n Since p-value(=0.022820) < alpha(=0.05) We reject the null hy
pothesis H0 for Platelets parameter. at 0.05 level of significance.

 Wilcoxon  - Check Platelets parameter in wilcoxon test:
Test statistic is 5973839.500000
p-value for two tailed test is 0.515377
Conclusion n Since p-value(=0.515377) > alpha(=0.05) We do not reject the
null hypothesis H0 for Platelets parameter.
```
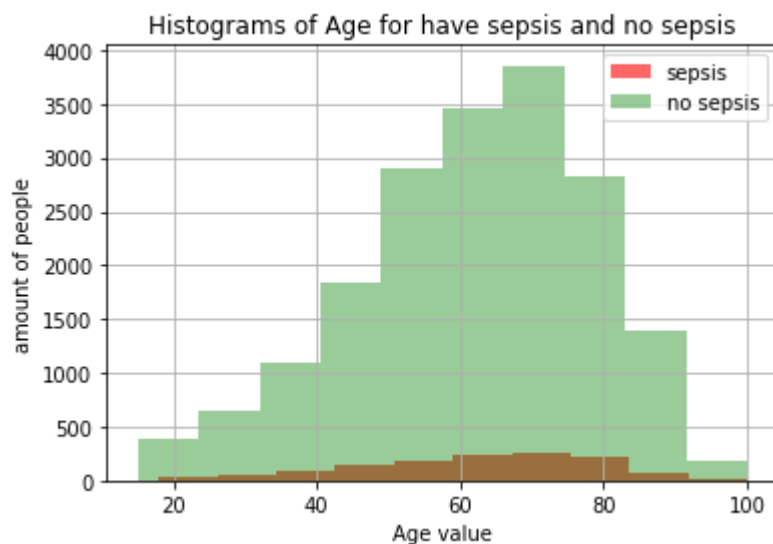
Histograms of Age for have sepsis and no sepsis

 Ttest - Check Age parameter:
Test statistic is 1.440456
p-value for two tailed test is 0.149754
Conclusion n Since p-value(=0.149754) > alpha(=0.05) We do not reject the
null hypothesis H0 for Age parameter.

 Wilcoxon - Check Age parameter in wilcoxon test:
Test statistic is 12306554.000000
p-value for two tailed test is 0.131686
Conclusion n Since p-value(=0.131686) > alpha(=0.05) We do not reject the
null hypothesis H0 for Age parameter.

Histograms of Gender for have sepsis and no sepsis

 Ttest - Check Gender parameter:
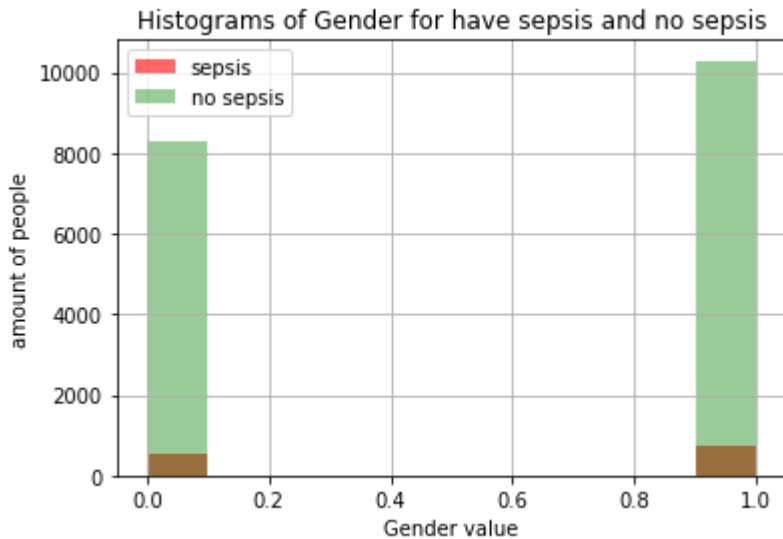Test statistic is 1.667015
p-value for two tailed test is 0.095527
Conclusion n Since p-value(=0.095527) > alpha(=0.05) We do not reject the
null hypothesis H0 for Gender parameter.

 Wilcoxon - Check Gender parameter in wilcoxon test:
Test statistic is 12292067.000000
p-value for two tailed test is 0.095527
Conclusion n Since p-value(=0.095527) > alpha(=0.05) We do not reject the
null hypothesis H0 for Gender parameter.

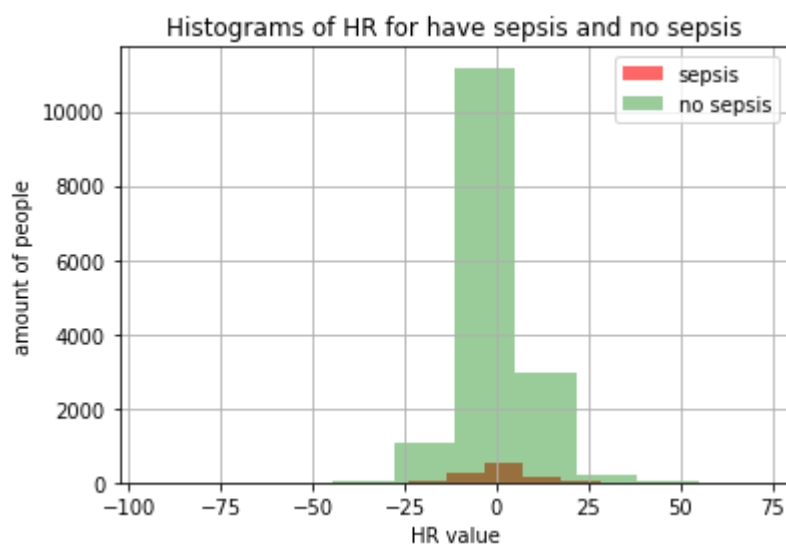--
histograms, Ttest and Wilcoxon-Test results for last-mean difference of ea
ch parameter

Histograms of HR for have sepsis and no sepsis

 Ttest - Check HR parameter:
Test statistic is 4.833465
p-value for two tailed test is 0.000001
Conclusion n Since p-value(=0.000001) < alpha(=0.05) We reject the null hy
pothesis H0 for HR parameter. at 0.05 level of significance.

 Wilcoxon - Check HR parameter in wilcoxon test:
Test statistic is 12303692.500000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for HR parameter. at 0.05 level of significance.

Histograms of O2Sat for have sepsis and no sepsis

 Ttest - Check O2Sat parameter:
Test statistic is 0.080199
p-value for two tailed test is 0.936080
Conclusion n Since p-value(=0.936080) > alpha(=0.05) We do not reject the
null hypothesis H0 for O2Sat parameter.

 Wilcoxon - Check O2Sat parameter in wilcoxon test:
Test statistic is 11078426.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for O2Sat parameter. at 0.05 level of significance.

Histograms of Temp for have sepsis and no sepsis

 Ttest - Check Temp parameter:
Test statistic is 4.416724
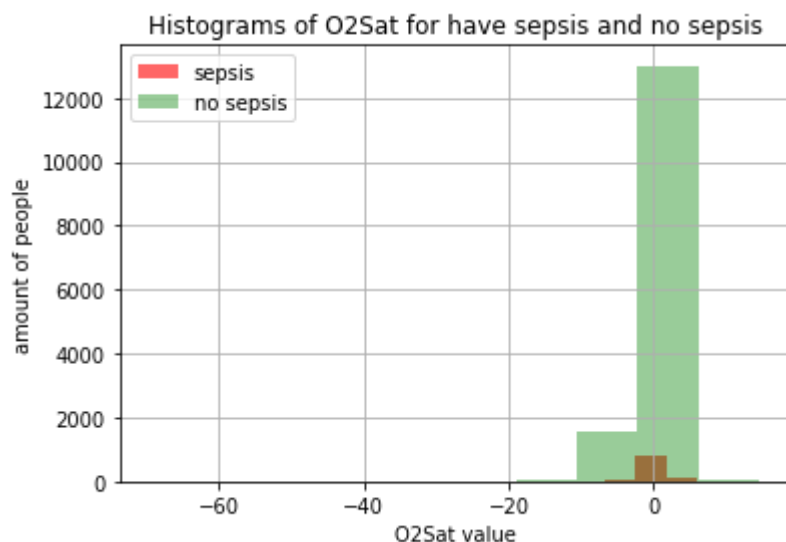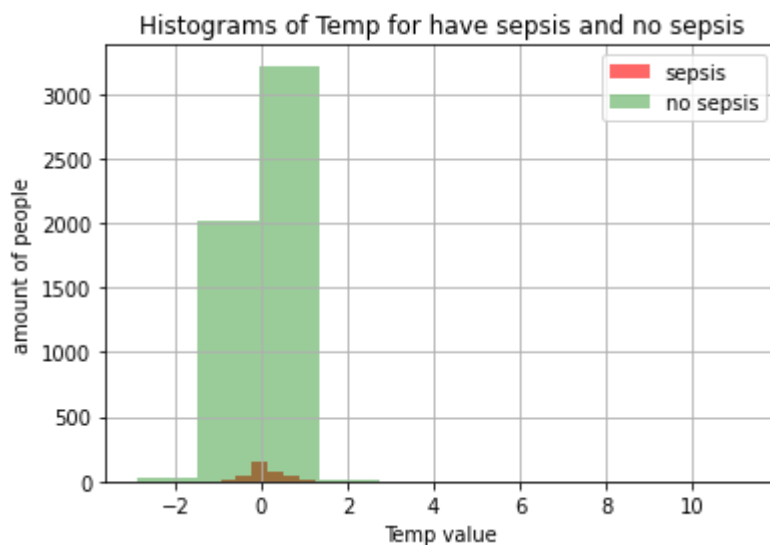p-value for two tailed test is 0.000010
Conclusion n Since p-value(=0.000010) < alpha(=0.05) We reject the null hy
pothesis H0 for Temp parameter. at 0.05 level of significance.

 Wilcoxon - Check Temp parameter in wilcoxon test:
Test statistic is 10516195.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Temp parameter. at 0.05 level of significance.

Histograms of SBP for have sepsis and no sepsis

Ttest - Check SBP parameter:
Test statistic is 0.175990
p-value for two tailed test is 0.860304
Conclusion n Since p-value(=0.860304) > alpha(=0.05) We do not reject the
null hypothesis H0 for SBP parameter.

 Wilcoxon - Check SBP parameter in wilcoxon test:
Test statistic is 8962797.000000
p-value for two tailed test is 0.036610
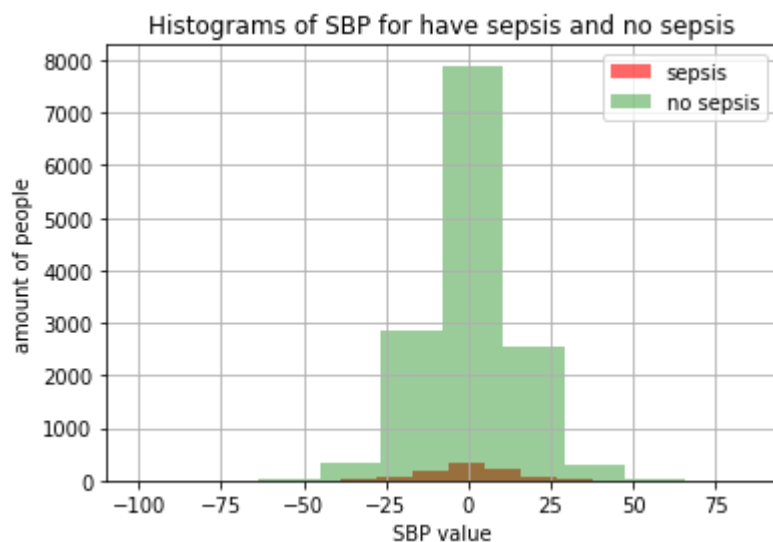Conclusion n Since p-value(=0.036610) < alpha(=0.05) We reject the null hy
pothesis H0 for SBP parameter. at 0.05 level of significance.

Histograms of MAP for have sepsis and no sepsis
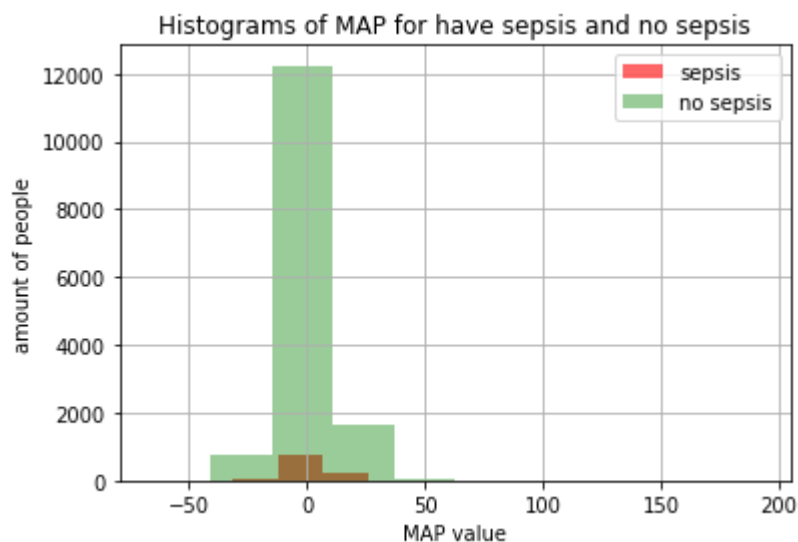
 Ttest - Check MAP parameter:
Test statistic is 0.918605
p-value for two tailed test is 0.358317
Conclusion n Since p-value(=0.358317) > alpha(=0.05) We do not reject the
null hypothesis H0 for MAP parameter.

 Wilcoxon - Check MAP parameter in wilcoxon test:
Test statistic is 9505940.500000
p-value for two tailed test is 0.000583
Conclusion n Since p-value(=0.000583) < alpha(=0.05) We reject the null hy
pothesis H0 for MAP parameter. at 0.05 level of significance.

Histograms of DBP for have sepsis and no sepsis


```
 Ttest - Check DBP parameter:
Test statistic is -0.443172
p-value for two tailed test is 0.657650
Conclusion n Since p-value(=0.657650) > alpha(=0.05) We do not reject the
null hypothesis H0 for DBP parameter.

 Wilcoxon  - Check DBP parameter in wilcoxon test:
Test statistic is 5793612.000000
p-value for two tailed test is 0.000082
Conclusion n Since p-value(=0.000082) < alpha(=0.05) We reject the null hy
pothesis H0 for DBP parameter. at 0.05 level of significance.
```
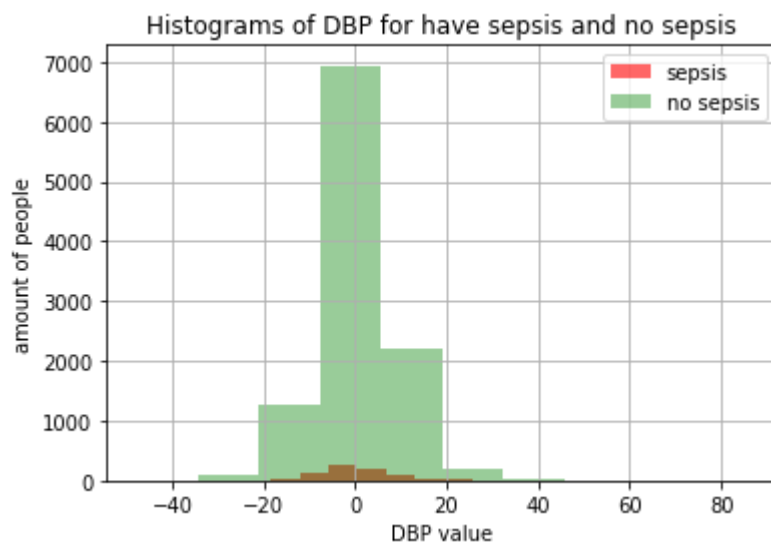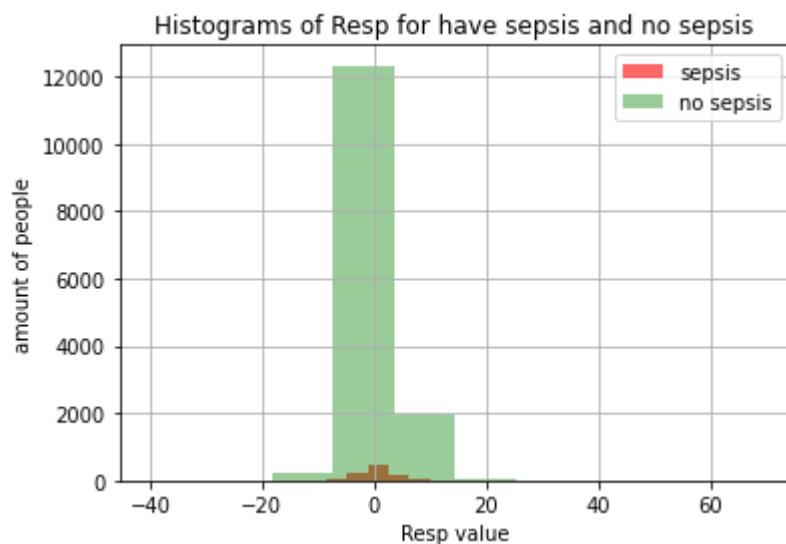
Histograms of Resp for have sepsis and no sepsis

 Ttest - Check Resp parameter:
Test statistic is 0.372601
p-value for two tailed test is 0.709451
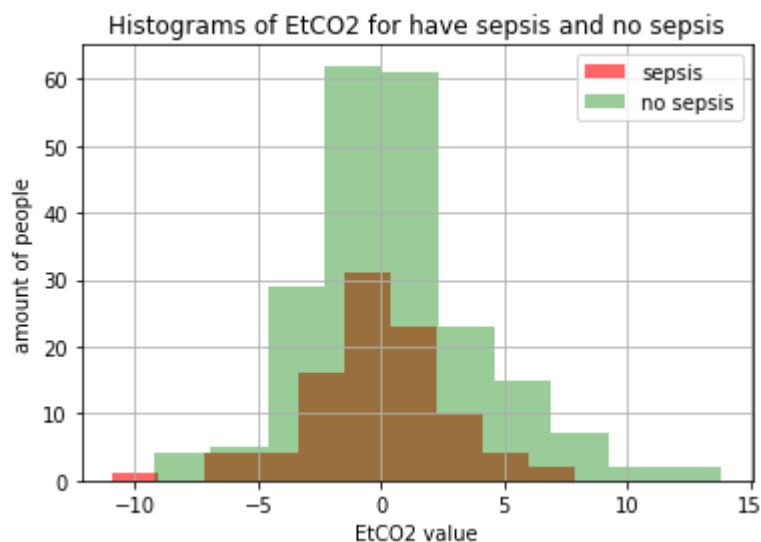Conclusion n Since p-value(=0.709451) > alpha(=0.05) We do not reject the
null hypothesis H0 for Resp parameter.

 Wilcoxon - Check Resp parameter in wilcoxon test:
Test statistic is 11674948.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Resp parameter. at 0.05 level of significance.

Histograms of EtCO2 for have sepsis and no sepsis

Ttest - Check EtCO2 parameter:
Test statistic is -1.651050
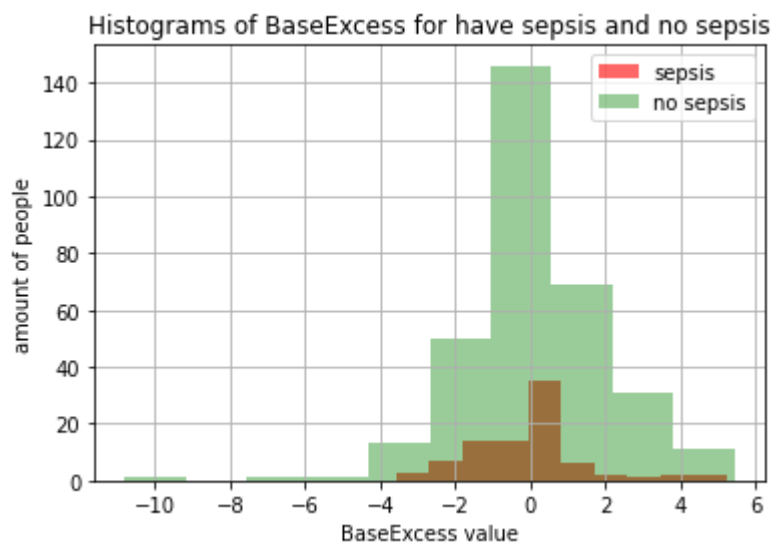p-value for two tailed test is 0.099764
Conclusion n Since p-value(=0.099764) > alpha(=0.05) We do not reject the
null hypothesis H0 for EtCO2 parameter.

Wilcoxon - Check EtCO2 parameter in wilcoxon test:
Test statistic is 42594.500000
p-value for two tailed test is 0.664844
Conclusion n Since p-value(=0.664844) > alpha(=0.05) We do not reject the
null hypothesis H0 for EtCO2 parameter.

Histograms of BaseExcess for have sepsis and no sepsis

Ttest - Check BaseExcess parameter:
Test statistic is -1.557603
p-value for two tailed test is 0.120104
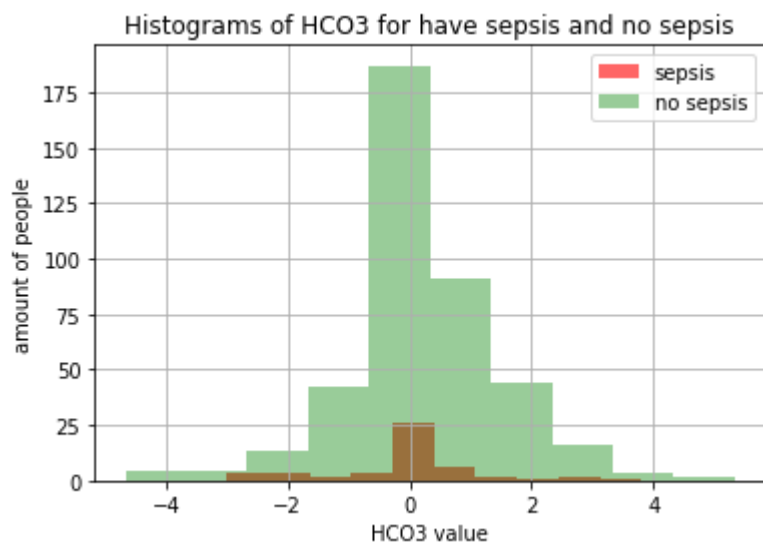Conclusion n Since p-value(=0.120104) > alpha(=0.05) We do not reject the
null hypothesis H0 for BaseExcess parameter.

Wilcoxon - Check BaseExcess parameter in wilcoxon test:
Test statistic is 848686.500000
p-value for two tailed test is 0.019760
Conclusion n Since p-value(=0.019760) < alpha(=0.05) We reject the null hy
pothesis H0 for BaseExcess parameter. at 0.05 level of significance.

Histograms of HCO3 for have sepsis and no sepsis

```
 Ttest - Check HCO3 parameter:
Test statistic is -0.839124
p-value for two tailed test is 0.401842
Conclusion n Since p-value(=0.401842) > alpha(=0.05) We do not reject the
null hypothesis H0 for HCO3 parameter.

 Wilcoxon  - Check HCO3 parameter in wilcoxon test:
Test statistic is 2013805.000000
p-value for two tailed test is 0.562284
Conclusion n Since p-value(=0.562284) > alpha(=0.05) We do not reject the
null hypothesis H0 for HCO3 parameter.
```

Histograms of FiO2 for have sepsis and no sepsis
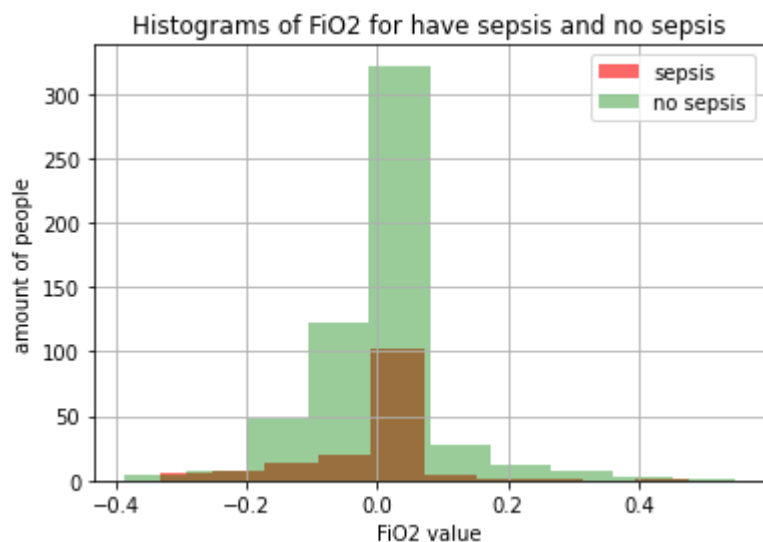
 Ttest - Check FiO2 parameter:
Test statistic is -1.817094
p-value for two tailed test is 0.069622
Conclusion n Since p-value(=0.069622) > alpha(=0.05) We do not reject the
null hypothesis H0 for FiO2 parameter.

 Wilcoxon - Check FiO2 parameter in wilcoxon test:
Test statistic is 1507641.000000
p-value for two tailed test is 0.000101
Conclusion n Since p-value(=0.000101) < alpha(=0.05) We reject the null hy
pothesis H0 for FiO2 parameter. at 0.05 level of significance.

Histograms of pH for have sepsis and no sepsis

```
 Ttest - Check pH parameter:
Test statistic is -0.691877
p-value for two tailed test is 0.489293
Conclusion n Since p-value(=0.489293) > alpha(=0.05) We do not reject the
null hypothesis H0 for pH parameter.

 Wilcoxon  - Check pH parameter in wilcoxon test:
Test statistic is 1465724.000000
p-value for two tailed test is 0.172022
Conclusion n Since p-value(=0.172022) > alpha(=0.05) We do not reject the
null hypothesis H0 for pH parameter.
```
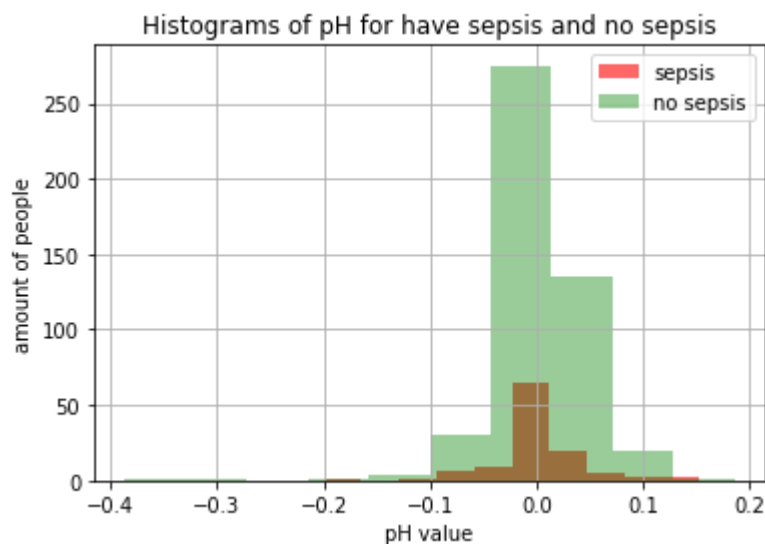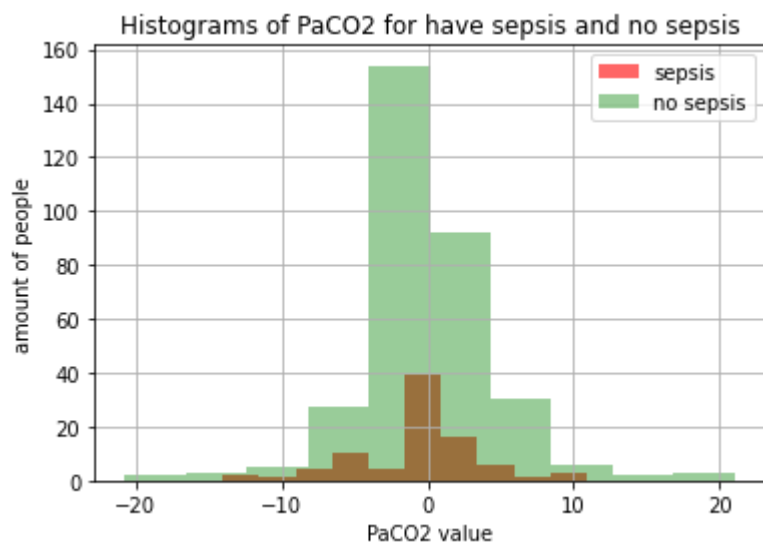
Histograms of PaCO2 for have sepsis and no sepsis

```
 Ttest - Check PaCO2 parameter:
Test statistic is -0.904635
p-value for two tailed test is 0.366193
Conclusion n Since p-value(=0.366193) > alpha(=0.05) We do not reject the
null hypothesis H0 for PaCO2 parameter.

 Wilcoxon  - Check PaCO2 parameter in wilcoxon test:
Test statistic is 1191247.500000
p-value for two tailed test is 0.976337
Conclusion n Since p-value(=0.976337) > alpha(=0.05) We do not reject the
null hypothesis H0 for PaCO2 parameter.
```

Histograms of SaO2 for have sepsis and no sepsis
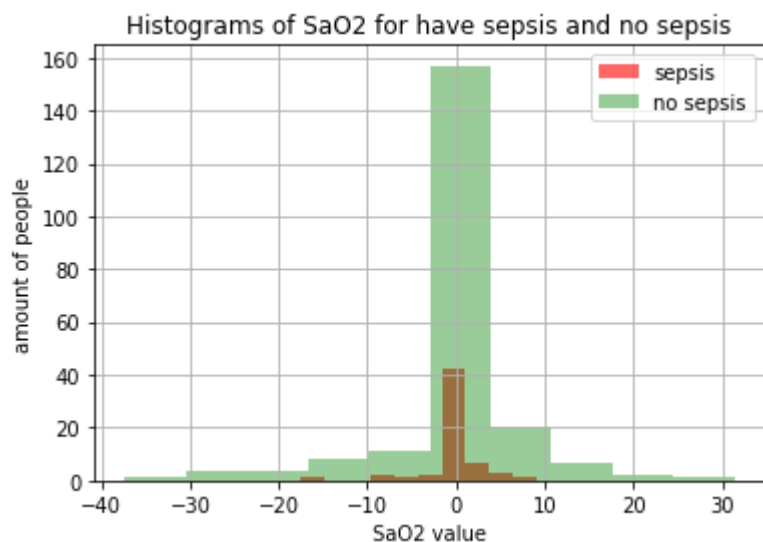
```
 Ttest - Check SaO2 parameter:
Test statistic is -0.060368
p-value for two tailed test is 0.951907
Conclusion n Since p-value(=0.951907) > alpha(=0.05) We do not reject the
null hypothesis H0 for SaO2 parameter.


 Wilcoxon  - Check SaO2 parameter in wilcoxon test:
Test statistic is 479035.500000
p-value for two tailed test is 0.001774
Conclusion n Since p-value(=0.001774) < alpha(=0.05) We reject the null hy
pothesis H0 for SaO2 parameter. at 0.05 level of significance.
```

Histograms of AST for have sepsis and no sepsis


```
 Ttest - Check AST parameter:
Test statistic is 0.477202
p-value for two tailed test is 0.633968
Conclusion n Since p-value(=0.633968) > alpha(=0.05) We do not reject the
null hypothesis H0 for AST parameter.

 Wilcoxon  - Check AST parameter in wilcoxon test:
Test statistic is 451343.000000
p-value for two tailed test is 0.011535
Conclusion n Since p-value(=0.011535) < alpha(=0.05) We reject the null hy
pothesis H0 for AST parameter. at 0.05 level of significance.
```
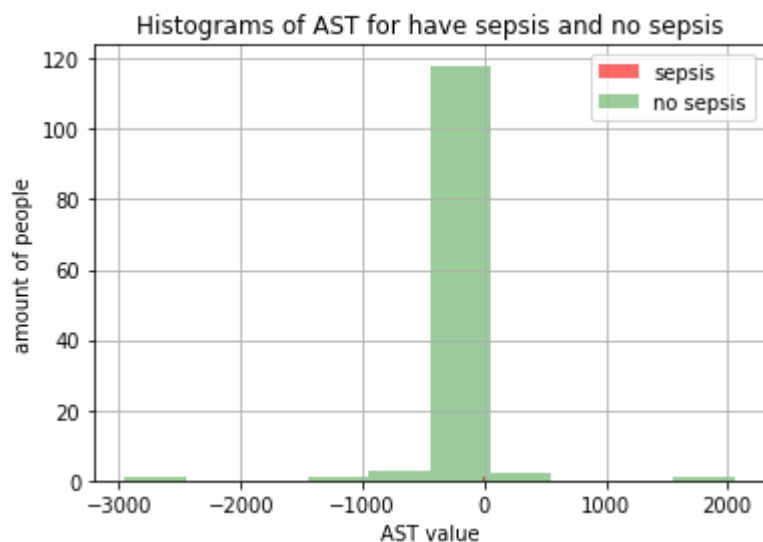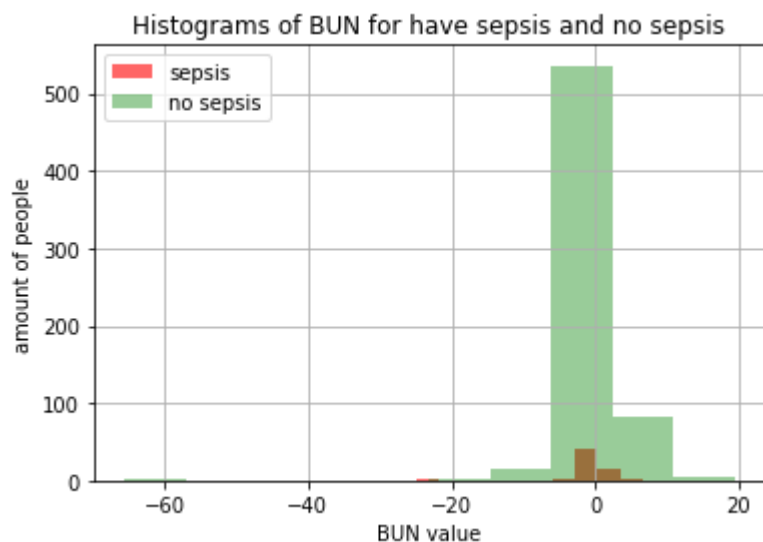
Histograms of BUN for have sepsis and no sepsis


```
 Ttest - Check BUN parameter:
Test statistic is 0.097013
p-value for two tailed test is 0.922744
Conclusion n Since p-value(=0.922744) > alpha(=0.05) We do not reject the
null hypothesis H0 for BUN parameter.

 Wilcoxon  - Check BUN parameter in wilcoxon test:
Test statistic is 7187585.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for BUN parameter. at 0.05 level of significance.
```
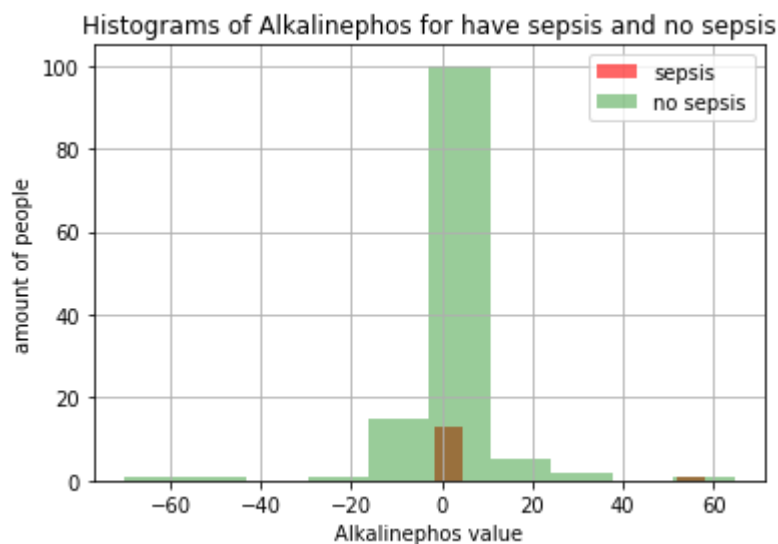
Histograms of Alkalinephos for have sepsis and no sepsis

```
 Ttest - Check Alkalinephos parameter:
Test statistic is 1.121320
p-value for two tailed test is 0.264099
Conclusion n Since p-value(=0.264099) > alpha(=0.05) We do not reject the
null hypothesis H0 for Alkalinephos parameter.

 Wilcoxon  - Check Alkalinephos parameter in wilcoxon test:
Test statistic is 402449.500000
p-value for two tailed test is 0.458888
Conclusion n Since p-value(=0.458888) > alpha(=0.05) We do not reject the
null hypothesis H0 for Alkalinephos parameter.
```
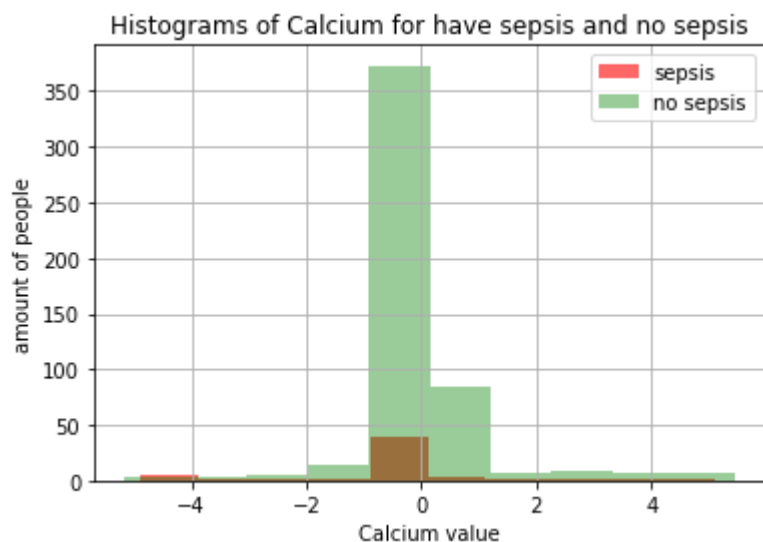
Histograms of Calcium for have sepsis and no sepsis


```
 Ttest - Check Calcium parameter:
Test statistic is -2.793469
p-value for two tailed test is 0.005391
Conclusion n Since p-value(=0.005391) < alpha(=0.05) We reject the null hy
pothesis H0 for Calcium parameter. at 0.05 level of significance.

 Wilcoxon  - Check Calcium parameter in wilcoxon test:
Test statistic is 4258344.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Calcium parameter. at 0.05 level of significance.
```
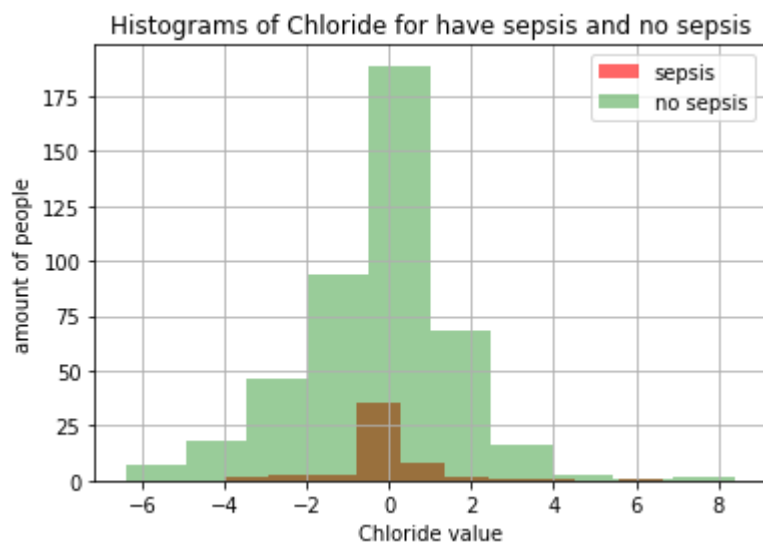
Histograms of Chloride for have sepsis and no sepsis

 Ttest - Check Chloride parameter:
Test statistic is 1.464628
p-value for two tailed test is 0.143653
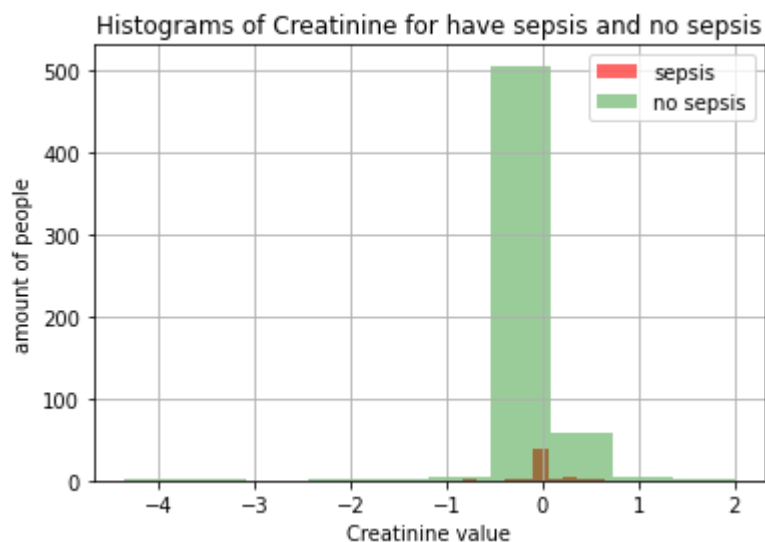Conclusion n Since p-value(=0.143653) > alpha(=0.05) We do not reject the
null hypothesis H0 for Chloride parameter.

 Wilcoxon - Check Chloride parameter in wilcoxon test:
Test statistic is 2347707.500000
p-value for two tailed test is 0.081692
Conclusion n Since p-value(=0.081692) > alpha(=0.05) We do not reject the
null hypothesis H0 for Chloride parameter.

Histograms of Creatinine for have sepsis and no sepsis

 Ttest - Check Creatinine parameter:
Test statistic is 0.604981
p-value for two tailed test is 0.545410
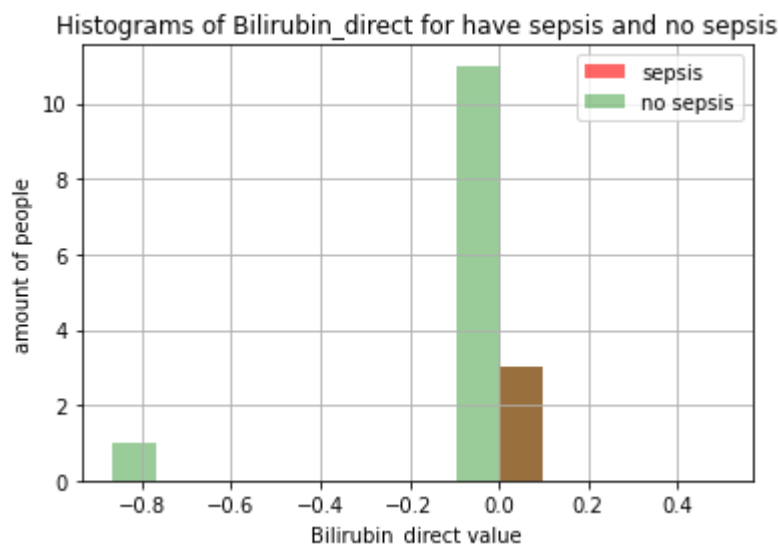Conclusion n Since p-value(=0.545410) > alpha(=0.05) We do not reject the
null hypothesis H0 for Creatinine parameter.

 Wilcoxon - Check Creatinine parameter in wilcoxon test:
Test statistic is 6310030.500000
p-value for two tailed test is 0.014732
Conclusion n Since p-value(=0.014732) < alpha(=0.05) We reject the null hy
pothesis H0 for Creatinine parameter. at 0.05 level of significance.

Histograms of Bilirubin_direct for have sepsis and no sepsis

 Ttest - Check Bilirubin_direct parameter:
Test statistic is 0.309281
p-value for two tailed test is 0.761099
Conclusion n Since p-value(=0.761099) > alpha(=0.05) We do not reject the
null hypothesis H0 for Bilirubin_direct parameter.

 Wilcoxon - Check Bilirubin_direct parameter in wilcoxon test:
Test statistic is 8312.000000
p-value for two tailed test is 0.006469
Conclusion n Since p-value(=0.006469) < alpha(=0.05) We reject the null hy
pothesis H0 for Bilirubin_direct parameter. at 0.05 level of significance.

Histograms of Glucose for have sepsis and no sepsis
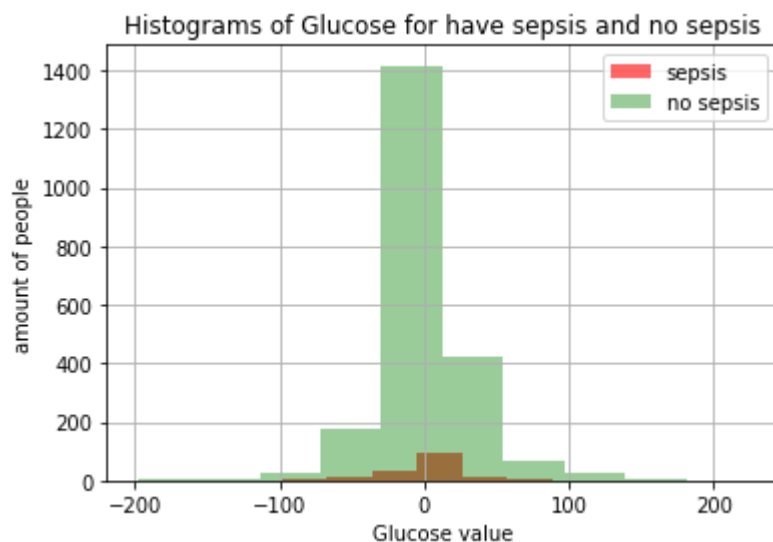

```
 Ttest - Check Glucose parameter:
Test statistic is -0.274036
p-value for two tailed test is 0.784081
Conclusion n Since p-value(=0.784081) > alpha(=0.05) We do not reject the
null hypothesis H0 for Glucose parameter.

 Wilcoxon  - Check Glucose parameter in wilcoxon test:
Test statistic is 7982248.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Glucose parameter. at 0.05 level of significance.
```

Histograms of Lactate for have sepsis and no sepsis


```
 Ttest - Check Lactate parameter:
Test statistic is 0.126918
p-value for two tailed test is 0.899150
Conclusion n Since p-value(=0.899150) > alpha(=0.05) We do not reject the
null hypothesis H0 for Lactate parameter.

 Wilcoxon  - Check Lactate parameter in wilcoxon test:
Test statistic is 410670.000000
p-value for two tailed test is 0.105473
Conclusion n Since p-value(=0.105473) > alpha(=0.05) We do not reject the
null hypothesis H0 for Lactate parameter.
```
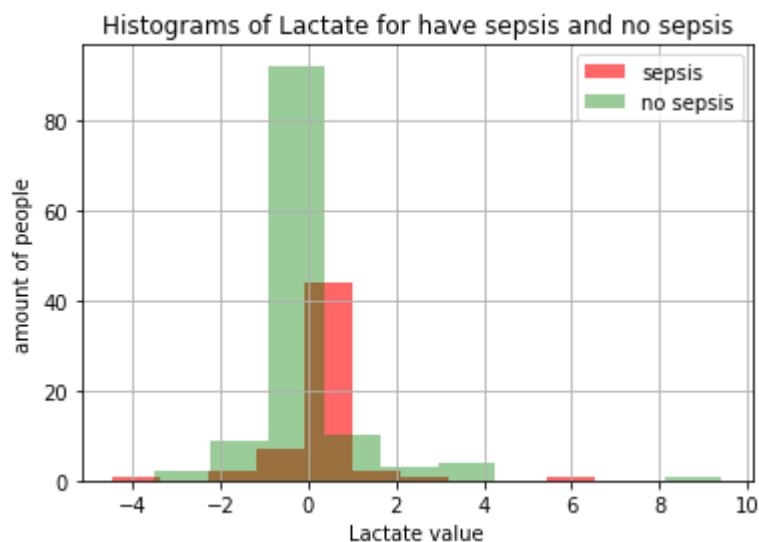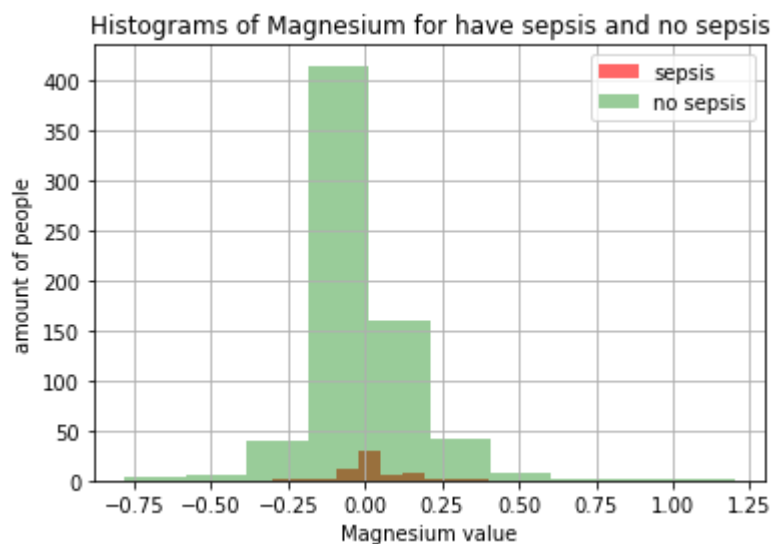
Histograms of Magnesium for have sepsis and no sepsis

 Ttest - Check Magnesium parameter:
Test statistic is 0.117284
p-value for two tailed test is 0.906667
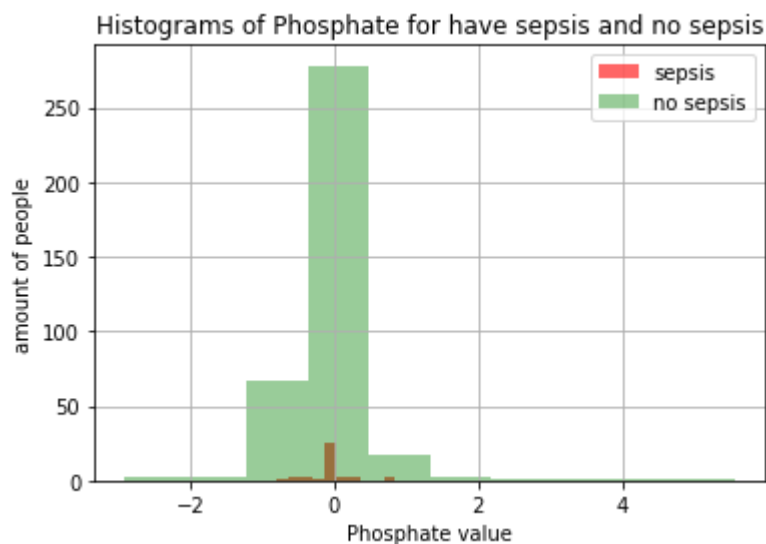Conclusion n Since p-value(=0.906667) > alpha(=0.05) We do not reject the
null hypothesis H0 for Magnesium parameter.

 Wilcoxon - Check Magnesium parameter in wilcoxon test:
Test statistic is 5599809.500000
p-value for two tailed test is 0.000240
Conclusion n Since p-value(=0.000240) < alpha(=0.05) We reject the null hy
pothesis H0 for Magnesium parameter. at 0.05 level of significance.

Histograms of Phosphate for have sepsis and no sepsis

 Ttest - Check Phosphate parameter:
Test statistic is 0.488958
p-value for two tailed test is 0.625132
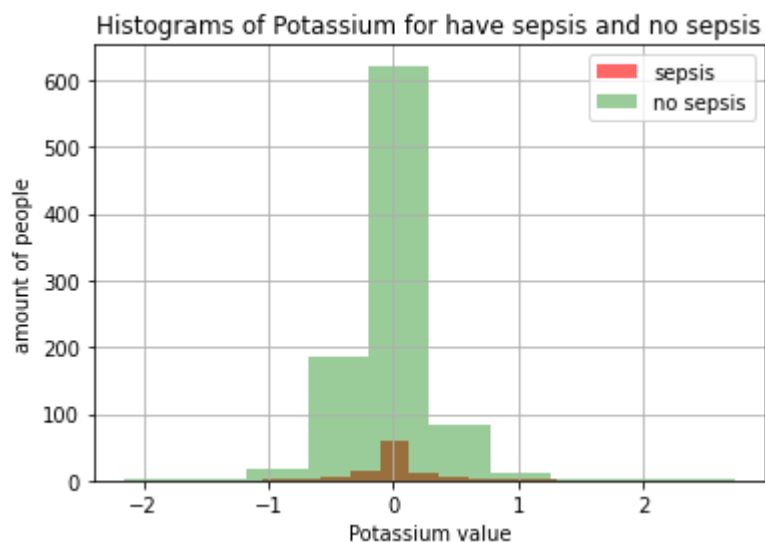Conclusion n Since p-value(=0.625132) > alpha(=0.05) We do not reject the
null hypothesis H0 for Phosphate parameter.

 Wilcoxon - Check Phosphate parameter in wilcoxon test:
Test statistic is 3459569.000000
p-value for two tailed test is 0.356921
Conclusion n Since p-value(=0.356921) > alpha(=0.05) We do not reject the
null hypothesis H0 for Phosphate parameter.

Histograms of Potassium for have sepsis and no sepsis

```
 Ttest - Check Potassium parameter:
Test statistic is 0.730792
p-value for two tailed test is 0.465073
Conclusion n Since p-value(=0.465073) > alpha(=0.05) We do not reject the
null hypothesis H0 for Potassium parameter.

 Wilcoxon  - Check Potassium parameter in wilcoxon test:
Test statistic is 6053364.500000
p-value for two tailed test is 0.006588
Conclusion n Since p-value(=0.006588) < alpha(=0.05) We reject the null hy
pothesis H0 for Potassium parameter. at 0.05 level of significance.
```
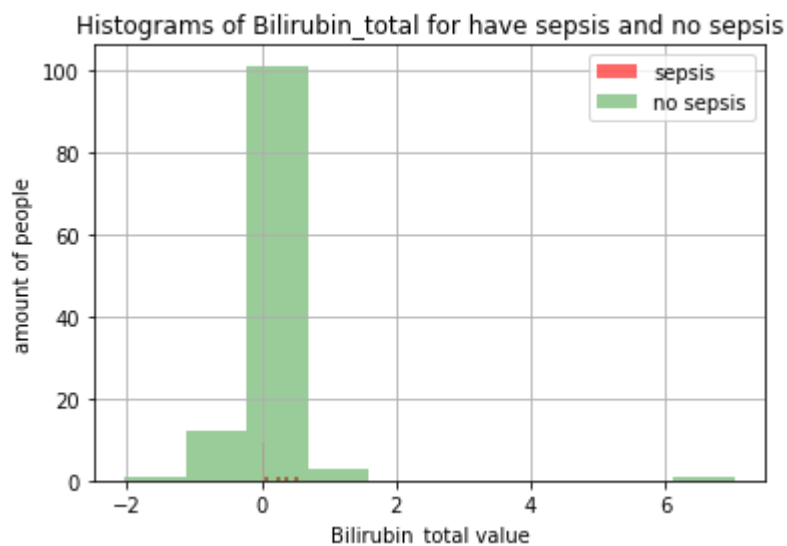
Histograms of Bilirubin_total for have sepsis and no sepsis


```
 Ttest - Check Bilirubin_total parameter:
Test statistic is 0.182599
p-value for two tailed test is 0.855399
Conclusion n Since p-value(=0.855399) > alpha(=0.05) We do not reject the
null hypothesis H0 for Bilirubin_total parameter.

 Wilcoxon  - Check Bilirubin_total parameter in wilcoxon test:
Test statistic is 438778.000000
p-value for two tailed test is 0.055420
Conclusion n Since p-value(=0.055420) > alpha(=0.05) We do not reject the
null hypothesis H0 for Bilirubin_total parameter.
```
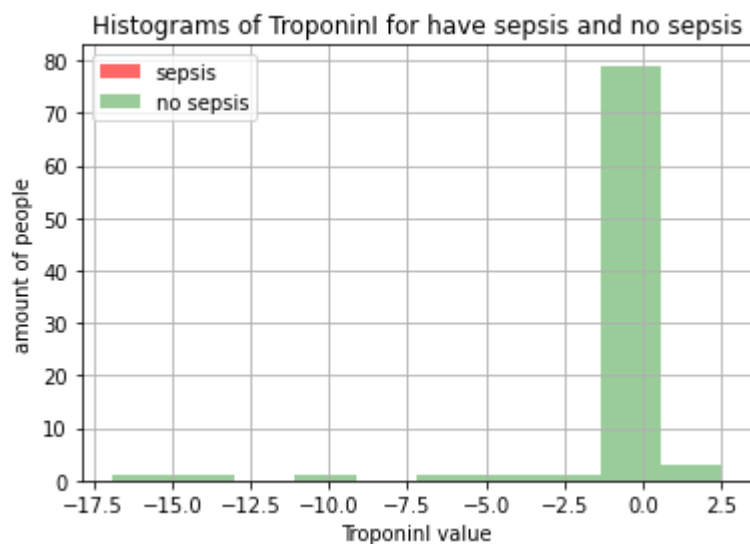
Histograms of TroponinI for have sepsis and no sepsis

 Ttest - Check TroponinI parameter:
Test statistic is 0.579073
p-value for two tailed test is 0.563925
Conclusion n Since p-value(=0.563925) > alpha(=0.05) We do not reject the
null hypothesis H0 for TroponinI parameter.

 Wilcoxon - Check TroponinI parameter in wilcoxon test:
Test statistic is 56783.500000
p-value for two tailed test is 0.120123
Conclusion n Since p-value(=0.120123) > alpha(=0.05) We do not reject the
null hypothesis H0 for TroponinI parameter.

Histograms of Hct for have sepsis and no sepsis

 Ttest - Check Hct parameter:
Test statistic is 0.527487
p-value for two tailed test is 0.597982
Conclusion n Since p-value(=0.597982) > alpha(=0.05) We do not reject the
null hypothesis H0 for Hct parameter.

 Wilcoxon - Check Hct parameter in wilcoxon test:
Test statistic is 5660863.500000
p-value for two tailed test is 0.000001
Conclusion n Since p-value(=0.000001) < alpha(=0.05) We reject the null hy
pothesis H0 for Hct parameter. at 0.05 level of significance.

Histograms of Hgb for have sepsis and no sepsis

 Ttest - Check Hgb parameter:
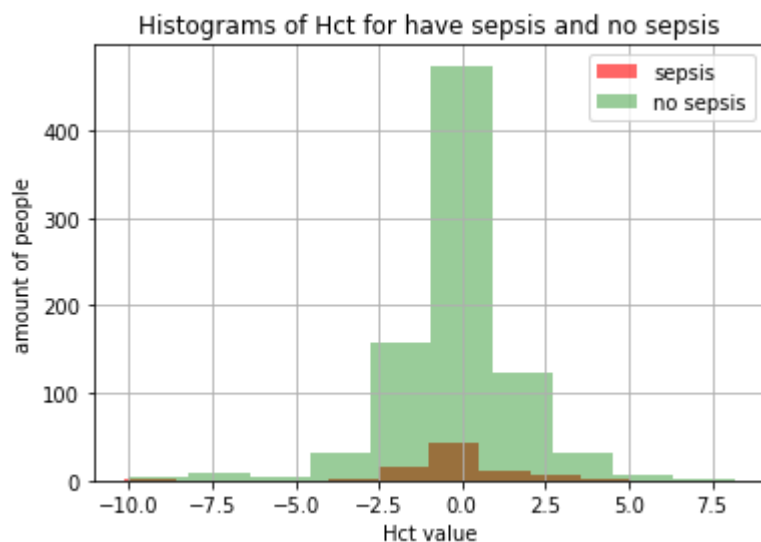Test statistic is 0.329507
p-value for two tailed test is 0.741862
Conclusion n Since p-value(=0.741862) > alpha(=0.05) We do not reject the
null hypothesis H0 for Hgb parameter.

 Wilcoxon - Check Hgb parameter in wilcoxon test:
Test statistic is 5386141.000000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for Hgb parameter. at 0.05 level of significance.

Histograms of PTT for have sepsis and no sepsis

 Ttest - Check PTT parameter:
Test statistic is 0.253875
p-value for two tailed test is 0.799751
Conclusion n Since p-value(=0.799751) > alpha(=0.05) We do not reject the
null hypothesis H0 for PTT parameter.

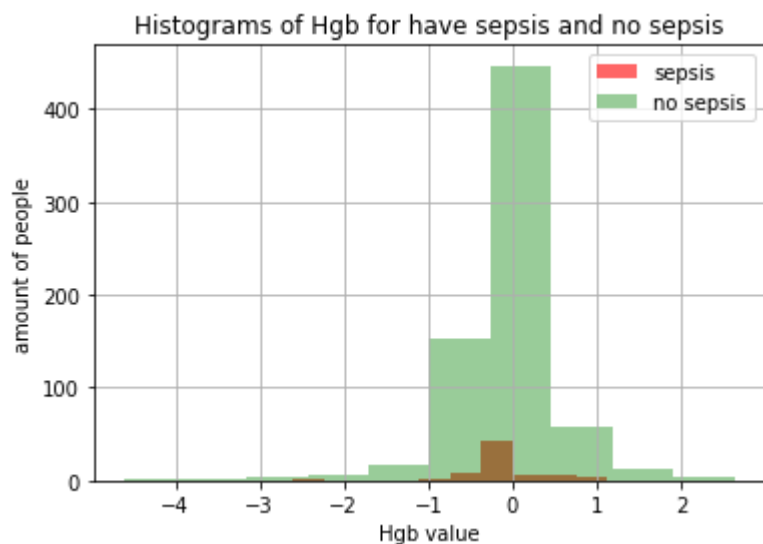 Wilcoxon - Check PTT parameter in wilcoxon test:
Test statistic is 1283426.500000
p-value for two tailed test is 0.001086
Conclusion n Since p-value(=0.001086) < alpha(=0.05) We reject the null hy
pothesis H0 for PTT parameter. at 0.05 level of significance.

Histograms of WBC for have sepsis and no sepsis

 Ttest - Check WBC parameter:
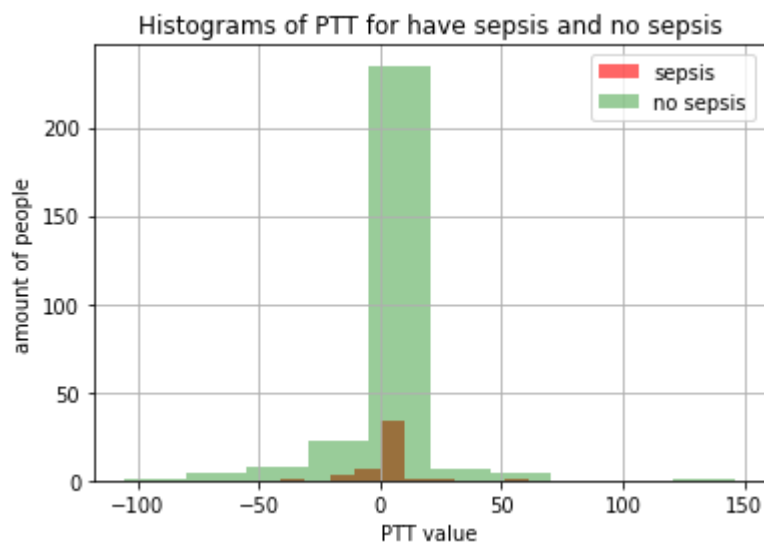Test statistic is 1.572348
p-value for two tailed test is 0.116356
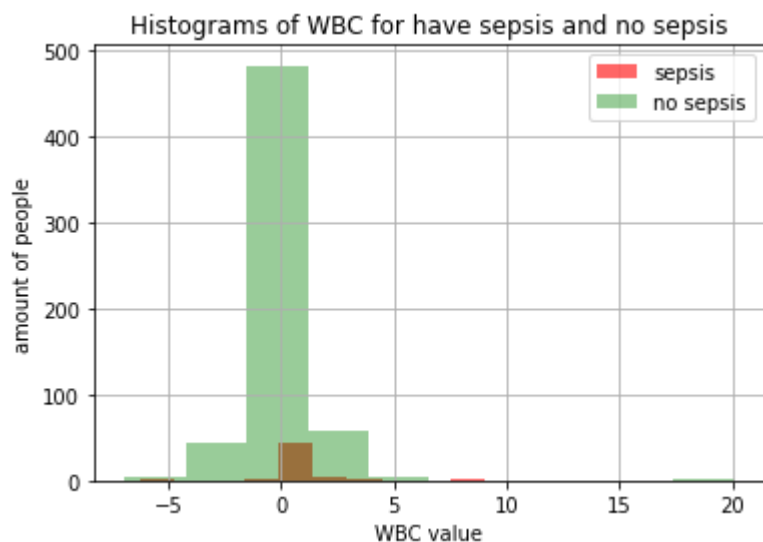Conclusion n Since p-value(=0.116356) > alpha(=0.05) We do not reject the
null hypothesis H0 for WBC parameter.

 Wilcoxon - Check WBC parameter in wilcoxon test:
Test statistic is 6963512.500000
p-value for two tailed test is 0.000000
Conclusion n Since p-value(=0.000000) < alpha(=0.05) We reject the null hy
pothesis H0 for WBC parameter. at 0.05 level of significance.

Histograms of Fibrinogen for have sepsis and no sepsis

 Ttest - Check Fibrinogen parameter:
Test statistic is -0.250129
p-value for two tailed test is 0.803328
Conclusion n Since p-value(=0.803328) > alpha(=0.05) We do not reject the
null hypothesis H0 for Fibrinogen parameter.

 Wilcoxon - Check Fibrinogen parameter in wilcoxon test:
Test statistic is 31559.500000
p-value for two tailed test is 0.514956
Conclusion n Since p-value(=0.514956) > alpha(=0.05) We do not reject the
null hypothesis H0 for Fibrinogen parameter.

Histograms of Platelets for have sepsis and no sepsis

  Ttest - Check Platelets parameter:
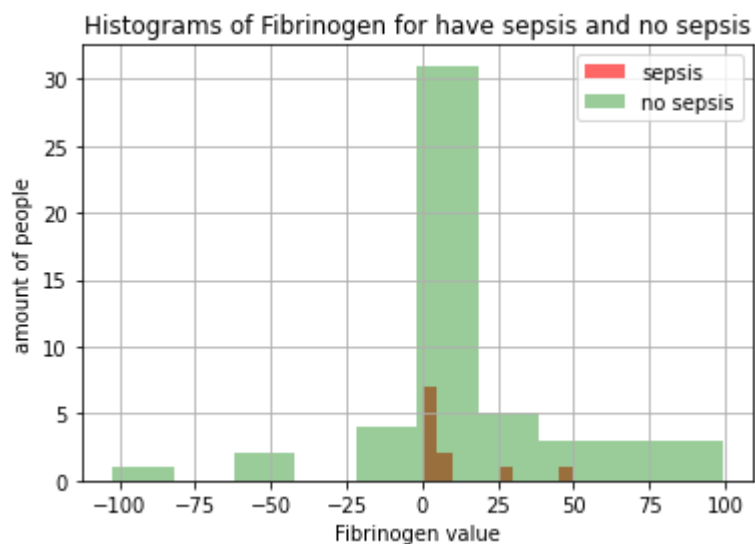Test statistic is 0.635760
p-value for two tailed test is 0.525170
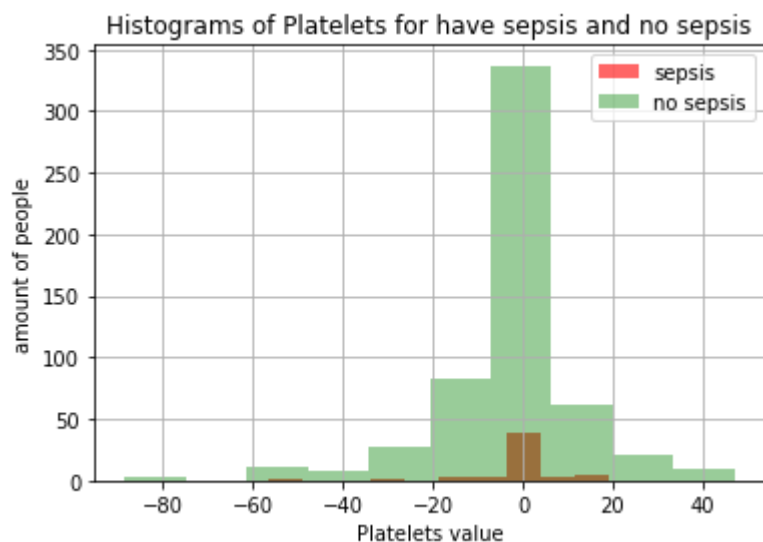Conclusion n Since p-value(=0.525170) > alpha(=0.05) We do not reject the
null hypothesis H0 for Platelets parameter.

  Wilcoxon - Check Platelets parameter in wilcoxon test:
Test statistic is 5973839.500000
p-value for two tailed test is 0.515377
Conclusion n Since p-value(=0.515377) > alpha(=0.05) We do not reject the
null hypothesis H0 for Platelets parameter.

Histograms of Age for have sepsis and no sepsis
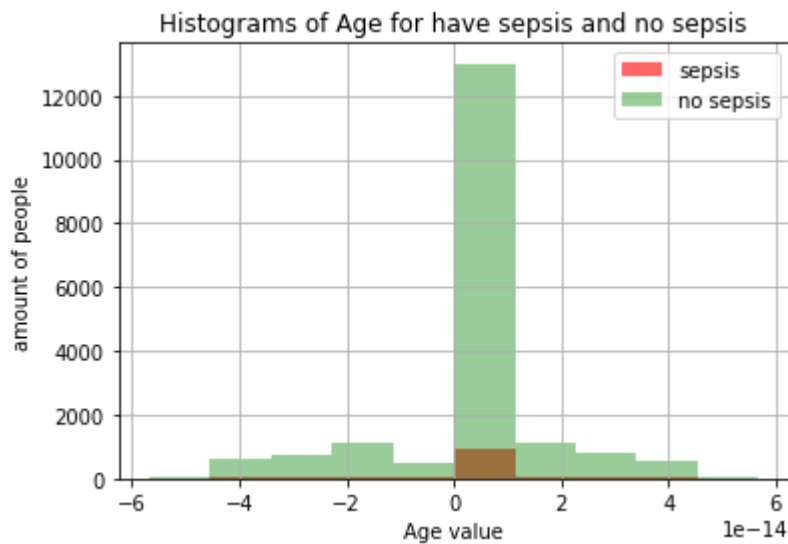
Ttest - Check Age parameter:
Test statistic is -2.325163
p-value for two tailed test is 0.020073
Conclusion n Since p-value(=0.020073) < alpha(=0.05) We reject the null hy
pothesis H0 for Age parameter. at 0.05 level of significance.

Wilcoxon - Check Age parameter in wilcoxon test:
Test statistic is 12306554.000000
p-value for two tailed test is 0.131686
Conclusion n Since p-value(=0.131686) > alpha(=0.05) We do not reject the
null hypothesis H0 for Age parameter.

Histograms of Gender for have sepsis and no sepsis


```
 Ttest - Check Gender parameter:
Test statistic is nan
p-value for two tailed test is nan
Conclusion n Since p-value(=nan) > alpha(=0.05) We do not reject the null
hypothesis H0 for Gender parameter.

 Wilcoxon  - Check Gender parameter in wilcoxon test:
Test statistic is 12292067.000000
p-value for two tailed test is 0.095527
Conclusion n Since p-value(=0.095527) > alpha(=0.05) We do not reject the
null hypothesis H0 for Gender parameter.
```

In [13]:

```python
# for each metric, print the parameters that lead to rejecting H0

print('For each parameter and each aggrigation version- mean/std/max/min/lastMeanDiffer
ence - we will check the null hypothesis H0\n')
print('TTest - Parameters that their mean values per patient leads to rejecting the nul
l hypothesis H0: ')
print(meanTParameters)
print('Wilcoxon Test - Parameters that their mean values per patient leads to rejecting
the null hypothesis H0: ')
print(meanWParameters)
print('\n')

print('\n TTest - Parameters that their std values per patient leads to rejecting the n
ull hypothesis H0: ')
print(stdTParameters)
print('\n Wilcoxon Test - Parameters that their std values per patient leads to rejecti
ng the null hypothesis H0: ')
print(stdWParameters)
print('\n')

print('\n TTest - Parameters that their max values per patient leads to rejecting the n
ull hypothesis H0: ')
print(maxTParameters)
print('\n Wilcoxon Test - Parameters that their max values per patient leads to rejecti
ng the null hypothesis H0: ')
print(maxWParameters)
print('\n')

print('\n TTest - Parameters that their min values per patient leads to rejecting the n
ull hypothesis H0: ')
print(minTParameters)
print('\n Wilcoxon Test - Parameters that their min values per patient leads to rejecti
ng the null hypothesis H0: ')
print(minWParameters)
print('\n')

print('\n TTest - Parameters that their last-mean difference values per patient leads t
o rejecting the null hypothesis H0: ')
print(lastMeanDifTParameters)
print('\n Wilcoxon Test - Parameters that their last-mean difference values per patient
leads to rejecting the null hypothesis H0: ')
print(lastMeanDifWParameters)
```

For each parameter and each aggragation version- mean/std/max/min/lastMean
Difference - we will check the null hypothesis H0

TTest - Parameters that their mean values per patient leads to rejecting t
he null hypothesis H0:
['HR', 'O2Sat', 'Temp', 'SBP', 'MAP', 'DBP', 'Resp', 'BaseExcess', 'FiO2',
'SaO2', 'BUN', 'Calcium', 'Glucose', 'Magnesium', 'Bilirubin_total', 'Hc
t', 'Hgb', 'PTT', 'WBC', 'Platelets']
Wilcoxon Test - Parameters that their mean values per patient leads to rej
ecting the null hypothesis H0:
['HR', 'O2Sat', 'Temp', 'SBP', 'MAP', 'DBP', 'Resp', 'BaseExcess', 'FiO2',
'SaO2', 'AST', 'BUN', 'Calcium', 'Creatinine', 'Bilirubin_direct', 'Glucos
e', 'Magnesium', 'Potassium', 'Hct', 'Hgb', 'PTT', 'WBC']

 TTest - Parameters that their std values per patient leads to rejecting t
he null hypothesis H0:
['HR', 'Temp', 'SBP', 'SaO2', 'Calcium', 'Chloride', 'Hct', 'Hgb']

 Wilcoxon Test - Parameters that their std values per patient leads to rej
ecting the null hypothesis H0:
['HR', 'O2Sat', 'Temp', 'SBP', 'MAP', 'DBP', 'Resp', 'BaseExcess', 'FiO2',
'SaO2', 'AST', 'BUN', 'Calcium', 'Creatinine', 'Bilirubin_direct', 'Glucos
e', 'Magnesium', 'Potassium', 'Hct', 'Hgb', 'PTT', 'WBC']

 TTest - Parameters that their max values per patient leads to rejecting t
he null hypothesis H0:
['HR', 'Temp', 'MAP', 'DBP', 'Resp', 'BaseExcess', 'FiO2', 'BUN', 'Calciu
m', 'Creatinine', 'Glucose', 'Magnesium', 'Bilirubin_total', 'Hct', 'Hgb',
'PTT', 'WBC', 'Platelets']

 Wilcoxon Test - Parameters that their max values per patient leads to rej
ecting the null hypothesis H0:
['HR', 'O2Sat', 'Temp', 'SBP', 'MAP', 'DBP', 'Resp', 'BaseExcess', 'FiO2',
'SaO2', 'AST', 'BUN', 'Calcium', 'Creatinine', 'Bilirubin_direct', 'Glucos
e', 'Magnesium', 'Potassium', 'Hct', 'Hgb', 'PTT', 'WBC']

 TTest - Parameters that their min values per patient leads to rejecting t
he null hypothesis H0:
['HR', 'Temp', 'MAP', 'DBP', 'Resp', 'BaseExcess', 'FiO2', 'BUN', 'Calciu
m', 'Creatinine', 'Glucose', 'Magnesium', 'Bilirubin_total', 'Hct', 'Hgb',
'PTT', 'WBC', 'Platelets']

 Wilcoxon Test - Parameters that their min values per patient leads to rej
ecting the null hypothesis H0:
['HR', 'O2Sat', 'Temp', 'SBP', 'MAP', 'DBP', 'Resp', 'BaseExcess', 'FiO2',
'SaO2', 'AST', 'BUN', 'Calcium', 'Creatinine', 'Bilirubin_direct', 'Glucos
e', 'Magnesium', 'Potassium', 'Hct', 'Hgb', 'PTT', 'WBC']

 TTest - Parameters that their last-mean difference values per patient lea
ds to rejecting the null hypothesis H0:
['HR', 'Temp', 'Calcium', 'Age']

 Wilcoxon Test - Parameters that their last-mean difference values per pat

```
ient leads to rejecting the null hypothesis H0:
['HR', 'O2Sat', 'Temp', 'SBP', 'MAP', 'DBP', 'Resp', 'BaseExcess', 'FiO2',
'SaO2', 'AST', 'BUN', 'Calcium', 'Creatinine', 'Bilirubin_direct', 'Glucos
e', 'Magnesium', 'Potassium', 'Hct', 'Hgb', 'PTT', 'WBC']
```