

# Analysis

## Preprocessing

```
Namespace(demographics=None, distance=False, file=[<_io.TextIOWrapper
name='experiment_results.csv' mode='r' encoding='UTF-8'>], final_q=[<_io.TextIOWrapper
name='final_questionnaire_results.csv' mode='r' encoding='UTF-8'>],
norm_test='shapiro', task_q=[<_io.TextIOWrapper name='task_questionnaire_results.csv'
mode='r' encoding='UTF-8'>])
```

- experiment\_results.csv
- task\_questionnaire\_results.csv
- final\_questionnaire\_results.csv

N = 50

Nswipe = 28

Nburger = 22

Dropping Task ID 0 (Training)

Asserting Absolute Distance Values!

Dataset Validation:

```
{'pid': True}
```

Adding success column based on

```
opt_interactions == interactions
```

in order to measure effectiveness.

Using normality test: shapiro

## Efficiency by Tasks

Descriptions [time\_ms]

Global Descriptions [time\_ms]

**burger**

```
count | 550.0 |
mean | 4638.11818182 |
std | 2276.28326918 |
min | 2379.0 |
25% | 3429.75 |
50% | 4086.5 |
75% | 5083.5 |
max | 35643.0 |
```

shapiro  
(0.5968540906906128, 8.550004996808949e-34)

### **swipe**

count | 700.0 |  
mean | 5105.28428571 |  
std | 2660.31481955 |  
min | 1453.0 |  
25% | 3496.25 |  
50% | 4796.0 |  
75% | 6205.0 |  
max | 36116.0 |

shapiro  
(0.7736766338348389, 5.710141920023298e-30)

### **Descriptions per tid [time\_ms]**

#### **('burger', 1)**

count | 110.0 |  
mean | 3882.02727273 |  
std | 1273.13599999 |  
min | 2379.0 |  
25% | 3038.0 |  
50% | 3454.5 |  
75% | 4136.5 |  
max | 9626.0 |

shapiro  
(0.8168985843658447, 2.2714176373117567e-10)

#### **('burger', 2)**

count | 110.0 |  
mean | 4855.64545455 |  
std | 3550.99032468 |  
min | 2587.0 |  
25% | 3419.0 |  
50% | 4059.0 |  
75% | 5109.25 |  
max | 35643.0 |

shapiro  
(0.4090617895126343, 4.500466891123517e-19)

**(‘burger’, 3)**

count | 110.0 |  
mean | 4923.24545455 |  
std | 2443.8345722 |  
min | 2825.0 |  
25% | 3495.0 |  
50% | 4068.0 |  
75% | 5331.5 |  
max | 16458.0 |

shapiro  
(0.6884725093841553, 5.890605250758948e-14)

**(‘burger’, 4)**

count | 110.0 |  
mean | 4455.94545455 |  
std | 1740.15099965 |  
min | 2598.0 |  
25% | 3363.5 |  
50% | 3995.0 |  
75% | 4903.25 |  
max | 12386.0 |

shapiro  
(0.7651486396789551, 5.638249849643229e-12)

**(‘burger’, 5)**

count | 110.0 |  
mean | 5073.72727273 |  
std | 1391.01089839 |  
min | 3211.0 |  
25% | 4127.0 |  
50% | 4825.0 |  
75% | 5579.25 |  
max | 10924.0 |

shapiro  
(0.8667532205581665, 1.6438381322814166e-08)

**(‘swipe’, 1)**

count | 140.0 |  
mean | 2770.21428571 |  
std | 1949.56224485 |  
min | 1453.0 |

25%		1933.0	
50%		2410.5	
75%		3031.5	
max		21906.0	

shapiro  
(0.4316411018371582, 5.047697224178308e-21)

**(‘swipe’, 2)**

count		140.0	
mean		4204.86428571	
std		2912.4724452	
min		2521.0	
25%		3322.25	
50%		3758.5	
75%		4416.25	
max		36116.0	

shapiro  
(0.28604620695114136, 3.420201117894323e-23)

**(‘swipe’, 3)**

count		140.0	
mean		5175.67857143	
std		1434.32085184	
min		3146.0	
25%		4098.75	
50%		4834.0	
75%		5789.25	
max		11129.0	

shapiro  
(0.881258487701416, 3.353237021386235e-09)

**(‘swipe’, 4)**

count		140.0	
mean		6123.01428571	
std		1877.88245579	
min		3622.0	
25%		5070.0	
50%		5691.5	
75%		6742.0	
max		20070.0	

shapiro  
(0.7405376434326172, 1.957654246771256e-14)

**(‘swipe’, 5)**

count | 140.0 |  
mean | 7252.65 |  
std | 2392.08935471 |  
min | 4282.0 |  
25% | 5917.75 |  
50% | 6747.5 |  
75% | 7843.5 |  
max | 24822.0 |

shapiro  
(0.713374674320221, 3.3856919106126353e-15)

**Cross-compare Tests per tid [time\_ms]**

**(‘burger’, 1) vs (‘burger’, 2)**

MannwhitneyuResult(statistic=4084.0, pvalue=1.5658541604548195e-05)

**(‘burger’, 1) vs (‘burger’, 3)**

MannwhitneyuResult(statistic=3859.0, pvalue=1.7395206547774697e-06)

**(‘burger’, 1) vs (‘burger’, 4)**

MannwhitneyuResult(statistic=4510.0, pvalue=0.00055464375072409916)

**(‘burger’, 1) vs (‘burger’, 5)**

MannwhitneyuResult(statistic=2461.0, pvalue=1.4603875579048891e-14)

**(‘burger’, 1) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=2545.5, pvalue=5.3739527354119754e-20)

**(‘burger’, 1) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=6426.0, pvalue=0.012421146700796878)

**(‘burger’, 1) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=3044.5, pvalue=1.1832340237823803e-16)

**(‘burger’, 1) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=1688.0, pvalue=1.6234943894088597e-26)

**(‘burger’, 1) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=879.5, pvalue=1.4551418512540368e-33)

**(‘burger’, 2) vs (‘burger’, 3)**

MannwhitneyuResult(statistic=5763.5, pvalue=0.27230524102743087)

**(‘burger’, 2) vs (‘burger’, 4)**

MannwhitneyuResult(statistic=5675.5, pvalue=0.2141010726328908)

**(‘burger’, 2) vs (‘burger’, 5)**

MannwhitneyuResult(statistic=4089.5, pvalue=1.6477907306930181e-05)

**(‘burger’, 2) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=1517.0, pvalue=6.2046882486582092e-28)

**(‘burger’, 2) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=6141.5, pvalue=0.0030244034839489709)

**(‘burger’, 2) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=4963.5, pvalue=7.1526787854356572e-07)

**(‘burger’, 2) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=2883.5, pvalue=1.0733745632893838e-17)

**(‘burger’, 2) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=1655.5, pvalue=8.7897345573373952e-27)

**(‘burger’, 3) vs (‘burger’, 4)**

MannwhitneyuResult(statistic=5391.5, pvalue=0.081675269997733058)

**(‘burger’, 3) vs (‘burger’, 5)**

MannwhitneyuResult(statistic=4492.5, pvalue=0.00048634928385682863)

**(‘burger’, 3) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=1439.0, pvalue=1.3586702461712472e-28)

**(‘burger’, 3) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=5879.5, pvalue=0.00067121480094522003)

**(‘burger’, 3) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=5504.0, pvalue=5.4782820605463963e-05)

**(‘burger’, 3) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=3501.0, pvalue=6.9355700044163638e-14)

**(‘burger’, 3) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=2181.5, pvalue=1.209482241056887e-22)

**(‘burger’, 4) vs (‘burger’, 5)**

MannwhitneyuResult(statistic=3771.5, pvalue=6.9773905569607094e-07)

**(‘burger’, 4) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=1729.5, pvalue=3.5365303681484993e-26)

**(‘burger’, 4) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=6683.5, pvalue=0.036715528361448695)

**(‘burger’, 4) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=4638.0, pvalue=3.4412289343765112e-08)

**(‘burger’, 4) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=2628.5, pvalue=2.0386245118994627e-19)

**(‘burger’, 4) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=1526.0, pvalue=7.3859731612301278e-28)

**(‘burger’, 5) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=840.0, pvalue=6.2536829317850368e-34)

**(‘burger’, 5) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=3444.0, pvalue=3.2402389481877241e-14)

**(‘burger’, 5) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=7337.5, pvalue=0.26179339474167185)

**(‘burger’, 5) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=4246.0, pvalue=5.8282442410782173e-10)

**(‘burger’, 5) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=2222.5, pvalue=2.4529114846074024e-22)

**(‘swipe’, 1) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=2472.5, pvalue=1.4576933191791186e-27)

**(‘swipe’, 1) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=1021.0, pvalue=1.0616997031420499e-38)

**(‘swipe’, 1) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=570.0, pvalue=1.4519936452032371e-42)

**(‘swipe’, 1) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=418.0, pvalue=6.5546742737482944e-44)

**(‘swipe’, 2) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=4176.5, pvalue=5.2058578706528549e-17)



**(‘swipe’, 2) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=1732.5, pvalue=5.4063782042061323e-33)

**(‘swipe’, 2) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=832.0, pvalue=2.6916244230076441e-40)

**(‘swipe’, 3) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=6099.0, pvalue=2.3509168964023139e-08)

**(‘swipe’, 3) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=3160.5, pvalue=5.6464403753533496e-23)

**(‘swipe’, 4) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=5782.5, pvalue=1.5200785567733307e-09)

**Global Burger vs Swipe per tid Tests [time\_\_ms]**

**burger vs swipe 1**

MannwhitneyuResult(statistic=8071.0, pvalue=1.2418694358581137e-47)

**burger vs swipe 2**

MannwhitneyuResult(statistic=31122.5, pvalue=0.00022970344985717234)

**burger vs swipe 3**

MannwhitneyuResult(statistic=25487.5, pvalue=3.2160499055159418e-10)

**burger vs swipe 4**

MannwhitneyuResult(statistic=14947.0, pvalue=2.4092928040063919e-29)

**burger vs swipe 5**

MannwhitneyuResult(statistic=8465.0, pvalue=1.846617100608964e-46)

**Global Burger vs Global Swipe Test [time\_\_ms]**

**burger vs swipe**

MannwhitneyuResult(statistic=163706.0, pvalue=2.7478174405275066e-06)

## Effectiveness by Tasks

### Descriptions [success]

#### Global Descriptions [success]

##### **burger**

count | 550 |  
unique | 2 |  
top | True |  
freq | 538 |

shapiro  
(0.12739139795303345, 2.2420775429197073e-44)

##### **swipe**

count | 700 |  
unique | 2 |  
top | True |  
freq | 654 |

shapiro  
(0.26620155572891235, 0.0)

#### Descriptions per tid [success]

##### **(‘burger’, 1)**

count | 110 |  
unique | 2 |  
top | True |  
freq | 109 |

shapiro  
(0.06994897127151489, 3.1585817095650164e-23)

##### **(‘burger’, 2)**

count | 110 |  
unique | 2 |  
top | True |  
freq | 106 |

shapiro  
(0.18283003568649292, 5.362584042303219e-22)

**(‘burger’, 3)**

count | 110 |  
unique | 2 |  
top | True |  
freq | 106 |

shapiro  
(0.18283003568649292, 5.362584042303219e-22)

**(‘burger’, 4)**

count | 110 |  
unique | 2 |  
top | True |  
freq | 108 |

shapiro  
(0.11454051733016968, 9.348057262676717e-23)

**(‘burger’, 5)**

count | 110 |  
unique | 2 |  
top | True |  
freq | 109 |

shapiro  
(0.06994897127151489, 3.1585817095650164e-23)

**(‘swipe’, 1)**

count | 140 |  
unique | 2 |  
top | True |  
freq | 137 |

shapiro  
(0.1273578405380249, 3.3945333096716617e-25)

**(‘swipe’, 2)**

count | 140 |  
unique | 2 |  
top | True |  
freq | 131 |

shapiro  
(0.26299595832824707, 1.6702977931133302e-23)

**(‘swipe’, 3)**

count | 140 |  
unique | 2 |  
top | True |  
freq | 125 |

shapiro  
(0.3557870388031006, 3.3555234851260835e-22)

**(‘swipe’, 4)**

count | 140 |  
unique | 2 |  
top | True |  
freq | 132 |

shapiro  
(0.24434572458267212, 9.471951496601841e-24)

**(‘swipe’, 5)**

count | 140 |  
unique | 2 |  
top | True |  
freq | 129 |

shapiro  
(0.29717856645584106, 4.8660244383503074e-23)

**Cross-compare Tests per tid [success]**

**(‘burger’, 1) vs (‘burger’, 2)**

MannwhitneyuResult(statistic=5885.0, pvalue=0.088514338258674385)

**(‘burger’, 1) vs (‘burger’, 3)**

MannwhitneyuResult(statistic=5885.0, pvalue=0.088514338258674385)

**(‘burger’, 1) vs (‘burger’, 4)**

MannwhitneyuResult(statistic=5995.0, pvalue=0.28273628216749636)

**(‘burger’, 1) vs (‘burger’, 5)**

MannwhitneyuResult(statistic=6050.0, pvalue=0.49742964452980454)

**(‘burger’, 1) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=7605.0, pvalue=0.22179890014407494)

**(‘burger’, 1) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=7275.0, pvalue=0.013774704590641996)

**(‘burger’, 1) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=6945.0, pvalue=0.0008566712200464943)

**(‘burger’, 1) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=7330.0, pvalue=0.021811891296381614)

**(‘burger’, 1) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=7165.0, pvalue=0.0054868348410904788)

**(‘burger’, 2) vs (‘burger’, 3)**

MannwhitneyuResult(statistic=6050.0, pvalue=0.49869675597742219)

**(‘burger’, 2) vs (‘burger’, 4)**

MannwhitneyuResult(statistic=5940.0, pvalue=0.20547426603584779)

**(‘burger’, 2) vs (‘burger’, 5)**

MannwhitneyuResult(statistic=5885.0, pvalue=0.088514338258674385)

**(‘burger’, 2) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=7585.0, pvalue=0.24008500168511188)

**(‘burger’, 2) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=7485.0, pvalue=0.162860956968579)

**(‘burger’, 2) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=7155.0, pvalue=0.018300662296952975)

**(‘burger’, 2) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=7540.0, pvalue=0.22392151178117164)

**(‘burger’, 2) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=7375.0, pvalue=0.082269468781977884)

**(‘burger’, 3) vs (‘burger’, 4)**

MannwhitneyuResult(statistic=5940.0, pvalue=0.20547426603584779)

**(‘burger’, 3) vs (‘burger’, 5)**

MannwhitneyuResult(statistic=5885.0, pvalue=0.088514338258674385)

**(‘burger’, 3) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=7585.0, pvalue=0.24008500168511188)

**(‘burger’, 3) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=7485.0, pvalue=0.162860956968579)

**(‘burger’, 3) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=7155.0, pvalue=0.018300662296952975)

**(‘burger’, 3) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=7540.0, pvalue=0.22392151178117164)

**(‘burger’, 3) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=7375.0, pvalue=0.082269468781977884)

**(‘burger’, 4) vs (‘burger’, 5)**

MannwhitneyuResult(statistic=5995.0, pvalue=0.28273628216749636)

**(‘burger’, 4) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=7675.0, pvalue=0.429353867493113)

**(‘burger’, 4) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=7345.0, pvalue=0.039349175524312156)

**(‘burger’, 4) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=7015.0, pvalue=0.0028380826908177329)

**(‘burger’, 4) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=7400.0, pvalue=0.060002832384090876)

**(‘burger’, 4) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=7235.0, pvalue=0.016660914589131787)

**(‘burger’, 5) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=7605.0, pvalue=0.22179890014407494)

**(‘burger’, 5) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=7275.0, pvalue=0.013774704590641996)

**(‘burger’, 5) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=6945.0, pvalue=0.0008566712200464943)

**(‘burger’, 5) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=7330.0, pvalue=0.021811891296381614)

**(‘burger’, 5) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=7165.0, pvalue=0.0054868348410904788)

**(‘swipe’, 1) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=9380.0, pvalue=0.038770512393067807)

**(‘swipe’, 1) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=8960.0, pvalue=0.0017670242686956415)

**(‘swipe’, 1) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=9450.0, pvalue=0.062622010514240933)

**(‘swipe’, 1) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=9240.0, pvalue=0.014343610809765796)

**(‘swipe’, 2) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=9380.0, pvalue=0.10079098881755333)

**(‘swipe’, 2) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=9730.0, pvalue=0.40205950418022463)

**(‘swipe’, 2) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=9660.0, pvalue=0.32217998161712597)

**(‘swipe’, 3) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=9310.0, pvalue=0.064351095787255674)

**(‘swipe’, 3) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=9520.0, pvalue=0.20590971152770549)

**(‘swipe’, 4) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=9590.0, pvalue=0.23888618804868444)

**Global Burger vs Swipe per tid Tests [success]**

**burger vs swipe 1**

MannwhitneyuResult(statistic=38485.0, pvalue=0.48912520694291894)

**burger vs swipe 2**

MannwhitneyuResult(statistic=36865.0, pvalue=0.0045417664593209763)

**burger vs swipe 3**

MannwhitneyuResult(statistic=35215.0, pvalue=1.7057508017866935e-06)



#### **burger vs swipe 4**

MannwhitneyuResult(statistic=37140.0, pvalue=0.013145629148188419)

#### **burger vs swipe 5**

MannwhitneyuResult(statistic=36315.0, pvalue=0.00042387011906782973)

#### **Global Burger vs Global Swipe Test [success]**

#### **burger vs swipe**

MannwhitneyuResult(statistic=184050.0, pvalue=0.00012578178491001905)

### **Task Questionnaires**

#### **Task Question 0**

#### **Descriptions [result]**

#### **Global Descriptions [result]**

burger

count | 110.0 |  
mean | 6.9090909090909 |  
std | 0.395976427467 |  
min | 4.0 |  
25% | 7.0 |  
50% | 7.0 |  
75% | 7.0 |  
max | 7.0 |

shapiro

(0.24518823623657227, 2.9252628439826945e-21)

swipe

count | 140.0 |  
mean | 6.83571428571 |  
std | 0.458504203722 |  
min | 5.0 |  
25% | 7.0 |  
50% | 7.0 |  
75% | 7.0 |  
max | 7.0 |

shapiro

(0.39919018745422363, 1.5329055243220379e-21)

### Descriptions per tid [result]

('burger', 1)

count | 22.0 |  
mean | 7.0 |  
std | 0.0 |  
min | 7.0 |  
25% | 7.0 |  
50% | 7.0 |  
75% | 7.0 |  
max | 7.0 |

shapiro

(1.0, 1.0)

('burger', 2)

count | 22.0 |  
mean | 6.90909090909 |  
std | 0.294244943168 |  
min | 6.0 |  
25% | 7.0 |  
50% | 7.0 |  
75% | 7.0 |  
max | 7.0 |

shapiro

(0.3322211503982544, 4.875188253095075e-09)

('burger', 3)

count | 22.0 |  
mean | 6.77272727273 |  
std | 0.751621623515 |  
min | 4.0 |  
25% | 7.0 |  
50% | 7.0 |  
75% | 7.0 |  
max | 7.0 |

shapiro

(0.3419651389122009, 5.8100124711302215e-09)

('burger', 4)

count | 22.0 |  
mean | 6.90909090909 |  
std | 0.294244943168 |  
min | 6.0 |  
25% | 7.0 |  
50% | 7.0 |

```

75% | 7.0 |
max | 7.0 |

shapiro
(0.3322211503982544, 4.875188253095075e-09)

('burger', 5)

count | 22.0 |
mean | 6.95454545455 |
std | 0.213200716356 |
min | 6.0 |
25% | 7.0 |
50% | 7.0 |
75% | 7.0 |
max | 7.0 |

shapiro
(0.22147256135940552, 7.41695094230721e-10)

('swipe', 1)

count | 28.0 |
mean | 6.85714285714 |
std | 0.448395139423 |
min | 5.0 |
25% | 7.0 |
50% | 7.0 |
75% | 7.0 |
max | 7.0 |

shapiro
(0.365678608417511, 6.050620560138498e-10)

('swipe', 2)

count | 28.0 |
mean | 6.92857142857 |
std | 0.262265264156 |
min | 6.0 |
25% | 7.0 |
50% | 7.0 |
75% | 7.0 |
max | 7.0 |

shapiro
(0.2873581051826477, 1.3197647141804936e-10)

('swipe', 3)

count | 28.0 |
mean | 6.82142857143 |
std | 0.475594865606 |

```

```

min | 5.0 |
25% | 7.0 |
50% | 7.0 |
75% | 7.0 |
max | 7.0 |

shapiro
(0.43253177404403687, 2.463778070449507e-09)

('swipe', 4)

count | 28.0 |
mean | 6.82142857143 |
std | 0.475594865606 |
min | 5.0 |
25% | 7.0 |
50% | 7.0 |
75% | 7.0 |
max | 7.0 |

shapiro
(0.43253177404403687, 2.463778070449507e-09)

('swipe', 5)

count | 28.0 |
mean | 6.75 |
std | 0.585314097381 |
min | 5.0 |
25% | 7.0 |
50% | 7.0 |
75% | 7.0 |
max | 7.0 |

shapiro
(0.48425883054733276, 7.892020370547925e-09)

```

### **Cross-compare Tests per tid [result]**

#### **('burger', 1) vs ('burger', 2)**

MannwhitneyuResult(statistic=220.0, pvalue=0.080992169841587358)

#### **('burger', 1) vs ('burger', 3)**

MannwhitneyuResult(statistic=220.0, pvalue=0.08104893779987532)

**(‘burger’, 1) vs (‘burger’, 4)**

MannwhitneyuResult(statistic=220.0, pvalue=0.080992169841587358)

**(‘burger’, 1) vs (‘burger’, 5)**

MannwhitneyuResult(statistic=231.0, pvalue=0.16990380614234185)

**(‘burger’, 1) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=275.0, pvalue=0.061389171314485569)

**(‘burger’, 1) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=286.0, pvalue=0.10790037602663682)

**(‘burger’, 1) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=264.0, pvalue=0.035323810007342034)

**(‘burger’, 1) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=264.0, pvalue=0.035323810007342034)

**(‘burger’, 1) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=253.0, pvalue=0.020341356769343476)

**(‘burger’, 2) vs (‘burger’, 3)**

MannwhitneyuResult(statistic=240.0, pvalue=0.47185717461959964)

**(‘burger’, 2) vs (‘burger’, 4)**

MannwhitneyuResult(statistic=242.0, pvalue=0.49060013900586225)

**(‘burger’, 2) vs (‘burger’, 5)**

MannwhitneyuResult(statistic=231.0, pvalue=0.28624482430604659)

**(‘burger’, 2) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=302.0, pvalue=0.41814383343092509)

**(‘burger’, 2) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=302.0, pvalue=0.40954587077471732)

**(‘burger’, 2) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=291.0, pvalue=0.28360268156813595)

**(‘burger’, 2) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=291.0, pvalue=0.28360268156813595)

**(‘burger’, 2) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=279.0, pvalue=0.1776214834950835)

**(‘burger’, 3) vs (‘burger’, 4)**

MannwhitneyuResult(statistic=240.0, pvalue=0.47185717461959964)

**(‘burger’, 3) vs (‘burger’, 5)**

MannwhitneyuResult(statistic=230.0, pvalue=0.26839195888913986)

**(‘burger’, 3) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=305.5, pvalue=0.47007151426311133)

**(‘burger’, 3) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=300.0, pvalue=0.37768095297605236)

**(‘burger’, 3) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=295.5, pvalue=0.3388315325050939)

**(‘burger’, 3) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=295.5, pvalue=0.3388315325050939)

**(‘burger’, 3) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=285.0, pvalue=0.23293475501797717)

**(‘burger’, 4) vs (‘burger’, 5)**

MannwhitneyuResult(statistic=231.0, pvalue=0.28624482430604659)

**(‘burger’, 4) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=302.0, pvalue=0.41814383343092509)

**(‘burger’, 4) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=302.0, pvalue=0.40954587077471732)

**(‘burger’, 4) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=291.0, pvalue=0.28360268156813595)

**(‘burger’, 4) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=291.0, pvalue=0.28360268156813595)

**(‘burger’, 4) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=279.0, pvalue=0.1776214834950835)

**(‘burger’, 5) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=288.5, pvalue=0.21488485789583234)

**(‘burger’, 5) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=300.0, pvalue=0.36081607462259746)

**(‘burger’, 5) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=277.5, pvalue=0.12983938884427548)

**(‘burger’, 5) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=277.5, pvalue=0.12983938884427548)

**(‘burger’, 5) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=266.0, pvalue=0.07519977300947886)

**(‘swipe’, 1) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=377.0, pvalue=0.31537541448498552)

**(‘swipe’, 1) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=378.5, pvalue=0.35525965271351878)

**(‘swipe’, 1) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=378.5, pvalue=0.35525965271351878)

**(‘swipe’, 1) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=363.5, pvalue=0.22518165687821007)

**(‘swipe’, 2) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=363.0, pvalue=0.19191432446450229)

**(‘swipe’, 2) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=363.0, pvalue=0.19191432446450229)

**(‘swipe’, 2) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=348.0, pvalue=0.10712672456029038)

**(‘swipe’, 3) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=392.0, pvalue=0.49461993710800994)

**(‘swipe’, 3) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=376.5, pvalue=0.3501076533991746)

**(‘swipe’, 4) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=376.5, pvalue=0.3501076533991746)

**Global Burger vs Swipe per tid Tests [result]**

**burger vs swipe 1**

MannwhitneyuResult(statistic=1473.0, pvalue=0.21665236926243431)



### **burger vs swipe 2**

MannwhitneyuResult(statistic=1530.0, pvalue=0.45320928415997419)

### **burger vs swipe 3**

MannwhitneyuResult(statistic=1419.0, pvalue=0.087083010808927386)

### **burger vs swipe 4**

MannwhitneyuResult(statistic=1419.0, pvalue=0.087083010808927386)

### **burger vs swipe 5**

MannwhitneyuResult(statistic=1362.0, pvalue=0.027199345369874211)

### **Global Burger vs Global Swipe Test [result]**

### **burger vs swipe**

MannwhitneyuResult(statistic=7203.0, pvalue=0.046318608676750285)

### **Task Question 1**

### **Descriptions [result]**

### **Global Descriptions [result]**

burger

count		110.0	
mean		1.89090909091	
std		1.80897585981	
min		1.0	
25%		1.0	
50%		1.0	
75%		1.0	
max		7.0	

shapiro

(0.5440710783004761, 6.783648646543276e-17)

swipe

count		140.0	
mean		2.86428571429	
std		2.12964925773	

```

min | 1.0 |
25% | 1.0 |
50% | 2.0 |
75% | 4.0 |
max | 7.0 |

shapiro
(0.799676775932312, 1.4816165872302833e-12)

```

### Descriptions per tid [result]

```

('burger', 1)

count | 22.0 |
mean | 1.95454545455 |
std | 2.01133153544 |
min | 1.0 |
25% | 1.0 |
50% | 1.0 |
75% | 1.0 |
max | 7.0 |

shapiro
(0.5299234390258789, 2.541320327509311e-07)

('burger', 2)

count | 22.0 |
mean | 1.77272727273 |
std | 1.87545088374 |
min | 1.0 |
25% | 1.0 |
50% | 1.0 |
75% | 1.0 |
max | 7.0 |

shapiro
(0.4611632227897644, 5.790687396256544e-08)

('burger', 3)

count | 22.0 |
mean | 2.0 |
std | 1.74574312189 |
min | 1.0 |
25% | 1.0 |
50% | 1.0 |
75% | 2.0 |
max | 6.0 |

```

shapiro  
(0.6260440349578857, 2.5660463052190607e-06)

('burger', 4)

count | 22.0 |  
mean | 1.77272727273 |  
std | 1.54092792643 |  
min | 1.0 |  
25% | 1.0 |  
50% | 1.0 |  
75% | 1.0 |  
max | 6.0 |

shapiro  
(0.5682213306427002, 6.146745477053628e-07)

('burger', 5)

count | 22.0 |  
mean | 1.95454545455 |  
std | 1.98751514465 |  
min | 1.0 |  
25% | 1.0 |  
50% | 1.0 |  
75% | 1.0 |  
max | 7.0 |

shapiro  
(0.5327657461166382, 2.7092326604361006e-07)

('swipe', 1)

count | 28.0 |  
mean | 2.75 |  
std | 2.36682315602 |  
min | 1.0 |  
25% | 1.0 |  
50% | 1.0 |  
75% | 4.25 |  
max | 7.0 |

shapiro  
(0.7217938303947449, 5.8795612858375534e-06)

('swipe', 2)

count | 28.0 |  
mean | 2.67857142857 |  
std | 2.21198036674 |  
min | 1.0 |  
25% | 1.0 |

```

50% | 1.0 |
75% | 4.0 |
max | 7.0 |

shapiro
(0.7506808042526245, 1.617231646378059e-05)

('swipe', 3)

count | 28.0 |
mean | 2.82142857143 |
std | 2.16116517662 |
min | 1.0 |
25% | 1.0 |
50% | 2.0 |
75% | 4.0 |
max | 7.0 |

shapiro
(0.7865198850631714, 6.232791929505765e-05)

('swipe', 4)

count | 28.0 |
mean | 2.85714285714 |
std | 1.87999774851 |
min | 1.0 |
25% | 1.0 |
50% | 3.0 |
75% | 4.0 |
max | 7.0 |

shapiro
(0.8642818927764893, 0.0018409639596939087)

('swipe', 5)

count | 28.0 |
mean | 3.21428571429 |
std | 2.11445015806 |
min | 1.0 |
25% | 1.0 |
50% | 3.0 |
75% | 4.0 |
max | 7.0 |

shapiro
(0.8491970896720886, 0.0009006079635582864)

```

**Cross-compare Tests per tid [result]**

**(‘burger’, 1) vs (‘burger’, 2)**

MannwhitneyuResult(statistic=231.5, pvalue=0.36950062145736295)

**(‘burger’, 1) vs (‘burger’, 3)**

MannwhitneyuResult(statistic=226.5, pvalue=0.32669163862815576)

**(‘burger’, 1) vs (‘burger’, 4)**

MannwhitneyuResult(statistic=237.5, pvalue=0.44908793706778233)

**(‘burger’, 1) vs (‘burger’, 5)**

MannwhitneyuResult(statistic=242.0, pvalue=0.4936172195955259)

**(‘burger’, 1) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=247.5, pvalue=0.082098002975044604)

**(‘burger’, 1) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=241.5, pvalue=0.066396878662638464)

**(‘burger’, 1) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=213.5, pvalue=0.020092875062028004)

**(‘burger’, 1) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=198.5, pvalue=0.010019521264436585)

**(‘burger’, 1) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=192.0, pvalue=0.0068101408106697112)

**(‘burger’, 2) vs (‘burger’, 3)**

MannwhitneyuResult(statistic=215.0, pvalue=0.20647583790178142)

**(‘burger’, 2) vs (‘burger’, 4)**

MannwhitneyuResult(statistic=235.0, pvalue=0.41428583227671284)

**(‘burger’, 2) vs (‘burger’, 5)**

MannwhitneyuResult(statistic=232.0, pvalue=0.37576224110670875)

**(‘burger’, 2) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=232.5, pvalue=0.038182542965196922)

**(‘burger’, 2) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=225.5, pvalue=0.028699028147674787)

**(‘burger’, 2) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=194.5, pvalue=0.0062373933525989578)

**(‘burger’, 2) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=179.5, pvalue=0.0028888514521789059)

**(‘burger’, 2) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=173.0, pvalue=0.001845925801493757)

**(‘burger’, 3) vs (‘burger’, 4)**

MannwhitneyuResult(statistic=221.0, pvalue=0.26964038824961989)

**(‘burger’, 3) vs (‘burger’, 5)**

MannwhitneyuResult(statistic=227.0, pvalue=0.33206339086194925)

**(‘burger’, 3) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=260.5, pvalue=0.14603135541294709)

**(‘burger’, 3) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=256.0, pvalue=0.12750985422970523)

**(‘burger’, 3) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=230.0, pvalue=0.049115891184390158)

**(‘burger’, 3) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=215.0, pvalue=0.026326679220802538)

**(‘burger’, 3) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=203.5, pvalue=0.014613622667340618)

**(‘burger’, 4) vs (‘burger’, 5)**

MannwhitneyuResult(statistic=237.0, pvalue=0.44276533380129457)

**(‘burger’, 4) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=238.5, pvalue=0.054909704407618581)

**(‘burger’, 4) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=233.0, pvalue=0.044870412680933683)

**(‘burger’, 4) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=209.0, pvalue=0.015775210433546256)

**(‘burger’, 4) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=192.5, pvalue=0.0070352388832014452)

**(‘burger’, 4) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=183.5, pvalue=0.0040067153811422793)

**(‘burger’, 5) vs (‘swipe’, 1)**

MannwhitneyuResult(statistic=246.0, pvalue=0.077014874525015403)

**(‘burger’, 5) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=240.5, pvalue=0.063535812872022673)

**(‘burger’, 5) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=211.5, pvalue=0.01809715117525822)

**(‘burger’, 5) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=198.5, pvalue=0.010033737896491264)

**(‘burger’, 5) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=190.5, pvalue=0.0062419441538161761)

**(‘swipe’, 1) vs (‘swipe’, 2)**

MannwhitneyuResult(statistic=389.5, pvalue=0.48562593257900771)

**(‘swipe’, 1) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=361.5, pvalue=0.29899029746393557)

**(‘swipe’, 1) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=348.5, pvalue=0.22808362379240826)

**(‘swipe’, 1) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=329.5, pvalue=0.14088538659882688)

**(‘swipe’, 2) vs (‘swipe’, 3)**

MannwhitneyuResult(statistic=364.5, pvalue=0.31879870403142863)

**(‘swipe’, 2) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=349.0, pvalue=0.23202420226563208)

**(‘swipe’, 2) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=328.0, pvalue=0.13662614652941502)

**(‘swipe’, 3) vs (‘swipe’, 4)**

MannwhitneyuResult(statistic=371.0, pvalue=0.36362070040972327)

**(‘swipe’, 3) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=343.5, pvalue=0.20657252218094635)



**(‘swipe’, 4) vs (‘swipe’, 5)**

MannwhitneyuResult(statistic=359.5, pvalue=0.29395572379615725)

**Global Burger vs Swipe per tid Tests [result]**

**burger vs swipe 1**

MannwhitneyuResult(statistic=1225.0, pvalue=0.017143625211004959)

**burger vs swipe 2**

MannwhitneyuResult(statistic=1196.5, pvalue=0.011075983661422355)

**burger vs swipe 3**

MannwhitneyuResult(statistic=1058.5, pvalue=0.00087828638876744818)

**burger vs swipe 4**

MannwhitneyuResult(statistic=984.0, pvalue=0.00018652482417813029)

**burger vs swipe 5**

MannwhitneyuResult(statistic=942.5, pvalue=6.5526352124271008e-05)

**Global Burger vs Global Swipe Test [result]**

**burger vs swipe**

MannwhitneyuResult(statistic=5406.5, pvalue=2.9062055593999374e-06)

**Final Questionnaires**

**Final Question 0**

**Descriptions [result]**

### Global Descriptions [result]

burger

count | 22.0 |  
mean | 1.5 |  
std | 1.05785047102 |  
min | 1.0 |  
25% | 1.0 |  
50% | 1.0 |  
75% | 1.75 |  
max | 5.0 |

shapiro

(0.5448707342147827, 3.567666624348931e-07)

swipe

count | 28.0 |  
mean | 1.53571428571 |  
std | 1.29048204766 |  
min | 1.0 |  
25% | 1.0 |  
50% | 1.0 |  
75% | 1.25 |  
max | 7.0 |

shapiro

(0.4864434003829956, 8.3034956688266e-09)

### Global Burger vs Global Swipe Test [result]

**burger vs swipe**

MannwhitneyuResult(statistic=302.5, pvalue=0.44941800310214225)

### Final Question 1

#### Descriptions [result]

### Global Descriptions [result]

burger

count | 22.0 |  
mean | 2.22727272727 |  
std | 1.79766563398 |  
min | 1.0 |  
25% | 1.0 |

```

50% | 1.0 |
75% | 3.5 |
max | 6.0 |

shapiro
(0.6886584758758545, 1.4087103409110568e-05)

swipe

count | 28.0 |
mean | 1.67857142857 |
std | 1.18801332542 |
min | 1.0 |
25% | 1.0 |
50% | 1.0 |
75% | 2.0 |
max | 6.0 |

shapiro
(0.6186860203742981, 2.4386196173509234e-07)

```

## Global Burger vs Global Swipe Test [result]

### burger vs swipe

```
MannwhitneyuResult(statistic=281.0, pvalue=0.27788843237866634)
```

## Final Question 2

### Descriptions [result]

#### Global Descriptions [result]

```

burger

count | 22.0 |
mean | 1.22727272727 |
std | 0.428932027229 |
min | 1.0 |
25% | 1.0 |
50% | 1.0 |
75% | 1.0 |
max | 2.0 |

shapiro
(0.5222699642181396, 2.1416671813767607e-07)

swipe

```

```

count | 28.0 |
mean | 1.75 |
std | 1.37773297418 |
min | 1.0 |
25% | 1.0 |
50% | 1.0 |
75% | 2.0 |
max | 7.0 |

shapiro
(0.6172786951065063, 2.343947329563889e-07)

```

### **Global Burger vs Global Swipe Test [result]**

#### **burger vs swipe**

```
MannwhitneyuResult(statistic=255.5, pvalue=0.10358134878107761)
```

### **Final Question 3**

#### **Descriptions [result]**

#### **Global Descriptions [result]**

```

burger
count | 22.0 |
mean | 5.13636363636 |
std | 1.67034226733 |
min | 2.0 |
25% | 3.25 |
50% | 5.5 |
75% | 6.75 |
max | 7.0 |

shapiro
(0.8708899021148682, 0.008132589980959892)

swipe
count | 28.0 |
mean | 4.5 |
std | 1.45296631451 |
min | 1.0 |
25% | 4.0 |
50% | 4.0 |

```

```
75% | 5.25 |  
max | 7.0 |  
shapiro  
(0.9325721859931946, 0.07159832864999771)
```

**Global Burger vs Global Swipe Test [result]**

**burger vs swipe**

```
MannwhitneyuResult(statistic=238.5, pvalue=0.084899251911718931)
```