

# 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='None', 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.

No normality test, *Forcing t-test!*

## 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	

### **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

### **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

#### **(‘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

#### **(‘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

**(‘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 |

**(‘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 |

**(‘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 |

**(‘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 |

**(‘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 |

```

#### **('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 |

```

#### **('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 |

```

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

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

Ttest\_indResult(statistic=-2.7069257840177166, pvalue=0.0076584106293651174)

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

Ttest\_indResult(statistic=-3.9630138423637753, pvalue=0.00011019834573310358)

##### **('burger', 1) vs ('burger', 4)**

Ttest\_indResult(statistic=-2.7916856663246765, pvalue=0.0057525652209190247)

**('burger', 1) vs ('burger', 5)**

Ttest\_indResult(statistic=-6.6281974576990477, pvalue=2.6654505205089786e-10)

**('burger', 1) vs ('swipe', 1)**

Ttest\_indResult(statistic=5.4326153841753113, pvalue=1.3586526333931942e-07)

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

Ttest\_indResult(statistic=-1.1762922471638779, pvalue=0.24087795976855594)

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

Ttest\_indResult(statistic=-7.5408734262828094, pvalue=9.1456060724920978e-13)

**('burger', 1) vs ('swipe', 4)**

Ttest\_indResult(statistic=-11.215580212273252, pvalue=8.4091646308958142e-24)

**('burger', 1) vs ('swipe', 5)**

Ttest\_indResult(statistic=-14.29368458997773, pvalue=3.0267427720130829e-33)

**('burger', 2) vs ('burger', 3)**

Ttest\_indResult(statistic=-0.16447445278862544, pvalue=0.86952948719325696)

**('burger', 2) vs ('burger', 4)**

Ttest\_indResult(statistic=1.0600946394028834, pvalue=0.29071432820462006)

**('burger', 2) vs ('burger', 5)**

Ttest\_indResult(statistic=-0.59974584216808413, pvalue=0.54963357840520244)

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

Ttest\_indResult(statistic=5.538439361373503, pvalue=1.2306063779073432e-07)

**(‘burger’, 2) vs (‘swipe’, 2)**

Ttest\_indResult(statistic=1.5546815529967002, pvalue=0.12153553523730215)

**(‘burger’, 2) vs (‘swipe’, 3)**

Ttest\_indResult(statistic=-0.88991887096624867, pvalue=0.37506981652796878)

**(‘burger’, 2) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=-3.3893532956398862, pvalue=0.00088695190095300206)

**(‘burger’, 2) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=-6.0785193664476225, pvalue=6.928771693524431e-09)

**(‘burger’, 3) vs (‘burger’, 4)**

Ttest\_indResult(statistic=1.633653476860327, pvalue=0.10392934344192963)

**(‘burger’, 3) vs (‘burger’, 5)**

Ttest\_indResult(statistic=-0.56126498193436625, pvalue=0.57534354989927383)

**(‘burger’, 3) vs (‘swipe’, 1)**

Ttest\_indResult(statistic=7.5444054072566527, pvalue=1.4527959234468714e-12)

**(‘burger’, 3) vs (‘swipe’, 2)**

Ttest\_indResult(statistic=2.1194676350640345, pvalue=0.035049242537354371)

**(‘burger’, 3) vs (‘swipe’, 3)**

Ttest\_indResult(statistic=-0.96107503820804641, pvalue=0.33790867474880881)

**(‘burger’, 3) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=-4.2556029720583979, pvalue=3.2035131582151195e-05)

**(‘burger’, 3) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=-7.550993296996201, pvalue=9.8652818305802416e-13)

**('burger', 4) vs ('burger', 5)**

Ttest\_indResult(statistic=-2.908423978077963, pvalue=0.0040271469815081331)

**('burger', 4) vs ('swipe', 1)**

Ttest\_indResult(statistic=7.209186111149064, pvalue=7.0263378717603719e-12)

**('burger', 4) vs ('swipe', 2)**

Ttest\_indResult(statistic=0.84582913729034226, pvalue=0.3985168455092658)

**('burger', 4) vs ('swipe', 3)**

Ttest\_indResult(statistic=-3.5026414730410522, pvalue=0.00056297399386590681)

**('burger', 4) vs ('swipe', 4)**

Ttest\_indResult(statistic=-7.2606750152898689, pvalue=5.2712588147746732e-12)

**('burger', 4) vs ('swipe', 5)**

Ttest\_indResult(statistic=-10.693428350595326, pvalue=3.5536454454504528e-22)

**('burger', 5) vs ('swipe', 1)**

Ttest\_indResult(statistic=10.890538484235995, pvalue=8.5016546211500906e-23)

**('burger', 5) vs ('swipe', 2)**

Ttest\_indResult(statistic=3.1074578497467975, pvalue=0.0021494163532751534)

**('burger', 5) vs ('swipe', 3)**

Ttest\_indResult(statistic=-0.56740454887630598, pvalue=0.57097571413562109)

**('burger', 5) vs ('swipe', 4)**

Ttest\_indResult(statistic=-5.0731662549008609, pvalue=7.6882650857723662e-07)

**('burger', 5) vs ('swipe', 5)**

Ttest\_indResult(statistic=-9.0116498280847814, pvalue=8.0218560476693546e-17)

**('swipe', 1) vs ('swipe', 2)**

Ttest\_indResult(statistic=-4.8434258013998477, pvalue=2.274961213270276e-06)

**('swipe', 1) vs ('swipe', 3)**

Ttest\_indResult(statistic=-11.759414000225329, pvalue=8.3981981627819097e-26)

**('swipe', 1) vs ('swipe', 4)**

Ttest\_indResult(statistic=-14.655532120635145, pvalue=2.0532387279374739e-36)

**('swipe', 1) vs ('swipe', 5)**

Ttest\_indResult(statistic=-17.186752811829475, pvalue=4.2694464640700814e-45)

**('swipe', 2) vs ('swipe', 3)**

Ttest\_indResult(statistic=-3.5382178337888495, pvalue=0.00049943120019875324)

**('swipe', 2) vs ('swipe', 4)**

Ttest\_indResult(statistic=-6.5492908547573476, pvalue=3.5428937762053603e-10)

**('swipe', 2) vs ('swipe', 5)**

Ttest\_indResult(statistic=-9.5682857766159515, pvalue=7.5669739907302645e-19)

**('swipe', 3) vs ('swipe', 4)**

Ttest\_indResult(statistic=-4.7435792201219673, pvalue=3.4662492531819365e-06)



**('swipe', 3) vs ('swipe', 5)**

Ttest\_indResult(statistic=-8.8109429254330092, pvalue=3.2416911874714276e-16)

**('swipe', 4) vs ('swipe', 5)**

Ttest\_indResult(statistic=-4.3950718940401625, pvalue=1.6076088389444222e-05)

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

**burger vs swipe 1**

Ttest\_indResult(statistic=9.7677785244985476, pvalue=3.048661963250753e-19)

**burger vs swipe 2**

Ttest\_indResult(statistic=1.6374276606675802, pvalue=0.10324597758459234)

**burger vs swipe 3**

Ttest\_indResult(statistic=-3.4616051586436036, pvalue=0.00060564874812197894)

**burger vs swipe 4**

Ttest\_indResult(statistic=-7.981729679231651, pvalue=5.0201723649504874e-14)

**burger vs swipe 5**

Ttest\_indResult(statistic=-11.658440737398982, pvalue=1.7212956322485464e-24)

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

**burger vs swipe**

Ttest\_indResult(statistic=-3.3427694548324953, pvalue=0.00085423271669792108)

**Effectiveness by Tasks**

**Descriptions [success]**

**Global Descriptions [success]**

### **burger**

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

### **swipe**

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

### **Descriptions per tid [success]**

#### **(‘burger’, 1)**

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

#### **(‘burger’, 2)**

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

#### **(‘burger’, 3)**

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

#### **(‘burger’, 4)**

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

**('burger', 5)**

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

**('swipe', 1)**

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

**('swipe', 2)**

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

**('swipe', 3)**

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

**('swipe', 4)**

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

**('swipe', 5)**

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

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

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

Ttest\_indResult(statistic=1.3566596213974287, pvalue=0.17678194158108454)

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

Ttest\_indResult(statistic=1.3566596213974287, pvalue=0.17678194158108454)

**('burger', 1) vs ('burger', 4)**

Ttest\_indResult(statistic=0.57912400691442567, pvalue=0.56316817234044769)

**('burger', 1) vs ('burger', 5)**

Ttest\_indResult(statistic=0.0, pvalue=1.0)

**('burger', 1) vs ('swipe', 1)**

Ttest\_indResult(statistic=0.80739517975463093, pvalue=0.42023551788635605)

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

Ttest\_indResult(statistic=2.4312286347458874, pvalue=0.015983788401592251)

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

Ttest\_indResult(statistic=3.5315534086960496, pvalue=0.00053094839433830772)

**('burger', 1) vs ('swipe', 4)**

Ttest\_indResult(statistic=2.215874978949087, pvalue=0.027866499438757488)

**('burger', 1) vs ('swipe', 5)**

Ttest\_indResult(statistic=2.8283089411876623, pvalue=0.0052076221586708762)

**('burger', 2) vs ('burger', 3)**

Ttest\_indResult(statistic=0.0, pvalue=1.0)

**('burger', 2) vs ('burger', 4)**

Ttest\_indResult(statistic=-0.82537870096095911, pvalue=0.41015411439664728)

**('burger', 2) vs ('burger', 5)**

Ttest\_indResult(statistic=-1.3566596213974287, pvalue=0.17678194158108454)

**(‘burger’, 2) vs (‘swipe’, 1)**

Ttest\_indResult(statistic=-0.68719540412208679, pvalue=0.49275308971484577)

**(‘burger’, 2) vs (‘swipe’, 2)**

Ttest\_indResult(statistic=1.0167030982209715, pvalue=0.31028623539588174)

**(‘burger’, 2) vs (‘swipe’, 3)**

Ttest\_indResult(statistic=2.2274529233560192, pvalue=0.02686863183496167)

**(‘burger’, 2) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=0.78033142539281197, pvalue=0.43594053940311395)

**(‘burger’, 2) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=1.4542927864169122, pvalue=0.14714672347976621)

**(‘burger’, 3) vs (‘burger’, 4)**

Ttest\_indResult(statistic=-0.82537870096095911, pvalue=0.41015411439664728)

**(‘burger’, 3) vs (‘burger’, 5)**

Ttest\_indResult(statistic=-1.3566596213974287, pvalue=0.17678194158108454)

**(‘burger’, 3) vs (‘swipe’, 1)**

Ttest\_indResult(statistic=-0.68719540412208691, pvalue=0.49275308971484599)

**(‘burger’, 3) vs (‘swipe’, 2)**

Ttest\_indResult(statistic=1.0167030982209715, pvalue=0.31028623539588174)

**(‘burger’, 3) vs (‘swipe’, 3)**

Ttest\_indResult(statistic=2.2274529233560192, pvalue=0.026868631834961684)

**(‘burger’, 3) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=0.78033142539281197, pvalue=0.43594053940311339)

**(‘burger’, 3) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=1.4542927864169122, pvalue=0.14714672347976621)

**(‘burger’, 4) vs (‘burger’, 5)**

Ttest\_indResult(statistic=-0.57912400691442567, pvalue=0.56316817234044769)

**(‘burger’, 4) vs (‘swipe’, 1)**

Ttest\_indResult(statistic=0.1830408456352626, pvalue=0.85491950188735677)

**(‘burger’, 4) vs (‘swipe’, 2)**

Ttest\_indResult(statistic=1.8876521394554662, pvalue=0.060369367164060092)

**(‘burger’, 4) vs (‘swipe’, 3)**

Ttest\_indResult(statistic=3.0477589618316396, pvalue=0.0026190549770261249)

**(‘burger’, 4) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=1.6592223276634299, pvalue=0.098439184876363106)

**(‘burger’, 4) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=2.3080061990353404, pvalue=0.021957393227192475)

**(‘burger’, 5) vs (‘swipe’, 1)**

Ttest\_indResult(statistic=0.80739517975463093, pvalue=0.42023551788635605)

**(‘burger’, 5) vs (‘swipe’, 2)**

Ttest\_indResult(statistic=2.4312286347458874, pvalue=0.015983788401592251)

**(‘burger’, 5) vs (‘swipe’, 3)**

Ttest\_indResult(statistic=3.5315534086960496, pvalue=0.00053094839433830772)

**(‘burger’, 5) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=2.215874978949087, pvalue=0.027866499438757488)

**(‘burger’, 5) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=2.8283089411876623, pvalue=0.0052076221586708762)

**(‘swipe’, 1) vs (‘swipe’, 2)**

Ttest\_indResult(statistic=1.7740264404232391, pvalue=0.077408728725552087)

**(‘swipe’, 1) vs (‘swipe’, 3)**

Ttest\_indResult(statistic=2.9590379368657991, pvalue=0.0034639370862902222)

**(‘swipe’, 1) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=1.5390840856715888, pvalue=0.12514089473419432)

**(‘swipe’, 1) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=2.2048134129200938, pvalue=0.028535852417557052)

**(‘swipe’, 2) vs (‘swipe’, 3)**

Ttest\_indResult(statistic=1.280041747845708, pvalue=0.20165292226882248)

**(‘swipe’, 2) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=-0.24938402863057901, pvalue=0.80324845639334197)

**(‘swipe’, 2) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=0.46261298892397296, pvalue=0.64400676703062332)

**(‘swipe’, 3) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=-1.5243950537075324, pvalue=0.12863551731870207)

**(‘swipe’, 3) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=-0.82168544483210404, pvalue=0.41197355678268388)

**(‘swipe’, 4) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=0.7109532653097157, pvalue=0.47772206370287928)

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

### burger vs swipe 1

Ttest\_indResult(statistic=-0.028285152780717485, pvalue=0.97746081014720443)

### burger vs swipe 2

Ttest\_indResult(statistic=1.95549234878333, pvalue=0.052216567883136028)

### burger vs swipe 3

Ttest\_indResult(statistic=3.1643004716025089, pvalue=0.0018713455894696909)

### burger vs swipe 4

Ttest\_indResult(statistic=1.7105169556030884, pvalue=0.089017873436017358)

### burger vs swipe 5

Ttest\_indResult(statistic=2.3988552989827197, pvalue=0.017594620657847271)

## Global Burger vs Global Swipe Test [success]

### burger vs swipe

Ttest\_indResult(statistic=3.8996269795774503, pvalue=0.00010184696908914221)

## Task Questionnaires

### Task Question 0

#### Descriptions [result]

#### Global Descriptions [result]

burger

count		110.0	
mean		6.90909090909	
std		0.395976427467	
min		4.0	
25%		7.0	
50%		7.0	
75%		7.0	
max		7.0	



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 |
```

### **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 |
```

('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 |
```

('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 |
```

('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 |

('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 |

('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 |

('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 |

('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 |

```

```
(‘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 |
```

```
(‘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 |
```

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

**(‘burger’, 1) vs (‘burger’, 2)**

Ttest\_indResult(statistic=1.4491376746189426, pvalue=0.16206871193916272)

**(‘burger’, 1) vs (‘burger’, 3)**

Ttest\_indResult(statistic=1.4182715723279398, pvalue=0.17078161271838718)

**(‘burger’, 1) vs (‘burger’, 4)**

Ttest\_indResult(statistic=1.4491376746189426, pvalue=0.16206871193916272)

**(‘burger’, 1) vs (‘burger’, 5)**

Ttest\_indResult(statistic=1.0000000000000089, pvalue=0.32869468323645945)

**(‘burger’, 1) vs (‘swipe’, 1)**

Ttest\_indResult(statistic=1.6858544608470538, pvalue=0.1033481555997189)

**(‘burger’, 1) vs (‘swipe’, 2)**

Ttest\_indResult(statistic=1.4411533842457791, pvalue=0.16103934953023244)

**(‘burger’, 1) vs (‘swipe’, 3)**

Ttest\_indResult(statistic=1.9867985355975688, pvalue=0.057179118127154482)

**(‘burger’, 1) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=1.9867985355975688, pvalue=0.057179118127154482)

**(‘burger’, 1) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=2.2601124105026518, pvalue=0.03208842174489044)

**(‘burger’, 2) vs (‘burger’, 3)**

Ttest\_indResult(statistic=0.79240581569306312, pvalue=0.434959083634744)

**(‘burger’, 2) vs (‘burger’, 4)**

Ttest\_indResult(statistic=0.0, pvalue=1.0)

**(‘burger’, 2) vs (‘burger’, 5)**

Ttest\_indResult(statistic=-0.58673869403846191, pvalue=0.56082327307745816)

**(‘burger’, 2) vs (‘swipe’, 1)**

Ttest\_indResult(statistic=0.49271170229567274, pvalue=0.62452609288904781)

**(‘burger’, 2) vs (‘swipe’, 2)**

Ttest\_indResult(statistic=-0.24365889171012692, pvalue=0.80866695186899662)

**(‘burger’, 2) vs (‘swipe’, 3)**

Ttest\_indResult(statistic=0.79978792158211109, pvalue=0.42796667468869776)

**(‘burger’, 2) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=0.79978792158211109, pvalue=0.42796667468869776)

**(‘burger’, 2) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=1.2510600541476802, pvalue=0.2178987002569478)

**('burger', 3) vs ('burger', 4)**

Ttest\_indResult(statistic=-0.79240581569306312, pvalue=0.434959083634744)

**('burger', 3) vs ('burger', 5)**

Ttest\_indResult(statistic=-1.0915536458196295, pvalue=0.28570930736987338)

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

Ttest\_indResult(statistic=-0.46568478226137766, pvalue=0.64455504483952952)

**('burger', 3) vs ('swipe', 2)**

Ttest\_indResult(statistic=-0.92910316007448612, pvalue=0.36170919252817291)

**('burger', 3) vs ('swipe', 3)**

Ttest\_indResult(statistic=-0.26506842102661687, pvalue=0.7925715578816479)

**('burger', 3) vs ('swipe', 4)**

Ttest\_indResult(statistic=-0.26506842102661687, pvalue=0.7925715578816479)

**('burger', 3) vs ('swipe', 5)**

Ttest\_indResult(statistic=0.11672011558286063, pvalue=0.90768224442657708)

**('burger', 4) vs ('burger', 5)**

Ttest\_indResult(statistic=-0.58673869403846191, pvalue=0.56082327307745816)

**('burger', 4) vs ('swipe', 1)**

Ttest\_indResult(statistic=0.49271170229567274, pvalue=0.62452609288904781)

**('burger', 4) vs ('swipe', 2)**

Ttest\_indResult(statistic=-0.24365889171012692, pvalue=0.80866695186899662)

**('burger', 4) vs ('swipe', 3)**

Ttest\_indResult(statistic=0.79978792158211109, pvalue=0.42796667468869776)

**(‘burger’, 4) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=0.79978792158211109, pvalue=0.42796667468869776)

**(‘burger’, 4) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=1.2510600541476802, pvalue=0.2178987002569478)

**(‘burger’, 5) vs (‘swipe’, 1)**

Ttest\_indResult(statistic=1.0129210828495314, pvalue=0.31711639921326906)

**(‘burger’, 5) vs (‘swipe’, 2)**

Ttest\_indResult(statistic=0.38622696788057731, pvalue=0.70103791654914316)

**(‘burger’, 5) vs (‘swipe’, 3)**

Ttest\_indResult(statistic=1.3216640957475614, pvalue=0.193927451557106)

**(‘burger’, 5) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=1.3216640957475614, pvalue=0.193927451557106)

**(‘burger’, 5) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=1.7104014031978396, pvalue=0.095898470850199258)

**(‘swipe’, 1) vs (‘swipe’, 2)**

Ttest\_indResult(statistic=-0.72760687510900546, pvalue=0.47074919343997945)

**(‘swipe’, 1) vs (‘swipe’, 3)**

Ttest\_indResult(statistic=0.28912165479145496, pvalue=0.77359920204510002)

**(‘swipe’, 1) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=0.28912165479145496, pvalue=0.77359920204510002)

**(‘swipe’, 1) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=0.76892189194508209, pvalue=0.44551595328148408)

**(‘swipe’, 2) vs (‘swipe’, 3)**

Ttest\_indResult(statistic=1.0438803085865349, pvalue=0.30250767106524179)

**(‘swipe’, 2) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=1.0438803085865349, pvalue=0.30250767106524179)

**(‘swipe’, 2) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=1.4732338600612171, pvalue=0.14905035503113803)

**(‘swipe’, 3) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=0.0, pvalue=1.0)

**(‘swipe’, 3) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=0.50116144175073229, pvalue=0.61837946822394008)

**(‘swipe’, 4) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=0.50116144175073229, pvalue=0.61837946822394008)

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

**burger vs swipe 1**

Ttest\_indResult(statistic=0.55997233123865175, pvalue=0.57874985452460637)

**burger vs swipe 2**

Ttest\_indResult(statistic=-0.31266159062439741, pvalue=0.75558308779702033)

**burger vs swipe 3**

Ttest\_indResult(statistic=0.89922333067579296, pvalue=0.37433593164182521)

**burger vs swipe 4**

Ttest\_indResult(statistic=0.89922333067579296, pvalue=0.37433593164182521)

**burger vs swipe 5**

Ttest\_indResult(statistic=1.3611501176257312, pvalue=0.18254059625123423)

## Global Burger vs Global Swipe Test [result]

### burger vs swipe

Ttest\_indResult(statistic=1.3562601440255169, pvalue=0.17626116218076363)

## 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	

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	

#### 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	

('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 |

```

('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 |

```

('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 |

```

('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 |

```

('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 |

('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 |

('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 |

('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 |

('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 |

```

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

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

Ttest\_indResult(statistic=0.31010458564086002, pvalue=0.75802244540869279)

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

Ttest\_indResult(statistic=-0.080051859907446427, pvalue=0.93658374072558803)

**('burger', 1) vs ('burger', 4)**

Ttest\_indResult(statistic=0.33657671342337503, pvalue=0.73822512878677493)

**('burger', 1) vs ('burger', 5)**

Ttest\_indResult(statistic=0.0, pvalue=1.0)

**('burger', 1) vs ('swipe', 1)**

Ttest\_indResult(statistic=-1.2837421053733327, pvalue=0.2054375873090272)

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

Ttest\_indResult(statistic=-1.2090139880073498, pvalue=0.23271472223326703)

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

Ttest\_indResult(statistic=-1.463852065048149, pvalue=0.14995179579288434)

**('burger', 1) vs ('swipe', 4)**

Ttest\_indResult(statistic=-1.6208185434680238, pvalue=0.11224980129520724)

**('burger', 1) vs ('swipe', 5)**

Ttest\_indResult(statistic=-2.1492165095182081, pvalue=0.03688815104511671)

**('burger', 2) vs ('burger', 3)**

Ttest\_indResult(statistic=-0.41604800757760851, pvalue=0.6795040084428422)

**('burger', 2) vs ('burger', 4)**

Ttest\_indResult(statistic=0.0, pvalue=1.0)

**('burger', 2) vs ('burger', 5)**

Ttest\_indResult(statistic=-0.31207579904219773, pvalue=0.75653217927135352)

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

Ttest\_indResult(statistic=-1.6289142640148464, pvalue=0.10987883761813257)

**('burger', 2) vs ('swipe', 2)**

Ttest\_indResult(statistic=-1.5659419487889481, pvalue=0.12397500203185813)

**('burger', 2) vs ('swipe', 3)**

Ttest\_indResult(statistic=-1.8347896616603989, pvalue=0.072806163662061316)

**('burger', 2) vs ('swipe', 4)**

Ttest\_indResult(statistic=-2.0273655509871724, pvalue=0.048533888623595652)

**('burger', 2) vs ('swipe', 5)**

Ttest\_indResult(statistic=-2.550121168647193, pvalue=0.014070036183701212)

**('burger', 3) vs ('burger', 4)**

Ttest\_indResult(statistic=0.45779999816880002, pvalue=0.64949206222919309)

**('burger', 3) vs ('burger', 5)**

Ttest\_indResult(statistic=0.08059475790364122, pvalue=0.93615340884054188)

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

Ttest\_indResult(statistic=-1.2889066290162134, pvalue=0.20362802550896689)

**('burger', 3) vs ('swipe', 2)**

Ttest\_indResult(statistic=-1.2123668735785071, pvalue=0.23130618790625015)

**('burger', 3) vs ('swipe', 3)**

Ttest\_indResult(statistic=-1.4865530860485299, pvalue=0.14367932916113879)

**(‘burger’, 3) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=-1.665827282358026, pvalue=0.10245606821048929)

**(‘burger’, 3) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=-2.2236416215700405, pvalue=0.030927460331272798)

**(‘burger’, 4) vs (‘burger’, 5)**

Ttest\_indResult(statistic=-0.33910136104054245, pvalue=0.73632757197468268)

**(‘burger’, 4) vs (‘swipe’, 1)**

Ttest\_indResult(statistic=-1.7609344102128832, pvalue=0.084815434369215556)

**(‘burger’, 4) vs (‘swipe’, 2)**

Ttest\_indResult(statistic=-1.7037658302714056, pvalue=0.09497299007775549)

**(‘burger’, 4) vs (‘swipe’, 3)**

Ttest\_indResult(statistic=-2.0007469881640132, pvalue=0.051138917909208527)

**(‘burger’, 4) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=-2.2409958289424603, pvalue=0.029698757129413455)

**(‘burger’, 4) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=-2.7866677954802945, pvalue=0.0076168232047276047)

**(‘burger’, 5) vs (‘swipe’, 1)**

Ttest\_indResult(statistic=-1.2910409183090523, pvalue=0.20290434875885618)

**(‘burger’, 5) vs (‘swipe’, 2)**

Ttest\_indResult(statistic=-1.2163777102367443, pvalue=0.22990419438692747)

**(‘burger’, 5) vs (‘swipe’, 3)**

Ttest\_indResult(statistic=-1.4729715892618513, pvalue=0.14745914516885314)

**(‘burger’, 5) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=-1.6322512563257097, pvalue=0.10976494840900448)

**(‘burger’, 5) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=-2.1628863874669357, pvalue=0.035735733189624176)

**(‘swipe’, 1) vs (‘swipe’, 2)**

Ttest\_indResult(statistic=0.11667176816723937, pvalue=0.90755497563889476)

**(‘swipe’, 1) vs (‘swipe’, 3)**

Ttest\_indResult(statistic=-0.11792698212695876, pvalue=0.90656666165487043)

**(‘swipe’, 1) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=-0.18756785365546197, pvalue=0.85195435322794189)

**(‘swipe’, 1) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=-0.77408790290137819, pvalue=0.44229719902179665)

**(‘swipe’, 2) vs (‘swipe’, 3)**

Ttest\_indResult(statistic=-0.24444025311801382, pvalue=0.80781680136158207)

**(‘swipe’, 2) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=-0.32549781971440689, pvalue=0.74609483697056533)

**(‘swipe’, 2) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=-0.92637576511926945, pvalue=0.35838094161896383)

**(‘swipe’, 3) vs (‘swipe’, 4)**

Ttest\_indResult(statistic=-0.065975241937917109, pvalue=0.94764585285887681)

**(‘swipe’, 3) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=-0.68754973774649286, pvalue=0.49468042451910721)

**(‘swipe’, 4) vs (‘swipe’, 5)**

Ttest\_indResult(statistic=-0.66793226421816831, pvalue=0.50706047845662638)

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

**burger vs swipe 1**

Ttest\_indResult(statistic=-1.7920485696152606, pvalue=0.081668377626223213)

**burger vs swipe 2**

Ttest\_indResult(statistic=-1.7418063441047225, pvalue=0.089916422412057356)

**burger vs swipe 3**

Ttest\_indResult(statistic=-2.0988468236683779, pvalue=0.042676536020284629)

**burger vs swipe 4**

Ttest\_indResult(statistic=-2.446535421195474, pvalue=0.018837342914925163)

**burger vs swipe 5**

Ttest\_indResult(statistic=-3.0406465555493165, pvalue=0.0042798608827830081)

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

**burger vs swipe**

Ttest\_indResult(statistic=-3.9046179737739855, pvalue=0.00012188835447452269)

**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 |

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 |

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

burger vs swipe

Ttest\_indResult(statistic=-0.10751543495766284, pvalue=0.9148292292550424)

### 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 |

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 |
```

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

#### **burger vs swipe**

Ttest\_indResult(statistic=1.2353085848140299, pvalue=0.22501281363206999)

### **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 |
```

##### **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 |
```

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

### **burger vs swipe**

Ttest\_indResult(statistic=-1.8942147514189334, pvalue=0.066878319737774167)

### **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

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

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

### **burger vs swipe**

Ttest\_indResult(statistic=1.4151306918873736, pvalue=0.16442349507017537)