

# BathSoap

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## R Markdown

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When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

```
library(readr)
BathSoap <- read_csv("BathSoap.csv")

## Rows: 600 Columns: 46
## — Column specification
## Delimiter: ","
## chr (27): Pur_Vol_No_Promo_-%, Pur_Vol_Promo_6_%, Pur_Vol_Other_Promo_%, Br...
## dbl (19): Member_id, SEC, FEH, MT, SEX, AGE, EDU, HS, CHILD, CS, Affluence_I...
##
## i Use `spec()` to retrieve the full column specification for this data.
## i Specify the column types or set `show_col_types = FALSE` to quiet this message.

View(BathSoap)
```

##Question 3 printing the descriptive ##statistics of average price, column 19 (quantitative example)

```
#created a vector for Avg._Price values
averagePriceVector <- BathSoap[,19]
#print statistical descriptions
nrow(BathSoap)

## [1] 600

sd(BathSoap$Avg._Price)

## [1] 3.742725

IQR(BathSoap$Avg._Price)
```

```

## [1] 3.6575

median(BathSoap$Avg._Price)

## [1] 11.25

mean(BathSoap$Avg._Price)

## [1] 11.83472

var(BathSoap$Avg._Price)

## [1] 14.00799

sd(BathSoap$Avg._Price)/sqrt(BathSoap$Avg._Price) #this is the standard error

## [1] 1.1724675 1.0790836 1.2882990 1.3576290 1.4026454 1.2220430
1.1759346
## [8] 1.5129068 1.0918650 1.0266571 1.2104837 1.1208576 1.3721495
1.3022605
## [15] 1.1823717 1.2168648 1.1841457 1.2117519 1.2413834 0.8749079
1.5608241
## [22] 1.5608241 1.5500782 1.4207189 1.1484858 1.0424649 1.1517439
1.1474059
## [29] 1.2740383 1.4899552 1.5635457 1.1937438 1.4095917 1.5717967
1.5787731
## [36] 1.1736198 1.3657397 1.2510549 1.5717967 1.2929028 1.4646414
1.4759866
## [43] 1.4416437 1.5717967 1.3928979 1.0845061 1.3401104 1.2079592
1.5717967
## [50] 0.9866372 1.4947003 1.1008014 1.4289790 1.1707453 1.5527439
1.0724184
## [57] 1.4156285 1.2379833 1.5662816 1.2035791 1.2393400 1.3531850
1.5254207
## [64] 1.1656242 1.0914007 1.3938635 1.3191371 1.0845061 1.2975563
1.1901172
## [71] 1.1622472 1.2799849 1.5395512 1.1065598 1.3470361 1.0258854
1.3435599
## [78] 1.4196964 1.0641505 1.3621170 1.0693499 1.2538600 1.5676549
0.9134032
## [85] 1.1511990 1.2117519 1.2073306 1.1572363 0.7535348 1.4714169
0.8244207
## [92] 1.3505395 1.4748402 0.9389143 0.9932160 1.1295013 1.5228931
1.1223686
## [99] 1.3919343 1.1650593 1.2306003 1.2067029 1.3282433 1.2359566
1.2482686
## [106] 1.2010975 0.9400983 1.1661899 1.1238856 1.2921321 1.4852550
1.2073306
## [113] 1.1583442 1.3349857 1.2136617 0.9350969 1.1372964 1.5279610
1.1468671
## [120] 1.1233793 1.2510549 1.0167595 1.1544803 0.9139477 1.0598750
1.3603164

```

## [127] 1.1415203 1.0209119 1.0163845 1.0680429 1.1841457 1.0498207  
0.8436753  
## [134] 1.0663077 1.5717967 0.6729734 1.2531569 1.1572363 1.1310475  
1.3909727  
## [141] 1.3648313 1.4958937 1.1583442 1.3523014 0.8081170 1.4947003  
1.3505395  
## [148] 1.2770012 1.1133935 1.0543932 1.1119184 1.1457917 1.5717967  
1.3341373  
## [155] 1.1070437 1.1388749 0.8479952 1.4935098 1.0569127 1.4136076  
1.4115954  
## [162] 1.5635457 1.0251155 1.0817846 1.1484858 1.0909370 1.1490269  
1.1300160  
## [169] 1.1352019 1.1320818 1.2999020 1.0186407 1.0416571 1.5759714  
1.1264278  
## [176] 1.1279614 1.1561315 1.4748402 1.3833509 1.1346801 1.1129011  
1.1594554  
## [183] 1.0448996 1.0481726 1.0772940 1.1533834 1.3666498 1.2226949  
1.1441843  
## [190] 1.0171349 1.3062199 0.9571591 1.1550299 1.1404599 1.1835535  
1.1279614  
## [197] 1.1404599 1.1315643 0.9590427 1.1409898 1.1051117 1.3461645  
1.3341373  
## [204] 1.3657397 1.5717967 1.0498207 1.3158719 1.1561315 1.1583442  
1.0840511  
## [211] 1.0914007 1.1310475 1.1208576 1.1331190 1.1696015 0.9460862  
1.1847388  
## [218] 0.9144932 1.3805248 0.8699307 1.4258646 1.0577566 1.4105925  
0.9974395  
## [225] 1.1070437 1.1980170 1.1980170 1.0344704 0.8348143 1.1550299  
1.2784904  
## [232] 1.2200934 1.4481037 1.1974037 1.3749243 1.3461645 1.3452946  
1.4491888  
## [239] 1.5717967 0.8661951 1.0637206 1.0408512 1.3118243 1.0552311  
1.2279482  
## [246] 1.2602410 1.4646414 1.0453070 1.0380451 1.0514765 1.1736198  
1.0075076  
## [253] 1.2777452 1.1031898 1.1310475 1.1279614 1.1022326 1.3249102  
1.1238856  
## [260] 1.1718926 0.8846294 1.1600121 1.0658752 1.1228736 1.1124095  
1.1109383  
## [267] 1.2111173 1.1770972 1.2755172 0.8092496 1.0590261 1.1331190  
1.1420517  
## [274] 1.0877073 1.1724675 1.0965411 1.0270435 1.0348658 1.1650593  
1.1008014  
## [281] 1.1188525 1.3452946 1.3401104 1.1511990 1.1955696 1.1753546  
1.2573930  
## [288] 1.1158649 1.1436501 0.9500403 1.1017549 0.9755151 1.1399309  
1.1522896  
## [295] 1.1794327 1.1490269 1.4459407 1.1305314 1.1550299 0.8881093  
0.9512670

## [302] 1.0702239 1.3142484 1.1084994 0.9327708 1.1871202 1.0293716  
1.1539315  
## [309] 1.0440861 0.9491234 0.9131313 1.1027109 1.1741972 0.8918837  
1.2123875  
## [316] 1.0461234 1.2098511 1.2117519 1.1249004 0.9644404 1.3426950  
0.8434610  
## [323] 1.1431165 1.2631084 0.9666897 1.3996997 1.1129011 1.0989018  
1.1555803  
## [330] 1.2136617 1.1178540 1.1425837 1.1588994 1.0872482 1.1238856  
1.1501114  
## [337] 1.1690308 1.0786353 0.9666897 1.1782632 0.9457841 1.1228736  
1.3987219  
## [344] 0.8967344 1.0702239 1.1561315 0.9412868 1.1060765 1.1372964  
1.0527236  
## [351] 0.9457841 0.9368530 1.0317155 1.1949600 1.0108091 1.0266571  
0.9350969  
## [358] 1.0448996 0.7999540 1.0056874 1.0017173 0.9728750 1.0510618  
1.0321077  
## [365] 1.0186407 0.9546649 1.0728589 1.0243474 0.9032391 1.3232530  
1.0858746  
## [372] 0.9828877 1.1080135 1.0420607 1.3814649 1.1213606 1.1362477  
0.9177867  
## [379] 1.0904738 1.0715390 1.0301511 0.9543545 1.0309324 0.8537116  
1.0444926  
## [386] 0.9093502 1.1776797 1.1208576 1.0998504 1.0473515 1.0190181  
0.8689923  
## [393] 0.6893252 0.9577857 1.0376461 0.7282889 0.8577375 1.0278178  
0.8530461  
## [400] 1.1388749 1.0904738 1.0432746 1.1003256 0.9123171 0.9528070  
1.0282056  
## [407] 0.9042931 1.1616872 0.9765107 1.1099608 1.0822368 1.1835535  
0.9136754  
## [414] 1.1289873 0.9197244 0.9093502 1.0205323 0.9445785 1.1713185  
1.0424649  
## [421] 1.1425837 1.1022326 1.0251155 1.0224345 1.0017173 0.9893913  
1.0485839  
## [428] 0.7938129 0.9457841 1.0676083 1.0078729 1.3014729 1.1254088  
0.8891111  
## [435] 0.9555980 1.1913224 0.9956732 0.9815348 1.1310475 0.9654025  
1.1550299  
## [442] 0.9590427 1.1279614 0.6482914 1.0835967 1.0465323 1.1259180  
0.9897371  
## [449] 1.1974037 1.1228736 0.9227944 1.0795323 1.1616872 0.9451807  
1.1300160  
## [456] 1.0890879 1.0590261 1.0632912 1.0360546 0.9180628 1.0075076  
1.1490269  
## [463] 0.9494288 0.8532678 0.9650815 1.2844998 1.0632912 1.1218642  
0.8720534  
## [470] 0.9250465 1.1089859 0.8541562 0.9992153 1.1114281 1.1724675  
1.1208576

```
## [477] 1.0937283 0.9866372 0.8238213 0.9960257 0.9077441 1.0436801
1.1420517
## [484] 1.0531403 1.0053245 1.1075283 0.8657315 1.0064143 0.9999282
0.9457841
## [491] 1.0667407 1.0498207 0.8661951 1.1561315 0.8276395 0.8222294
1.0804316
## [498] 0.9699303 1.1213606 1.1183529 1.3603164 1.0086045 1.1522896
1.0428695
## [505] 1.0270435 0.8584141 0.9907770 1.1188525 1.0523074 0.9808604
0.8084940
## [512] 1.1188525 1.0650118 0.8722902 0.9603046 1.0808820 0.8501802
1.0372475
## [519] 0.8957066 1.1539315 1.0719784 0.9939162 1.2448117 1.3487844
1.1372964
## [526] 1.2017165 1.1213606 1.1943515 1.0904738 1.0890879 1.0182636
1.1357245
## [533] 1.0548119 1.1550299 1.0746264 1.1357245 1.3514196 1.1188525
1.1352019
## [540] 1.0352616 0.9828877 1.0420607 1.0737415 1.0027954 0.9974395
1.1594554
## [547] 1.3307597 1.0305415 1.1124095 0.8868618 1.1650593 0.9869802
0.7340087
## [554] 1.0278178 1.2168648 1.2413834 1.1673238 1.0220532 0.9008811
0.7845159
## [561] 1.0137712 1.1490269 0.9460862 1.1431165 1.0266571 1.0813331
1.1158649
## [568] 0.9689547 1.1089859 0.8409025 0.9278849 1.0858746 0.7952451
0.9778429
## [575] 1.0732999 1.2085889 0.9460862 1.0777406 0.8814345 0.9942669
1.0799817
## [582] 0.9644404 1.0031555 1.1877178 1.2023364 1.0654432 1.0886271
1.0951320
## [589] 1.0119169 1.0799817 1.0527236 1.0156358 0.9374405 1.1806057
1.0477618
## [596] 1.0186407 0.9117755 1.1109383 1.2944484 1.1153693

mad(BathSoap$Avg._Price)

## [1] 2.720571

min(BathSoap$Avg._Price)

## [1] 5.62

max(BathSoap$Avg._Price)

## [1] 33.33

range(BathSoap$Avg._Price)

## [1] 5.62 33.33
```

```
quantile(BathSoap$Avg._Price)

##      0%      25%      50%      75%     100%
## 5.6200  9.7600 11.2500 13.4175 33.3300
```

*#categorical variables*

```
table(BathSoap$SEX)
```

```
##
##  0  1  2
## 68 21 511
```

```
table(BathSoap$AGE)
```

```
##
##  1  2  3  4
## 15 129 169 287
```

```
table(BathSoap$EDU)
```

```
##
##  0  1  2  3  4  5  6  7  8  9
## 73 49  9 33 136 189 23 73 13  2
```

#Question 4 Transforming total volume by calculating square root

*#square root of total volume*

```
sqrt(BathSoap$Total_Volume)
```

```
##  [1]  89.58236 118.21590 151.98684  38.72983  91.10434 134.81469
## 99.74969
##  [8]  96.43651 162.75749  86.34234 127.57351 117.79219 143.78804
## 124.29803
## [15]  95.65563 126.68859 138.38353 120.93387 120.00000  25.98076
## 80.00000
## [22]  86.89074 178.88544  40.00000  53.15073 129.34450 103.92305
## 111.46748
## [29] 104.52272  77.78175 122.88206  86.45808  32.40370 148.49242
## 136.38182
## [36] 111.69154  69.28203 100.24969 122.47449  57.66281 101.61201
## 124.09674
## [43] 153.29710  30.00000 184.93242  96.95360  62.64982  98.99495
## 70.35624
## [50] 141.10280 145.43040 125.99603  82.61356 162.40382 127.86712
## 135.18506
## [57] 174.21251 137.84049 157.95569  94.73648 141.66863 141.24447
## 141.77447
## [64] 108.62780 107.81929 101.36567 152.72524 155.96474 102.34745
## 120.62338
## [71]  95.65563 109.77249 113.68817  74.83315 121.86058  68.19091
## 52.44044
## [78]  90.82951 146.28739  82.61356  80.77747 162.01852 119.79149
```

84.40972  
## [85] 32.40370 140.17846 107.00467 171.31842 12.24745 126.29331  
103.07764  
## [92] 159.37377 94.86833 96.43651 102.71319 114.34597 141.86261  
110.90537  
## [99] 73.31439 106.30146 118.11012 126.88578 156.71630 127.37739  
108.51267  
## [106] 130.28814 139.37360 107.00467 109.54451 99.74969 129.61481  
119.89579  
## [113] 122.67844 139.28388 145.43040 97.97959 119.26860 87.46428  
126.58989  
## [120] 94.07444 124.19742 125.19984 121.07849 184.45867 151.32746  
160.85708  
## [127] 201.18400 105.00000 93.27379 133.97761 144.48183 133.79088  
87.03448  
## [134] 86.45808 69.28203 78.10250 110.00000 85.00000 111.69154  
150.99669  
## [141] 128.84099 123.69317 109.08712 109.88630 128.06248 102.83482  
84.35046  
## [148] 98.36158 95.78622 96.56604 17.32051 34.64102 72.45688  
108.97247  
## [155] 109.93180 104.23531 95.91663 66.33250 88.60023 170.07351  
132.38202  
## [162] 150.58220 187.74983 143.26549 162.71140 111.13055 175.85505  
82.61356  
## [169] 142.03873 118.21590 121.44958 88.03408 75.49834 101.36567  
158.42980  
## [176] 110.79260 161.86414 108.16654 162.63456 108.97247 91.92388  
142.47807  
## [183] 111.01802 82.61356 141.77447 118.74342 149.49916 140.00000  
184.72953  
## [190] 108.74282 119.58261 145.51632 30.00000 104.16333 128.64680  
88.45903  
## [197] 113.68817 79.84360 125.99603 105.47512 105.35654 150.33296  
174.28425  
## [204] 95.91663 87.46428 88.17596 83.66600 150.00000 114.45523  
138.65425  
## [211] 111.01802 72.80110 108.51267 133.22913 165.52945 53.38539  
114.45523  
## [218] 80.00000 111.60197 103.68221 109.08712 225.59920 139.10428  
72.97260  
## [225] 93.67497 80.00000 129.03488 125.29964 75.99342 20.00000  
114.89125  
## [232] 169.04142 127.86712 148.49242 88.17596 141.33294 133.02255  
105.47512  
## [239] 152.47951 15.00000 106.65365 97.46794 98.48858 84.55767  
120.51971  
## [246] 77.78175 76.81146 65.38348 97.59611 78.89867 42.42641  
87.03448  
## [253] 50.00000 145.94520 120.20815 98.48858 117.89826 131.05342

154.19144  
## [260] 100.24969 93.00538 81.39410 90.69179 129.80755 139.01439  
108.62780  
## [267] 124.53915 108.62780 113.68817 95.00000 197.29420 150.00000  
83.21658  
## [274] 93.80832 116.94016 110.45361 128.84099 112.58330 83.06624  
30.00000  
## [281] 220.22716 134.90738 105.35654 156.31699 138.83443 96.56604  
90.13878  
## [288] 103.92305 117.26039 110.79260 106.88779 80.62258 100.00000  
104.52272  
## [295] 73.14369 120.41595 122.06556 114.45523 133.60389 103.92305  
65.19202  
## [302] 46.63690 75.49834 120.00000 96.95360 107.00467 96.04686  
36.74235  
## [309] 55.45268 92.33093 112.36103 124.49900 161.40012 101.11874  
215.29050  
## [316] 134.25722 111.13055 103.80270 123.02439 103.92305 174.14075  
97.08244  
## [323] 177.69356 167.63055 83.36666 36.05551 157.32133 107.93517  
119.37336  
## [330] 115.75837 131.05342 99.49874 95.39392 85.32292 52.44044  
96.17692  
## [337] 128.16006 96.56604 82.76473 118.95377 99.62429 87.60708  
133.97761  
## [344] 70.53368 100.97029 78.10250 114.10521 119.79149 108.28204  
100.12492  
## [351] 98.99495 34.27827 111.69154 116.18950 112.91590 105.83005  
149.41553  
## [358] 108.51267 113.02655 113.79807 75.16648 65.00000 131.90906  
151.41004  
## [365] 133.51030 95.00000 66.70832 99.84989 78.58117 19.36492  
90.13878  
## [372] 74.83315 117.68602 98.99495 118.53270 72.28416 65.76473  
95.39392  
## [379] 142.82857 101.71037 61.23724 36.05551 141.50972 86.74676  
136.47344  
## [386] 87.74964 91.51503 109.65856 80.15610 84.55767 159.76545  
89.30286  
## [393] 86.60254 61.23724 122.47449 43.53160 95.39392 56.78908  
67.26812  
## [400] 97.46794 25.98076 125.89678 127.96484 75.72978 80.77747  
40.00000  
## [407] 40.92676 71.93747 119.37336 98.99495 111.35529 14.14214  
76.81146  
## [414] 114.56439 88.31761 64.42049 92.46621 36.74235 105.11898  
92.16832  
## [421] 178.95530 57.44563 17.32051 109.54451 50.24938 137.29530  
73.65460  
## [428] 74.66592 92.19544 97.21111 169.70563 112.69428 120.51971



```

82.00610
## [435] 87.32125 110.90537 114.38968 105.00000 82.61356 72.11103
22.36068
## [442] 77.78175 80.62258 91.10434 79.52987 84.85281 85.44004
96.43651
## [449] 89.02247 47.95832 69.46222 77.13624 110.90537 74.49832
79.21490
## [456] 104.36475 108.51267 148.07093 110.00000 88.60023 101.85774
84.70537
## [463] 85.00000 118.32160 129.32517 153.13393 83.51647 96.56604
47.69696
## [470] 82.67406 89.07862 33.54102 81.54753 93.67497 139.73189
163.17169
## [477] 114.45523 96.30680 95.91663 165.36324 57.87918 86.89074
93.00538
## [484] 115.43396 76.32169 93.80832 70.07139 86.31338 100.74721
91.97826
## [491] 73.99324 109.43034 15.00000 111.80340 176.42279 95.91663
24.49490
## [498] 101.58740 152.72524 104.88088 104.04326 98.99495 99.12114
104.16333
## [505] 60.82763 94.60444 38.72983 45.82576 117.26039 100.87121
22.91288
## [512] 80.62258 115.75837 106.44247 72.11103 96.95360 63.44289
80.93207
## [519] 90.13878 127.18097 68.55655 77.94229 83.06624 200.99751
88.74120
## [526] 132.57074 94.68368 81.24038 112.02678 79.37254 61.23724
51.72040
## [533] 134.90738 81.85353 68.92024 35.00000 27.38613 79.05694
83.51647
## [540] 79.52987 64.03124 88.96629 108.74282 125.39936 122.16792
131.43439
## [547] 86.02325 92.73618 107.70330 107.77291 62.24950 52.67827
15.00000
## [554] 123.79418 114.34597 28.72281 114.78240 84.11302 98.74209
95.26279
## [561] 77.13624 128.45233 99.87492 108.74282 107.81929 57.22762
88.31761
## [568] 77.13624 84.70537 108.51267 50.49752 124.69964 44.72136
81.45551
## [575] 223.60680 58.73670 115.75837 89.30286 76.15773 73.31439
92.73618
## [582] 68.73864 120.93387 96.69540 96.95360 97.97959 148.61023
92.60130
## [589] 75.06664 125.00000 78.10250 83.21658 90.82951 52.91503
72.80110
## [596] 95.00000 71.06335 170.58722 74.16198 110.90537

```

```
class(BathSoap$SEX)
```

```
## [1] "numeric"

class(BathSoap$Member_id)

## [1] "numeric"

as.character(BathSoap$Member_id)

## [1] "1010010" "1010020" "1014020" "1014030" "1014190" "1017020"
"1017110"
## [8] "1017160" "1017360" "1017460" "1017490" "1020070" "1020210"
"1024050"
## [15] "1024100" "1024120" "1024220" "1024400" "1024630" "1025070"
"1025140"
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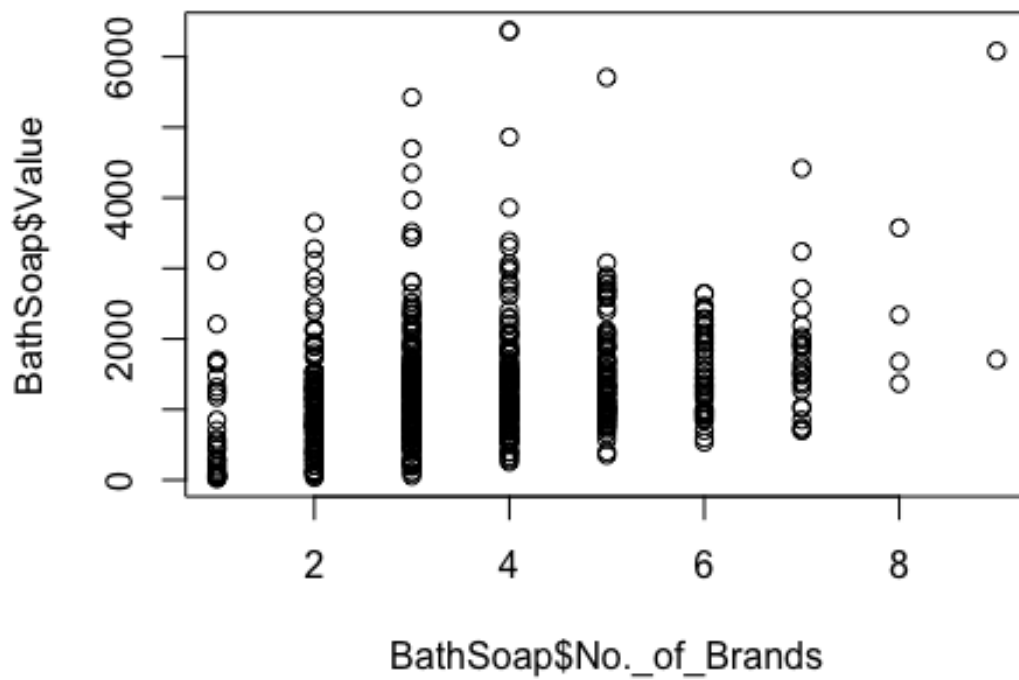
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#Question 5 Plot number of transcations and the value, #plot number of brands and value

```

#plotting the number of transactions, column 15
plot(BathSoap$No._of_Brands,BathSoap$Value)

```



*#not sure which made more sense, so I added both*  
`plot(BathSoap$No._of__Trans,BathSoap$Value)`

