Validity

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Methods

The data was collected by two means: A survey of 637 parents conducted at Saint Rose College in May 2014 and surveying 185 parents online through a mechanical turk via Amazon.

Results

```
#Load library 'psy'
library(psy); library(caret)
```

These next few chunks of code are just cleaning up the data set in preparation for analysis.

```
# Load data
setwd("~/Dropbox/Measure Validation Study")
alldata <- read.csv("MeasureValidationStudyPECTAC2014.csv", stringsAsFactors=FALSE)
```

```
# Subsetting by scale
TechResourcesInSupportOfLearning <- alldata[,15:29]
ActiveAndTeamLearning <- alldata[,45:54]
ClassLearningOpportunities <- alldata[,65:77]
ACaringFaculty <- alldata[,91:99]
ACaringUniversityCommunity <- alldata[,109:118]
BeingInParternshipWithParents <- alldata[,129:139]
```

```
# Complete Cases
ccTechResourcesInSupportOfLearning <- TechResourcesInSupportOfLearning[complete.cases(TechResourcesInSu
ccActiveAndTeamLearning <- ActiveAndTeamLearning[complete.cases(ActiveAndTeamLearning == TRUE),]
ccClassLearningOpportunities <- ClassLearningOpportunities[complete.cases(ClassLearningOpportunities ==
ccACaringFaculty <- ACaringFaculty[complete.cases(ACaringFaculty == TRUE),]
ccACaringUniversityCommunity <- ACaringUniversityCommunity[complete.cases(ACaringUniversityCommunity ==
ccBeingInPartnershipWithParents <- BeingInParternshipWithParents[complete.cases(BeingInParternshipWithPa
```

```
# Row means
means1 <- colMeans(TechResourcesInSupportOfLearning, na.rm = TRUE)
```

This chunk of code will print out correlation matrices for the 6 scales.

```
# Correlation Matrices
corMatrix1 <- cor(ccTechResourcesInSupportOfLearning)
corMatrix1
```

```
##                       TechAAvWeb TechWebAccessRDA TechWebAccessTF
## TechAAvWeb             1.0000000        0.5137786      0.40959376
```

```
## TechWebAccessRDA        0.5137786        1.0000000      0.64784350
## TechWebAccessTF         0.4095938        0.6478435      1.00000000
## TechWebAccessFA         0.3451028        0.5427008      0.78268799
## TechSAAWeb              0.6077762        0.4232634      0.42765849
## TechEmail               0.2629660        0.3038127      0.29482864
## TechBooks               0.3185392        0.4070805      0.44001440
## TechCLabs               0.2630764        0.2849672      0.27511955
## TechInternetResHall     0.2133089        0.2918710      0.34697803
## TechWireless            0.2655569        0.4125772      0.45362425
## TechLibrary             0.3012036        0.3086505      0.34195252
## TechUnivLaptop          0.1267235        0.1091076      0.09592236
## TechFacultyEmail        0.2641921        0.2906593      0.25896759
## TechAcademicContentWeb  0.4544113        0.3243788      0.29246823
## TechAAEmail             0.3318313        0.2542897      0.22918078
##                       TechWebAccessFA TechSAAWeb TechEmail TechBooks
## TechAAvWeb                  0.3451028  0.6077762 0.2629660 0.3185392
## TechWebAccessRDA            0.5427008  0.4232634 0.3038127 0.4070805
## TechWebAccessTF             0.7826880  0.4276585 0.2948286 0.4400144
## TechWebAccessFA             1.0000000  0.3808044 0.2825772 0.3688215
## TechSAAWeb                  0.3808044  1.0000000 0.2389554 0.3253932
## TechEmail                   0.2825772  0.2389554 1.0000000 0.3489268
## TechBooks                   0.3688215  0.3253932 0.3489268 1.0000000
## TechCLabs                   0.2536722  0.3004341 0.3084754 0.3648750
## TechInternetResHall         0.2755945  0.1899838 0.1589444 0.2906775
## TechWireless                0.3605492  0.3127527 0.3423288 0.3351573
## TechLibrary                 0.2816786  0.3135333 0.2988582 0.3520663
## TechUnivLaptop              0.1222210  0.1759568 0.2142893 0.2241342
## TechFacultyEmail            0.2009768  0.2041614 0.2434075 0.2337139
## TechAcademicContentWeb      0.2500195  0.4301868 0.2711873 0.3113727
## TechAAEmail                 0.1874470  0.3074737 0.2616092 0.2323963
##                       TechCLabs TechInternetResHall TechWireless
## TechAAvWeb            0.2630764           0.2133089    0.2655569
## TechWebAccessRDA      0.2849672           0.2918710    0.4125772
## TechWebAccessTF       0.2751196           0.3469780    0.4536243
## TechWebAccessFA       0.2536722           0.2755945    0.3605492
## TechSAAWeb            0.3004341           0.1899838    0.3127527
## TechEmail             0.3084754           0.1589444    0.3423288
## TechBooks             0.3648750           0.2906775    0.3351573
## TechCLabs             1.0000000           0.2005853    0.2763435
## TechInternetResHall   0.2005853           1.0000000    0.5011516
## TechWireless          0.2763435           0.5011516    1.0000000
## TechLibrary           0.3807307           0.2729897    0.3850244
## TechUnivLaptop        0.3288925           0.1067965    0.1693003
## TechFacultyEmail      0.2317576           0.1709217    0.3080553
## TechAcademicContentWeb 0.2986407          0.1822733    0.3391471
## TechAAEmail           0.2235726           0.1652984    0.2618494
##                       TechLibrary TechUnivLaptop TechFacultyEmail
## TechAAvWeb              0.3012036     0.12672350        0.2641921
## TechWebAccessRDA        0.3086505     0.10910756        0.2906593
## TechWebAccessTF         0.3419525     0.09592236        0.2589676
## TechWebAccessFA         0.2816786     0.12222097        0.2009768
## TechSAAWeb              0.3135333     0.17595685        0.2041614
## TechEmail               0.2988582     0.21428927        0.2434075
## TechBooks               0.3520663     0.22413415        0.2337139
```

```
## TechCLabs                0.3807307     0.32889251        0.2317576
## TechInternetResHall      0.2729897     0.10679649        0.1709217
## TechWireless             0.3850244     0.16930028        0.3080553
## TechLibrary              1.0000000     0.22590021        0.2892439
## TechUnivLaptop           0.2259002     1.00000000        0.1779229
## TechFacultyEmail         0.2892439     0.17792285        1.0000000
## TechAcademicContentWeb   0.3292753     0.24152446        0.3143514
## TechAAEmail              0.2942969     0.15296712        0.7541500
##                        TechAcademicContentWeb TechAAEmail
## TechAAvWeb                          0.4544113   0.3318313
## TechWebAccessRDA                    0.3243788   0.2542897
## TechWebAccessTF                     0.2924682   0.2291808
## TechWebAccessFA                     0.2500195   0.1874470
## TechSAAWeb                          0.4301868   0.3074737
## TechEmail                           0.2711873   0.2616092
## TechBooks                           0.3113727   0.2323963
## TechCLabs                           0.2986407   0.2235726
## TechInternetResHall                 0.1822733   0.1652984
## TechWireless                        0.3391471   0.2618494
## TechLibrary                         0.3292753   0.2942969
## TechUnivLaptop                      0.2415245   0.1529671
## TechFacultyEmail                    0.3143514   0.7541500
## TechAcademicContentWeb              1.0000000   0.3486996
## TechAAEmail                         0.3486996   1.0000000
```

```
corMatrix2 <- cor(ccActiveAndTeamLearning)
corMatrix2
```

```
##                     ATLDiscuss ATLPresent ATLOutperform ATLGroupProject
## ATLDiscuss           1.0000000  0.4353268     0.3004550      0.20834027
## ATLPresent           0.4353268  1.0000000     0.3529913      0.30327275
## ATLOutperform        0.3004550  0.3529913     1.0000000      0.27976730
## ATLGroupProject      0.2083403  0.3032728     0.2797673      1.00000000
## ATLOnline            0.1781338  0.1820737     0.1481673      0.46383490
## ATLCommunityService  0.3050907  0.3035869     0.2062317      0.32613469
## ATLInternetResearch  0.3373432  0.3122260     0.3116432      0.23821224
## ATLWebAssign         0.2031469  0.1942903     0.1664840      0.37552200
## ATLMoreIT            0.1814780  0.3041782     0.2495761      0.08279367
## ATLFeedback          0.2915000  0.2779456     0.2621408      0.04568197
##                      ATLOnline ATLCommunityService ATLInternetResearch
## ATLDiscuss          0.17813382           0.3050907           0.3373432
## ATLPresent          0.18207366           0.3035869           0.3122260
## ATLOutperform       0.14816731           0.2062317           0.3116432
## ATLGroupProject     0.46383490           0.3261347           0.2382122
## ATLOnline           1.00000000           0.2596796           0.2317414
## ATLCommunityService 0.25967962           1.0000000           0.3209595
## ATLInternetResearch 0.23174144           0.3209595           1.0000000
## ATLWebAssign        0.46955309           0.2850073           0.4717753
## ATLMoreIT           0.15172441           0.1606880           0.3200502
## ATLFeedback         0.03662649           0.2235492           0.3751686
##                     ATLWebAssign  ATLMoreIT ATLFeedback
## ATLDiscuss             0.2031469 0.18147801  0.29149996
## ATLPresent             0.1942903 0.30417824  0.27794560
## ATLOutperform          0.1664840 0.24957613  0.26214083
```

```
## ATLGroupProject        0.3755220 0.08279367  0.04568197
## ATLOnline              0.4695531 0.15172441  0.03662649
## ATLCommunityService    0.2850073 0.16068804  0.22354924
## ATLInternetResearch    0.4717753 0.32005023  0.37516863
## ATLWebAssign           1.0000000 0.26441328  0.19036562
## ATLMoreIT              0.2644133 1.00000000  0.50183975
## ATLFeedback            0.1903656 0.50183975  1.00000000
```

```
corMatrix3 <- cor(ccClassLearningOpportunities)
corMatrix3
```

```
##                       OCLResponsible  OCLClubs OCLAdditionalAA
## OCLResponsible             1.0000000 0.3380836       0.2873576
## OCLClubs                   0.3380836 1.0000000       0.3963914
## OCLAdditionalAA            0.2873576 0.3963914       1.0000000
## OCLInternships             0.1661497 0.3947192       0.4297893
## OCLRaceCulture             0.2541478 0.3131822       0.2082888
## OCLServeVolunteer          0.2614558 0.4546077       0.2651691
## OCLArea                    0.3192196 0.3891993       0.2969366
## OCLRemedialDisibility      0.2617342 0.2977433       0.3271963
## OCLAccessTutorASupport     0.3085168 0.3544809       0.4620238
## OCLSocialGroup             0.2478114 0.5202723       0.2827768
## OCLPracticumIntern         0.2404027 0.2860324       0.2197481
## OCLCareerCounsel           0.2856677 0.3807612       0.4875207
## OCLMorals                  0.5920274 0.3460693       0.2384614
##                       OCLInternships OCLRaceCulture OCLServeVolunteer
## OCLResponsible             0.1661497      0.2541478         0.2614558
## OCLClubs                   0.3947192      0.3131822         0.4546077
## OCLAdditionalAA            0.4297893      0.2082888         0.2651691
## OCLInternships             1.0000000      0.2579690         0.3168850
## OCLRaceCulture             0.2579690      1.0000000         0.5666521
## OCLServeVolunteer          0.3168850      0.5666521         1.0000000
## OCLArea                    0.2823608      0.4506672         0.4893128
## OCLRemedialDisibility      0.1708337      0.3829775         0.3695506
## OCLAccessTutorASupport     0.3031584      0.2965961         0.3382568
## OCLSocialGroup             0.2716730      0.3271003         0.4342802
## OCLPracticumIntern         0.3535670      0.2420606         0.2479514
## OCLCareerCounsel           0.4933927      0.2489953         0.2756226
## OCLMorals                  0.2153905      0.3379917         0.3942308
##                         OCLArea OCLRemedialDisibility
## OCLResponsible        0.3192196             0.2617342
## OCLClubs              0.3891993             0.2977433
## OCLAdditionalAA       0.2969366             0.3271963
## OCLInternships        0.2823608             0.1708337
## OCLRaceCulture        0.4506672             0.3829775
## OCLServeVolunteer     0.4893128             0.3695506
## OCLArea               1.0000000             0.4001312
## OCLRemedialDisibility 0.4001312             1.0000000
## OCLAccessTutorASupport 0.3786518            0.5163637
## OCLSocialGroup        0.3609208             0.2959526
## OCLPracticumIntern    0.2452354             0.1801978
## OCLCareerCounsel      0.3351537             0.2321051
## OCLMorals             0.4070937             0.2703290
##                       OCLAccessTutorASupport OCLSocialGroup
```

```
## OCLResponsible                      0.3085168      0.2478114
## OCLClubs                            0.3544809      0.5202723
## OCLAdditionalAA                     0.4620238      0.2827768
## OCLInternships                      0.3031584      0.2716730
## OCLRaceCulture                      0.2965961      0.3271003
## OCLServeVolunteer                   0.3382568      0.4342802
## OCLArea                             0.3786518      0.3609208
## OCLRemedialDisibility               0.5163637      0.2959526
## OCLAccessTutorASupport              1.0000000      0.4072514
## OCLSocialGroup                      0.4072514      1.0000000
## OCLPracticumIntern                  0.2344734      0.3710555
## OCLCareerCounsel                    0.4032584      0.3512782
## OCLMorals                           0.3086643      0.3324130
##                         OCLPracticumIntern OCLCareerCounsel OCLMorals
## OCLResponsible                   0.2404027        0.2856677 0.5920274
## OCLClubs                         0.2860324        0.3807612 0.3460693
## OCLAdditionalAA                  0.2197481        0.4875207 0.2384614
## OCLInternships                   0.3535670        0.4933927 0.2153905
## OCLRaceCulture                   0.2420606        0.2489953 0.3379917
## OCLServeVolunteer                0.2479514        0.2756226 0.3942308
## OCLArea                          0.2452354        0.3351537 0.4070937
## OCLRemedialDisibility            0.1801978        0.2321051 0.2703290
## OCLAccessTutorASupport           0.2344734        0.4032584 0.3086643
## OCLSocialGroup                   0.3710555        0.3512782 0.3324130
## OCLPracticumIntern               1.0000000        0.3603028 0.2973968
## OCLCareerCounsel                 0.3603028        1.0000000 0.2813174
## OCLMorals                        0.2973968        0.2813174 1.0000000
```

```
corMatrix4 <- cor(ccACaringFaculty)
corMatrix4
```

```
##                       CFContactAA CFMajorAA CFKnownByF CFKnownByInstructor
## CFContactAA             1.0000000 0.6887847  0.5562751           0.5290023
## CFMajorAA               0.6887847 1.0000000  0.4757648           0.4776408
## CFKnownByF              0.5562751 0.4757648  1.0000000           0.7001514
## CFKnownByInstructor     0.5290023 0.4776408  0.7001514           1.0000000
## CFFairTreatment         0.4188186 0.3798161  0.3768305           0.4305195
## CFAccessOutOfClass      0.4459305 0.4039751  0.5028893           0.5555383
## CFGiveFeedback          0.3709265 0.3861837  0.4420427           0.4491698
## CFAdditionalTutoring    0.4248406 0.4569750  0.3709809           0.4375200
## CFFOrTA                 0.3226517 0.3178045  0.3474614           0.3642180
##                       CFFairTreatment CFAccessOutOfClass CFGiveFeedback
## CFContactAA                 0.4188186          0.4459305      0.3709265
## CFMajorAA                   0.3798161          0.4039751      0.3861837
## CFKnownByF                  0.3768305          0.5028893      0.4420427
## CFKnownByInstructor         0.4305195          0.5555383      0.4491698
## CFFairTreatment             1.0000000          0.3563496      0.2556842
## CFAccessOutOfClass          0.3563496          1.0000000      0.5846051
## CFGiveFeedback              0.2556842          0.5846051      1.0000000
## CFAdditionalTutoring        0.3339864          0.4561430      0.5228387
## CFFOrTA                     0.3434754          0.3038540      0.2593590
##                       CFAdditionalTutoring   CFFOrTA
## CFContactAA                      0.4248406 0.3226517
## CFMajorAA                        0.4569750 0.3178045
```

```
## CFKnownByF                      0.3709809 0.3474614
## CFKnownByInstructor             0.4375200 0.3642180
## CFFairTreatment                 0.3339864 0.3434754
## CFAccessOutOfClass              0.4561430 0.3038540
## CFGiveFeedback                  0.5228387 0.2593590
## CFAdditionalTutoring            1.0000000 0.2794239
## CFFOrTA                         0.2794239 1.0000000
```

```
corMatrix5 <- cor(ccACaringUniversityCommunity)
corMatrix5
```

```
##                       CUCWProgram CUCLeadership CUCUnique CUCOrientation
## CUCWProgram             1.0000000     0.4391697 0.4918145      0.6110347
## CUCLeadership           0.4391697     1.0000000 0.5247524      0.4456813
## CUCUnique               0.4918145     0.5247524 1.0000000      0.5870693
## CUCOrientation          0.6110347     0.4456813 0.5870693      1.0000000
## CUCParentSupChallenge   0.4052717     0.4387619 0.4725622      0.5235068
## CUCHealth               0.2703685     0.2446022 0.3353954      0.3128908
## CUCComOthers            0.3628404     0.4355142 0.4887810      0.4085464
## CUCRAFriend             0.3346669     0.3203053 0.2866810      0.3369432
## CUCFaith                0.2294279     0.2821925 0.1967697      0.2135426
## CUCCounseling           0.3538536     0.2973515 0.3811544      0.3694015
##                       CUCParentSupChallenge CUCHealth CUCComOthers
## CUCWProgram                       0.4052717 0.2703685    0.3628404
## CUCLeadership                     0.4387619 0.2446022    0.4355142
## CUCUnique                         0.4725622 0.3353954    0.4887810
## CUCOrientation                    0.5235068 0.3128908    0.4085464
## CUCParentSupChallenge             1.0000000 0.3282552    0.4861917
## CUCHealth                         0.3282552 1.0000000    0.4231591
## CUCComOthers                      0.4861917 0.4231591    1.0000000
## CUCRAFriend                       0.3386845 0.3863688    0.3966771
## CUCFaith                          0.3174305 0.1982726    0.2768533
## CUCCounseling                     0.3882634 0.4109191    0.4081361
##                       CUCRAFriend  CUCFaith CUCCounseling
## CUCWProgram             0.3346669 0.2294279     0.3538536
## CUCLeadership           0.3203053 0.2821925     0.2973515
## CUCUnique               0.2866810 0.1967697     0.3811544
## CUCOrientation          0.3369432 0.2135426     0.3694015
## CUCParentSupChallenge   0.3386845 0.3174305     0.3882634
## CUCHealth               0.3863688 0.1982726     0.4109191
## CUCComOthers            0.3966771 0.2768533     0.4081361
## CUCRAFriend             1.0000000 0.3082209     0.3219784
## CUCFaith                0.3082209 1.0000000     0.3978702
## CUCCounseling           0.3219784 0.3978702     1.0000000
```

```
corMatrix6 <- cor(ccBeingInPartnershipWithParents)
corMatrix6
```

```
##                    BPPNotifyASuccess  BPPCheat BPP24CallRet BPPSecure
## BPPNotifyASuccess          1.0000000 0.5584393    0.5163780 0.1109246
## BPPCheat                   0.5584393 1.0000000    0.4814829 0.2391751
## BPP24CallRet               0.5163780 0.4814829    1.0000000 0.2306869
## BPPSecure                  0.1109246 0.2391751    0.2306869 1.0000000
```

```
## BPPMDProgress             0.6199452 0.4985851    0.4340564 0.2227514
## BPPDicipline              0.2575490 0.4193382    0.3453766 0.3131131
## BPPAATutorMentor          0.2660186 0.3782821    0.4009620 0.4840240
## BPPIllegalSub             0.4409960 0.5316439    0.4022811 0.3063420
## BPPOrientInvolve          0.4789137 0.3982465    0.4472545 0.2129435
## BPPCounseling             0.1655455 0.2197348    0.2643485 0.2601110
## BPPIllegalDrink           0.4371892 0.4461397    0.3821932 0.1797247
##                    BPPMDProgress BPPDicipline BPPAATutorMentor
## BPPNotifyASuccess     0.6199452    0.2575490        0.2660186
## BPPCheat              0.4985851    0.4193382        0.3782821
## BPP24CallRet          0.4340564    0.3453766        0.4009620
## BPPSecure             0.2227514    0.3131131        0.4840240
## BPPMDProgress         1.0000000    0.3732620        0.3387221
## BPPDicipline          0.3732620    1.0000000        0.4138278
## BPPAATutorMentor      0.3387221    0.4138278        1.0000000
## BPPIllegalSub         0.4365080    0.4180262        0.3985751
## BPPOrientInvolve      0.5341243    0.3332807        0.3504999
## BPPCounseling         0.2473498    0.3250759        0.4266979
## BPPIllegalDrink       0.4121831    0.3430925        0.2568280
##                    BPPIllegalSub BPPOrientInvolve BPPCounseling
## BPPNotifyASuccess     0.4409960        0.4789137     0.1655455
## BPPCheat              0.5316439        0.3982465     0.2197348
## BPP24CallRet          0.4022811        0.4472545     0.2643485
## BPPSecure             0.3063420        0.2129435     0.2601110
## BPPMDProgress         0.4365080        0.5341243     0.2473498
## BPPDicipline          0.4180262        0.3332807     0.3250759
## BPPAATutorMentor      0.3985751        0.3504999     0.4266979
## BPPIllegalSub         1.0000000        0.4807473     0.2670878
## BPPOrientInvolve      0.4807473        1.0000000     0.3770501
## BPPCounseling         0.2670878        0.3770501     1.0000000
## BPPIllegalDrink       0.6848156        0.4876945     0.2799356
##                    BPPIllegalDrink
## BPPNotifyASuccess        0.4371892
## BPPCheat                 0.4461397
## BPP24CallRet             0.3821932
## BPPSecure                0.1797247
## BPPMDProgress            0.4121831
## BPPDicipline             0.3430925
## BPPAATutorMentor         0.2568280
## BPPIllegalSub            0.6848156
## BPPOrientInvolve         0.4876945
## BPPCounseling            0.2799356
## BPPIllegalDrink          1.0000000
```

The corrplot package and corrplot() function can visualize these nicely.

This chunk of code looks for any variables that are highly correlated with others.

```
# Find Highly Correlated
findCorrelation(corMatrix1, cutoff = 0.75)
```

```
## [1]  3 13
```

```
findCorrelation(corMatrix2, cutoff = 0.75)
```

```
## integer(0)
```

```
findCorrelation(corMatrix3, cutoff = 0.75)
```

```
## integer(0)
```

```
findCorrelation(corMatrix4, cutoff = 0.75)
```

```
## integer(0)
```

```
findCorrelation(corMatrix5, cutoff = 0.75)
```

```
## integer(0)
```

```
findCorrelation(corMatrix6, cutoff = 0.75)
```

```
## integer(0)
```

Principle Component Analysis

```
pc1 <- princomp(ccTechResourcesInSupportOfLearning, cor = TRUE, scores = TRUE)
pc2 <- princomp(ccActiveAndTeamLearning, cor = TRUE, scores = TRUE)
pc3 <- princomp(ccClassLearningOpportunities, cor = TRUE, scores = TRUE)
pc4 <- princomp(ccACaringFaculty, cor = TRUE, scores = TRUE)
pc5 <- princomp(ccACaringUniversityCommunity, cor = TRUE, scores = TRUE)
pc6 <- princomp(ccActiveAndTeamLearning, cor = TRUE, scores = TRUE)
```

It is first worth doing a principle component analysis to ensure that all of the items capture the essence of the survey. As shown in table xxx, none of the variables are highly correlated with eachother (aside 3, 13 of TechResources at r = 0.754 which I will have to decide on). This is somewhat to be expected since Young already completed a PCA in his research and the items in this PECTAC survery were the variables remaining after his dimension reduction. It was possible that new data analyzed or changing perceptions over time could introduce some new features to be eliminated, but that was not found to be the case.

```
# Compute Cronbach's alpha for Tech Resources in Support of Learning
cronbach(TechResourcesInSupportOfLearning)$alpha
```

```
## [1] 0.8537683
```

```
# Compute Cronbach's alpha for Active and Team Learning
cronbach(ActiveAndTeamLearning)$alpha
```

```
## [1] 0.7806494
```

```
# Compute Cronbach's alpha for Class Learning Opportunities
cronbach(ClassLearningOpportunities)$alpha
```

```
## [1] 0.8585345
```

```
# Compute Cronbach's alpha for A Caring Faculty
cronbach(ACaringFaculty)$alpha
```

```
## [1] 0.8682269
```

```
# Compute Cronbach's alpha for A Caring University Community
cronbach(ACaringUniversityCommunity)$alpha
```

```
## [1] 0.8455916
```

```
# Compute Cronbach's alpha for Being in Partnership with Parents
cronbach(BeingInParternshipWithParents)$alpha
```

```
## [1] 0.8687662
```

```
# Additional functions to look at
#prcomp()
#varimax()
```

Each of the six scales has shown by its cronbach's alpha to be independently sufficiently reliable, as each of them is between 0.70 and 1.00. In the PECTAC Teaching section, the 15-item Tech Resources in Support of Learning had alpha = 0.85 for n = 635, the 10-item Active and Team Learning had alpha = 0.78 for n = 677, and the 13-item Class Learning Opportunities had alpha = 0.86 for n = 659.

In the PECTAC Caring section, the 9-item A Caring Faculty had an alpha = 0.87 for n = 674, the 10-item A Caring University Community had an alpha = 0.85 for n = 653, the 11-item Being in Partnership with Parents had an alpha = 0.87 for n = 656.

Several respondents omitted certain questions. The data analyzed for each individual scale were only the respondents that had complete results within that scale, which explains why the sample sizes vary for each scale.

Main questions – Is there a relationship between how parents are paying and their expectations?

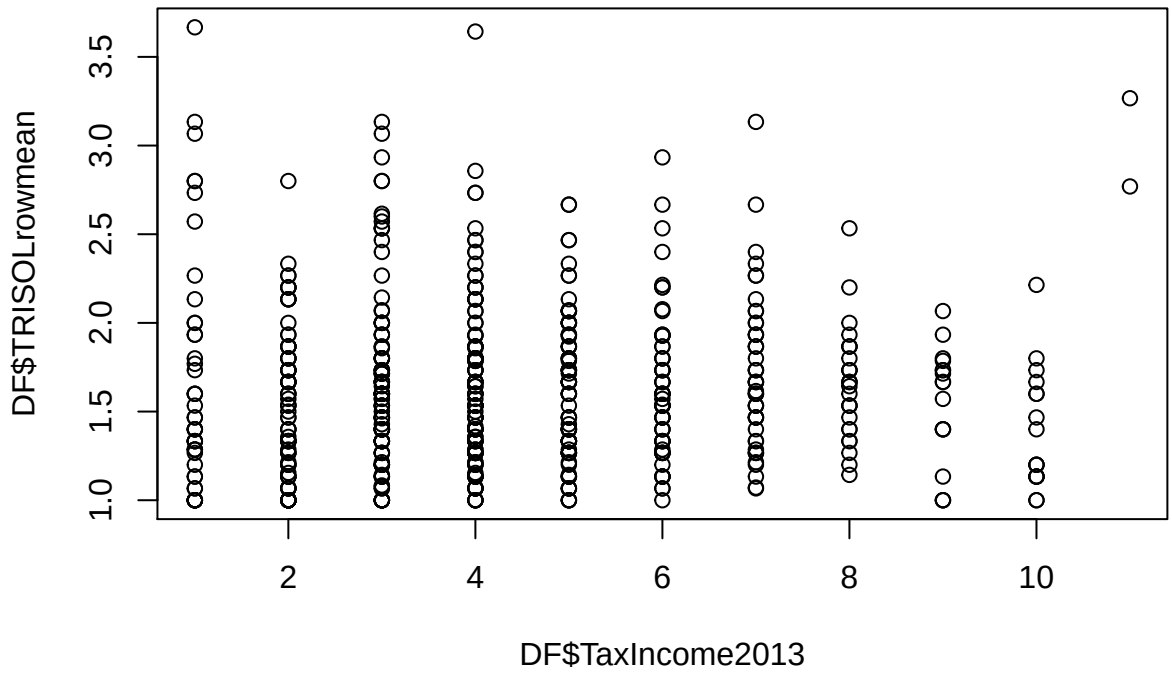
```
# Clean up data for financial questions
TaxIncome2013 <- alldata[,167]
FinAssets <- rowSums(alldata[,153:157], na.rm = TRUE)
PBorrowing <- rowSums(alldata[,158:163], na.rm = TRUE)
```

```r
# Get row means for each scale
# Essentially is the mean score for each parent of the questions across each entire scale.
# e.g. parent #1 had a mean score of 1.00, parent #2 had a mean score of 1.07, etc.
TRISOLrowmean <- rowMeans(TechResourcesInSupportOfLearning, na.rm = TRUE)
AATLrowmean <- rowMeans(ActiveAndTeamLearning, na.rm = TRUE)
ACFrowmean <- rowMeans(ACaringFaculty, na.rm = TRUE)
ACUCrowmean <- rowMeans(ACaringUniversityCommunity, na.rm = TRUE)
BIPWProwmean <- rowMeans(BeingInParternshipWithParents, na.rm = TRUE)
CLOrowmean <- rowMeans(ClassLearningOpportunities, na.rm = TRUE)
```

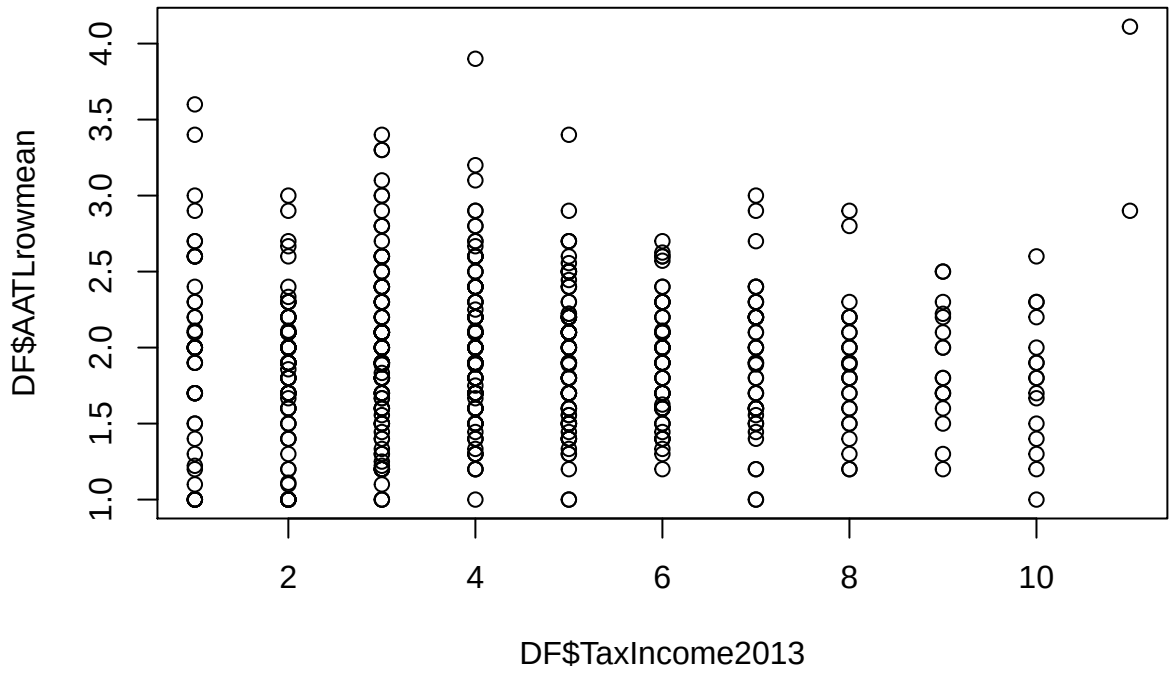
Question 1 – Is there a relationship between parent's TaxIncome2013 with their PECTAC expectations?

```r
# Matrix that contains each parent's Tax Income with their (mean) score for each scale
DF <- as.data.frame(cbind(TaxIncome2013, TRISOLrowmean, AATLrowmean, ACFrowmean, ACUCrowmean, BIPWProwme
```

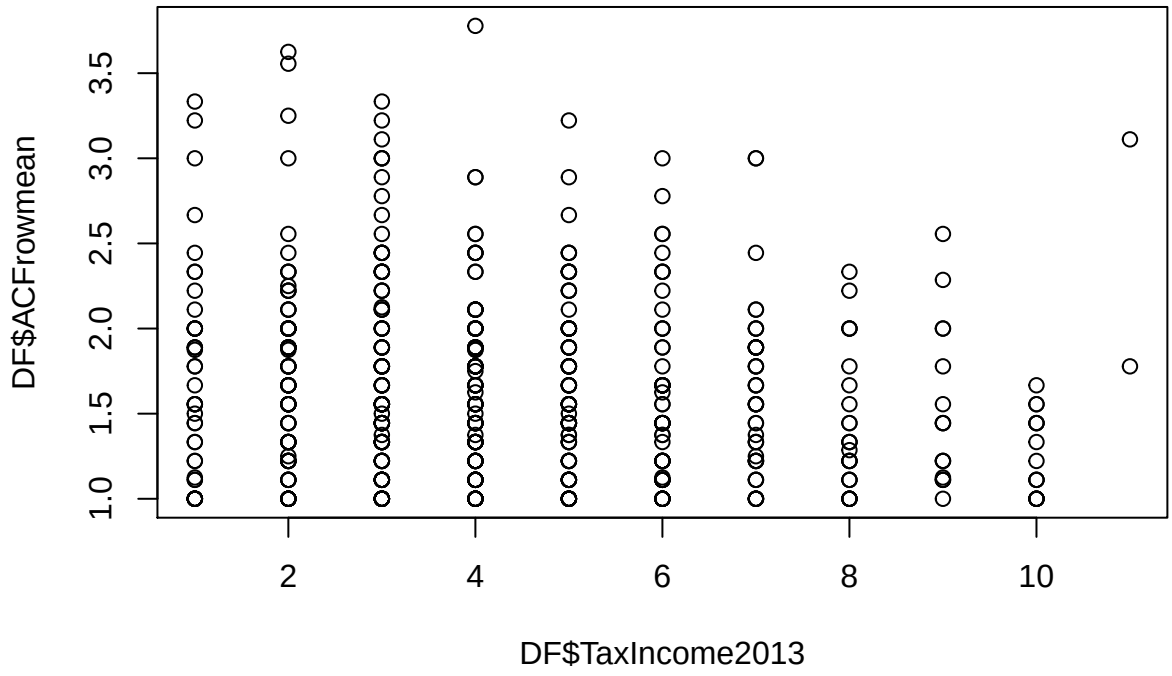
```r
plot(DF$TaxIncome2013, DF$TRISOLrowmean)
```



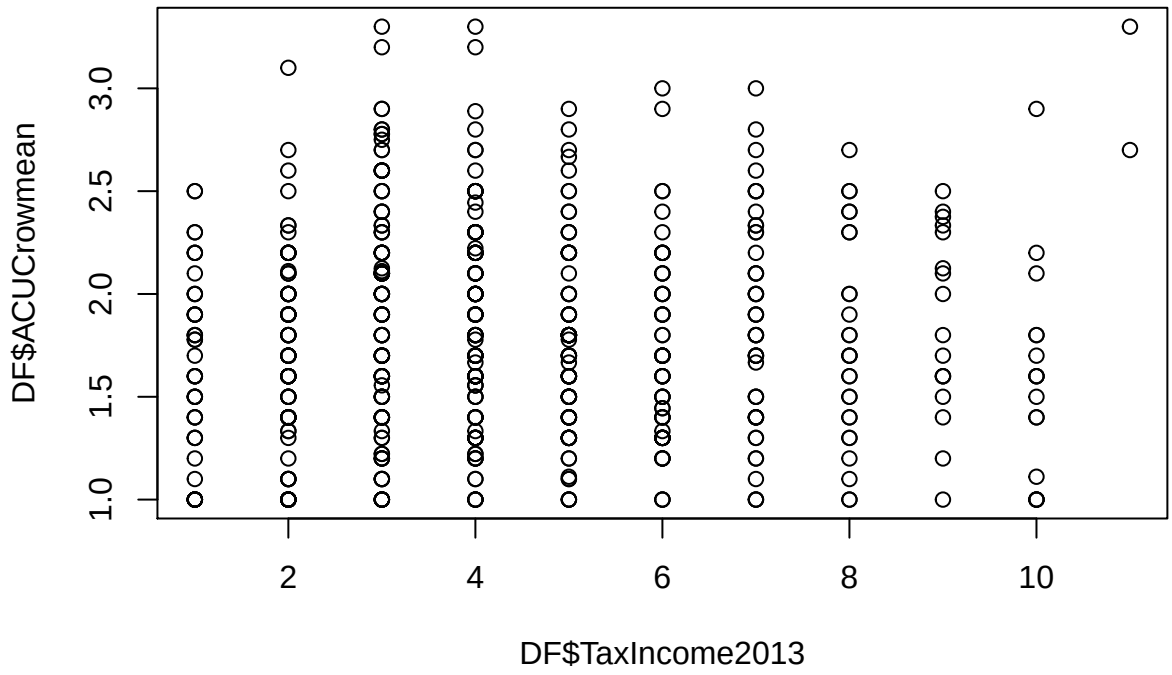

```r
plot(DF$TaxIncome2013, DF$AATLrowmean)
```



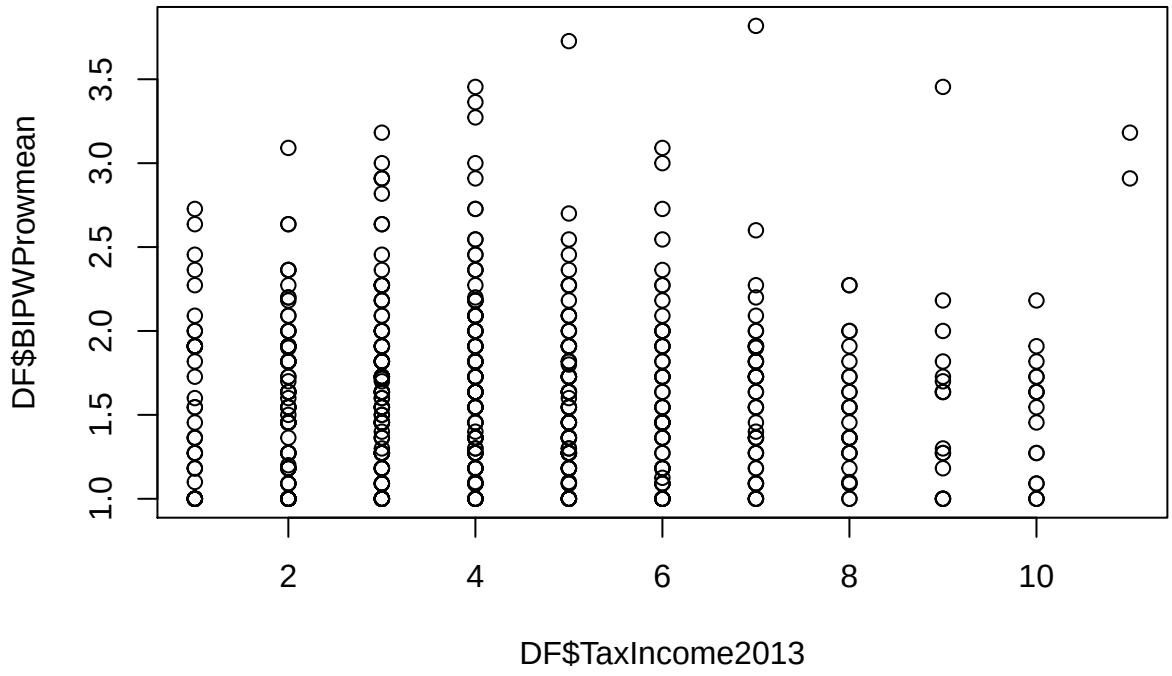

```
plot(DF$TaxIncome2013, DF$ACFrowmean)
```



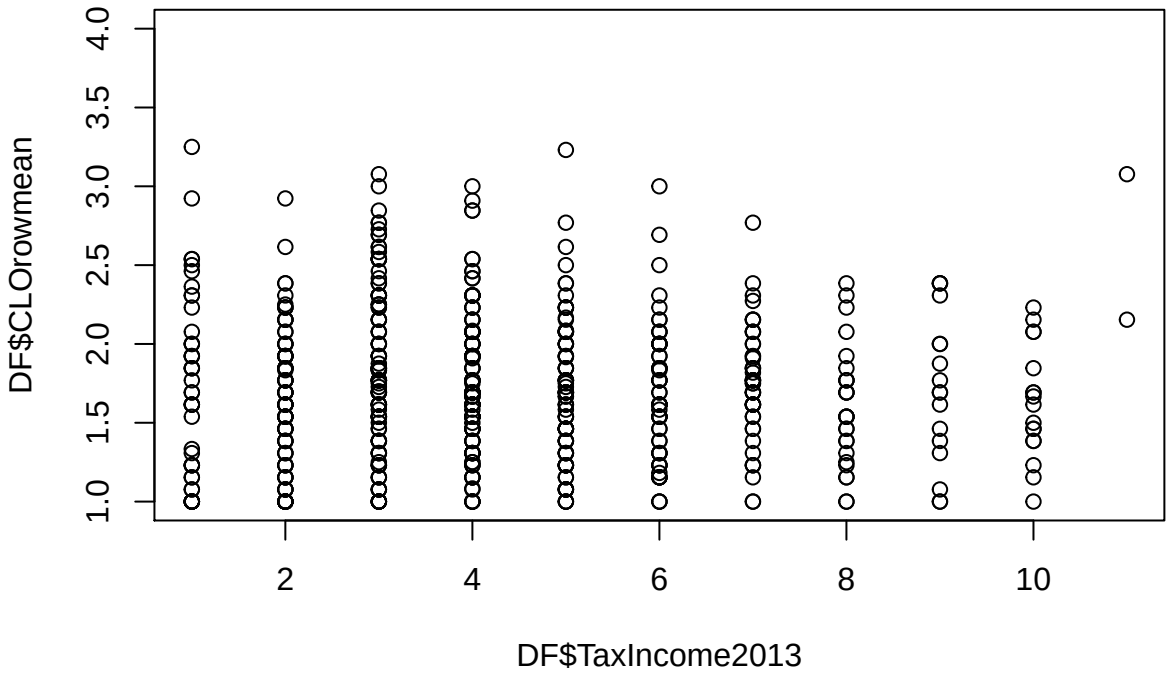

```
plot(DF$TaxIncome2013, DF$ACUCrowmean)
```




```
plot(DF$TaxIncome2013, DF$BIPWProwmean)
```




```
plot(DF$TaxIncome2013, DF$CLOrowmean)
```




```
# Lin reg for Scale Expectancy ~ Tax Income
lm1 <- lm(TRISOLrowmean ~ TaxIncome2013, data = DF)
summary(lm1)
```

```
##
## Call:
## lm(formula = TRISOLrowmean ~ TaxIncome2013, data = DF)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.65228 -0.33732 -0.05552  0.23407  2.07883
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)   1.580677   0.039464  40.054   <2e-16 ***
## TaxIncome2013 0.007161   0.008074   0.887    0.375
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4552 on 652 degrees of freedom
##   (167 observations deleted due to missingness)
## Multiple R-squared:  0.001205,   Adjusted R-squared:  -0.0003269
## F-statistic: 0.7866 on 1 and 652 DF,  p-value: 0.3755
```

```
lm2 <- lm(AATLrowmean ~ TaxIncome2013, data = DF)
summary(lm2)
```

```
##
## Call:
## lm(formula = AATLrowmean ~ TaxIncome2013, data = DF)
##
```

```
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.94122 -0.33937 -0.03906  0.26002  2.17298
##
## Coefficients:
##                 Estimate Std. Error t value Pr(>|t|)
## (Intercept)    1.9415257  0.0416437  46.622   <2e-16 ***
## TaxIncome2013 -0.0003083  0.0085406  -0.036    0.971
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4791 on 651 degrees of freedom
##   (168 observations deleted due to missingness)
## Multiple R-squared:  2.002e-06,  Adjusted R-squared:  -0.001534
## F-statistic: 0.001303 on 1 and 651 DF,  p-value: 0.9712
```

```
lm3 <- lm(ACFrowmean ~ TaxIncome2013, data = DF)
summary(lm3)
```

```
##
## Call:
## lm(formula = ACFrowmean ~ TaxIncome2013, data = DF)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.70389 -0.42135 -0.08801  0.30565  2.16437
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)    1.73406    0.04512  38.434  < 2e-16 ***
## TaxIncome2013 -0.03016    0.00923  -3.268  0.00114 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.52 on 650 degrees of freedom
##   (169 observations deleted due to missingness)
## Multiple R-squared:  0.01617,    Adjusted R-squared:  0.01465
## F-statistic: 10.68 on 1 and 650 DF,  p-value: 0.00114
```

```
lm4 <- lm(ACUCrowmean ~ TaxIncome2013, data = DF)
summary(lm4)
```

```
##
## Call:
## lm(formula = ACUCrowmean ~ TaxIncome2013, data = DF)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.82658 -0.37149 -0.05313  0.33769  1.53769
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)   1.734768   0.042518  40.801   <2e-16 ***
```

```
## TaxIncome2013 0.009181   0.008696   1.056    0.291
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4899 on 649 degrees of freedom
##   (170 observations deleted due to missingness)
## Multiple R-squared:  0.001715,   Adjusted R-squared:  0.0001766
## F-statistic: 1.115 on 1 and 649 DF,  p-value: 0.2914
```

```
lm5 <- lm(BIPWProwmean ~ TaxIncome2013, data = DF)
summary(lm5)
```

```
##
## Call:
## lm(formula = BIPWProwmean ~ TaxIncome2013, data = DF)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.62271 -0.41710 -0.05757  0.30279  2.20532
##
## Coefficients:
##               Estimate Std. Error t value Pr(>|t|)
## (Intercept)   1.589900   0.043458  36.585   <2e-16 ***
## TaxIncome2013 0.003281   0.008886   0.369    0.712
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.5006 on 648 degrees of freedom
##   (171 observations deleted due to missingness)
## Multiple R-squared:  0.0002103,  Adjusted R-squared:  -0.001333
## F-statistic: 0.1363 on 1 and 648 DF,  p-value: 0.7121
```

```
lm6 <- lm(CLOrowmean ~ TaxIncome2013, data = DF)
summary(lm6)
```

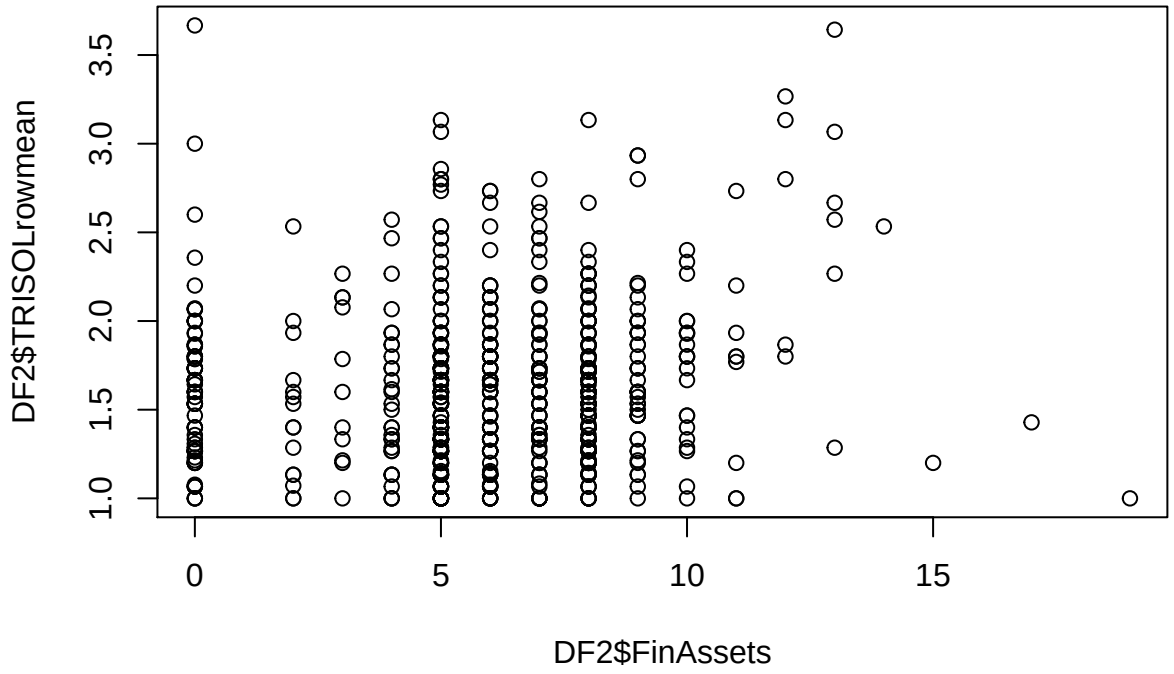
```
##
## Call:
## lm(formula = CLOrowmean ~ TaxIncome2013, data = DF)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.72603 -0.33813 -0.02935  0.28126  1.52397
##
## Coefficients:
##                Estimate Std. Error t value Pr(>|t|)
## (Intercept)    1.727492   0.039907  43.288   <2e-16 ***
## TaxIncome2013 -0.001459   0.008165  -0.179    0.858
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4603 on 652 degrees of freedom
##   (167 observations deleted due to missingness)
## Multiple R-squared:  4.898e-05,  Adjusted R-squared:  -0.001485
## F-statistic: 0.03194 on 1 and 652 DF,  p-value: 0.8582
```

Answer: There is no relationship between parent's TaxIncome2013 and their PECTAC expectations.

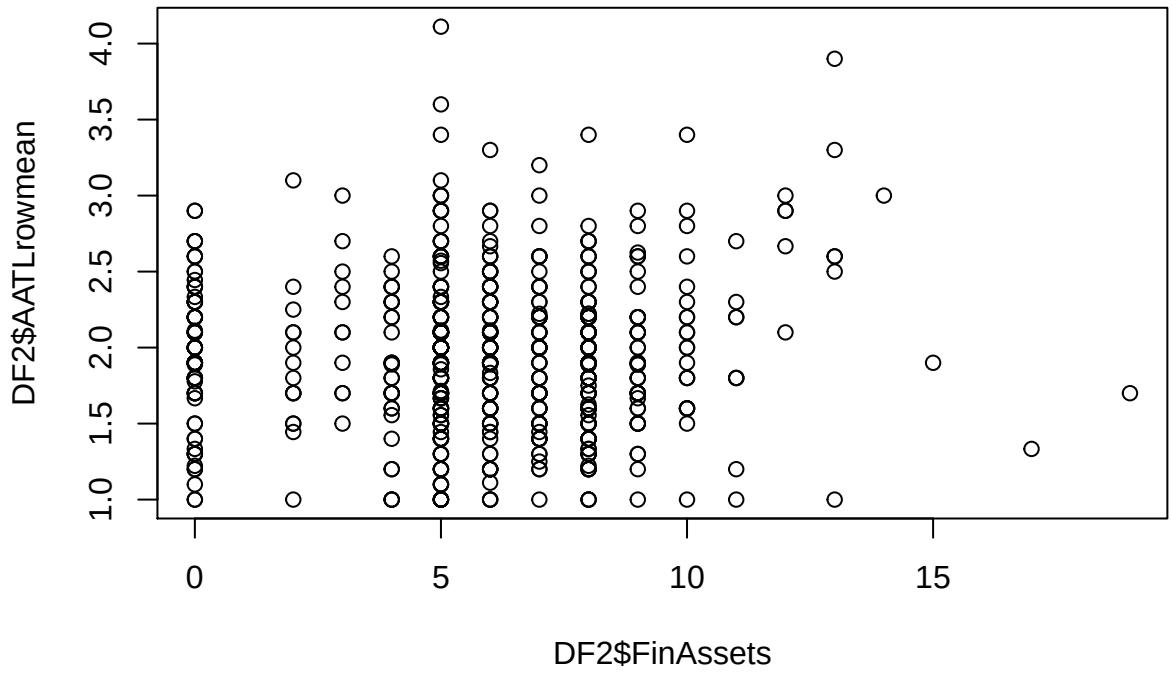
Question 2 – Is there a relationship between parent's use of Family Assets to pay for college with their PECTAC expectations?

```
# Matrix that contains each parent's use of Financial Assets to Pay for College with their (mean) score
DF2 <- as.data.frame(cbind(FinAssets, TRISOLrowmean, AATLrowmean, ACFrowmean, ACUCrowmean, BIPWProwmean
```

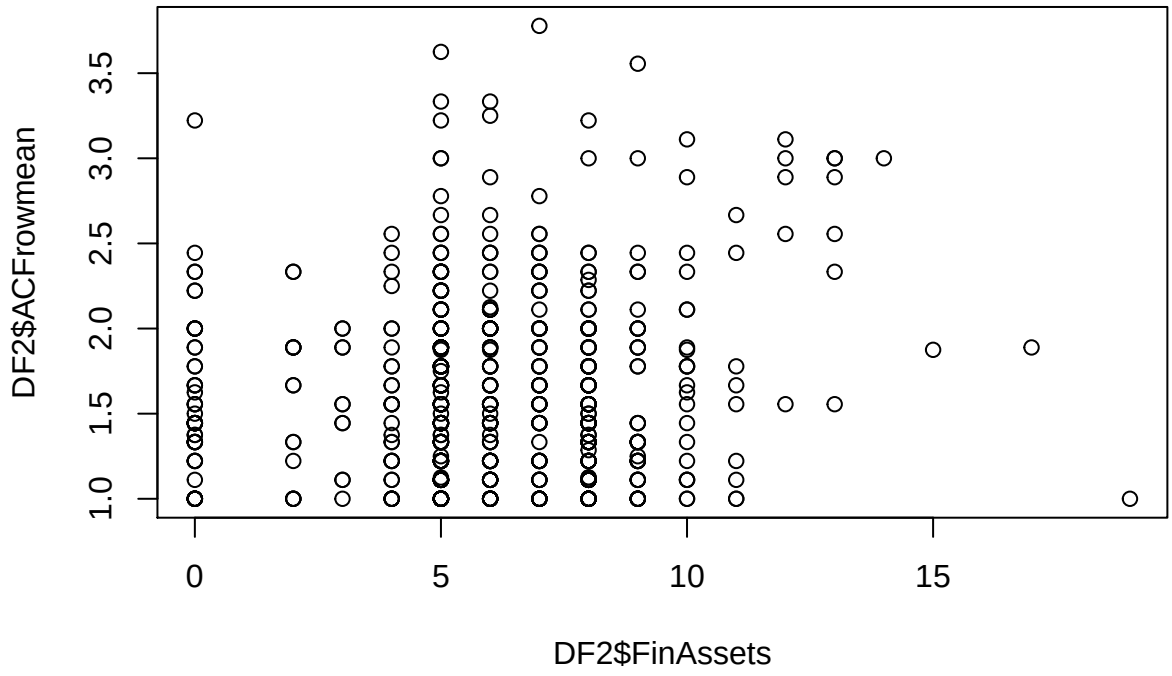
```
plot(DF2$FinAssets, DF2$TRISOLrowmean)
```



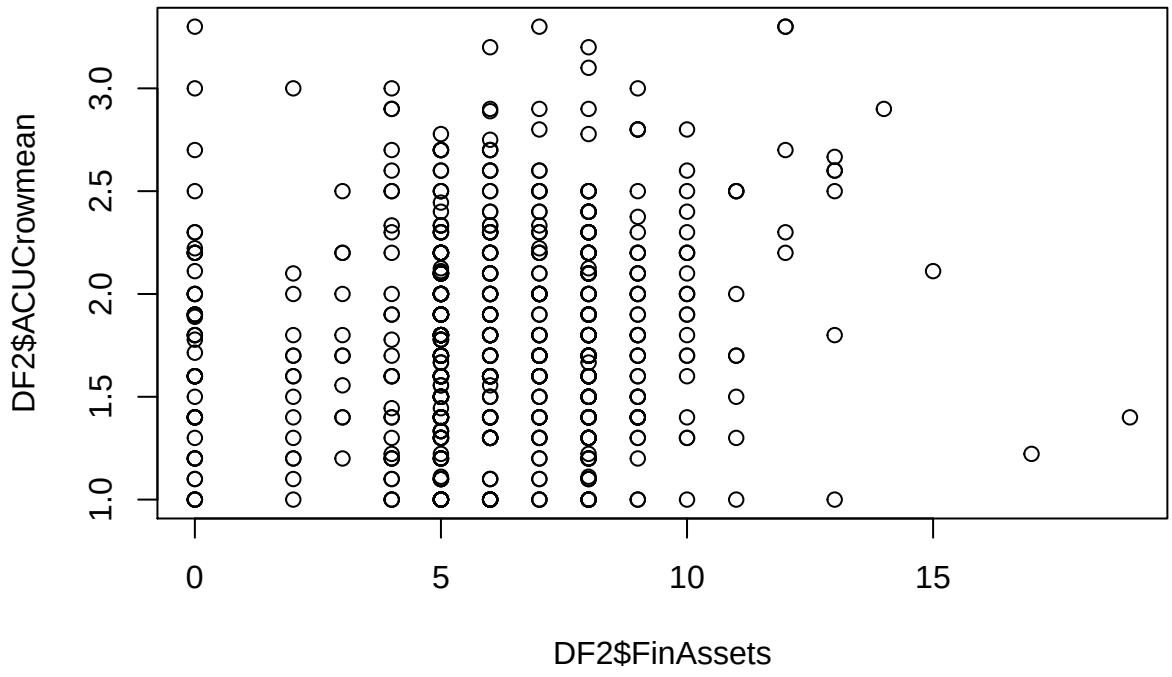

```
plot(DF2$FinAssets, DF2$AATLrowmean)
```



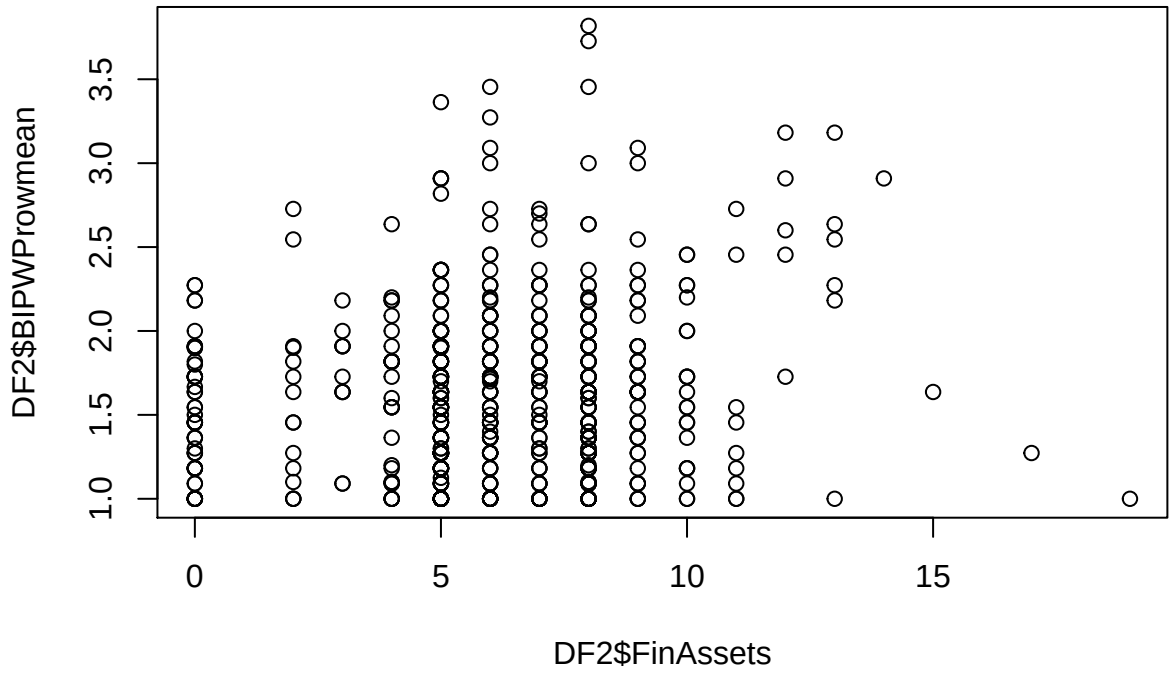

```
plot(DF2$FinAssets, DF2$ACFrowmean)
```



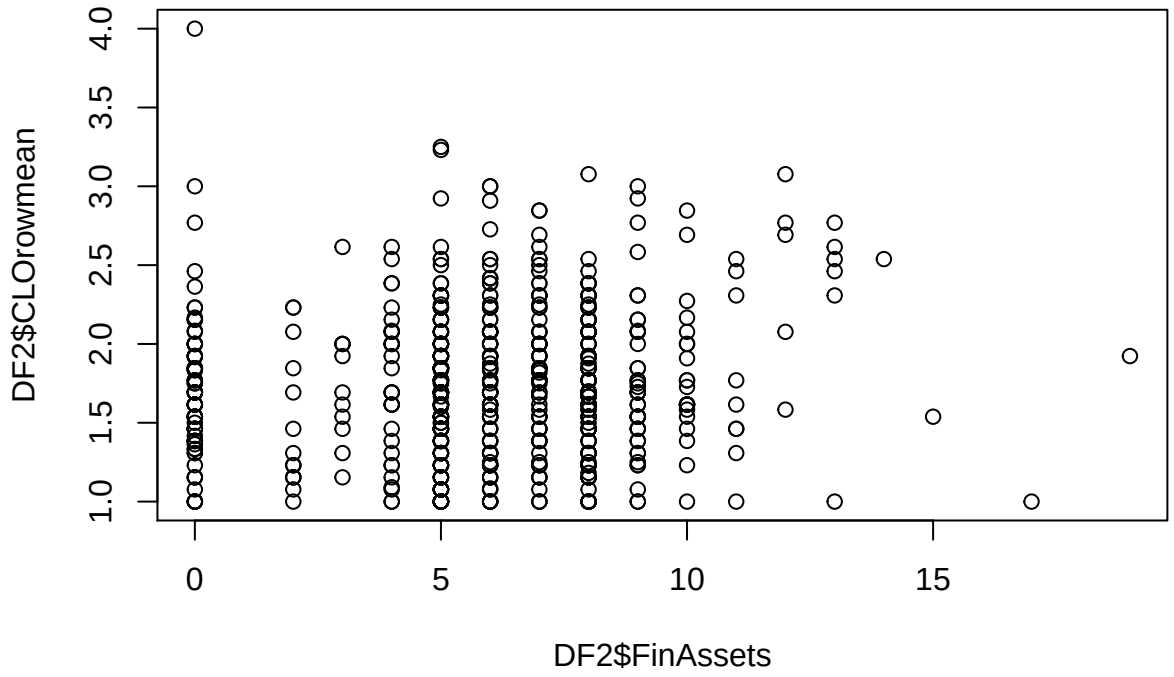

```
plot(DF2$FinAssets, DF2$ACUCrowmean)
```




```
plot(DF2$FinAssets, DF2$BIPWProwmean)
```




```
plot(DF2$FinAssets, DF2$CLOrowmean)
```




```
# Lin reg for Scale Expectancy ~ Tax Income
lm1 <- lm(TRISOLrowmean ~ FinAssets, data = DF2)
summary(lm1)
```

```
##
## Call:
## lm(formula = TRISOLrowmean ~ FinAssets, data = DF2)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.82514 -0.32868 -0.04459  0.22292  2.15339
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 1.513278   0.036695  41.239  < 2e-16 ***
## FinAssets   0.016414   0.005667   2.897  0.00388 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.444 on 744 degrees of freedom
##   (75 observations deleted due to missingness)
## Multiple R-squared:  0.01115,    Adjusted R-squared:  0.009822
## F-statistic:  8.39 on 1 and 744 DF,  p-value: 0.003883
```

```
lm2 <- lm(AATLrowmean ~ FinAssets, data = DF2)
summary(lm2)
```

```
##
## Call:
## lm(formula = AATLrowmean ~ FinAssets, data = DF2)
##
```

```
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.96934 -0.34084 -0.02303  0.25916  2.17027
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 1.923027   0.039455  48.740   <2e-16 ***
## FinAssets   0.003562   0.006091   0.585    0.559
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4757 on 742 degrees of freedom
##   (77 observations deleted due to missingness)
## Multiple R-squared:  0.0004608,  Adjusted R-squared:  -0.0008863
## F-statistic: 0.3421 on 1 and 742 DF,  p-value: 0.5588
```

```
lm3 <- lm(ACFrowmean ~ FinAssets, data = DF2)
summary(lm3)
```

```
##
## Call:
## lm(formula = ACFrowmean ~ FinAssets, data = DF2)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.84630 -0.43827 -0.08354  0.32111  2.17021
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 1.468303   0.047232   31.09  < 2e-16 ***
## FinAssets   0.019895   0.007155    2.78  0.00557 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.5139 on 714 degrees of freedom
##   (105 observations deleted due to missingness)
## Multiple R-squared:  0.01071,    Adjusted R-squared:  0.009326
## F-statistic: 7.731 on 1 and 714 DF,  p-value: 0.005573
```

```
lm4 <- lm(ACUCrowmean ~ FinAssets, data = DF2)
summary(lm4)
```

```
##
## Call:
## lm(formula = ACUCrowmean ~ FinAssets, data = DF2)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.92542 -0.35428 -0.04731  0.33876  1.65269
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 1.647312   0.045403  36.282  < 2e-16 ***
```

```
## FinAssets   0.021393   0.006867   3.115  0.00191 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4896 on 711 degrees of freedom
##   (108 observations deleted due to missingness)
## Multiple R-squared:  0.01347,    Adjusted R-squared:  0.01208
## F-statistic: 9.706 on 1 and 711 DF,  p-value: 0.00191
```

```
lm5 <- lm(BIPWProwmean ~ FinAssets, data = DF2)
summary(lm5)
```

```
##
## Call:
## lm(formula = BIPWProwmean ~ FinAssets, data = DF2)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.90165 -0.38409 -0.03785  0.28127  2.18033
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 1.446002   0.045315  31.910  < 2e-16 ***
## FinAssets   0.023981   0.006862   3.495 0.000504 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4906 on 711 degrees of freedom
##   (108 observations deleted due to missingness)
## Multiple R-squared:  0.01689,    Adjusted R-squared:  0.0155
## F-statistic: 12.21 on 1 and 711 DF,  p-value: 0.000504
```

```
lm6 <- lm(CLOrowmean ~ FinAssets, data = DF2)
summary(lm6)
```

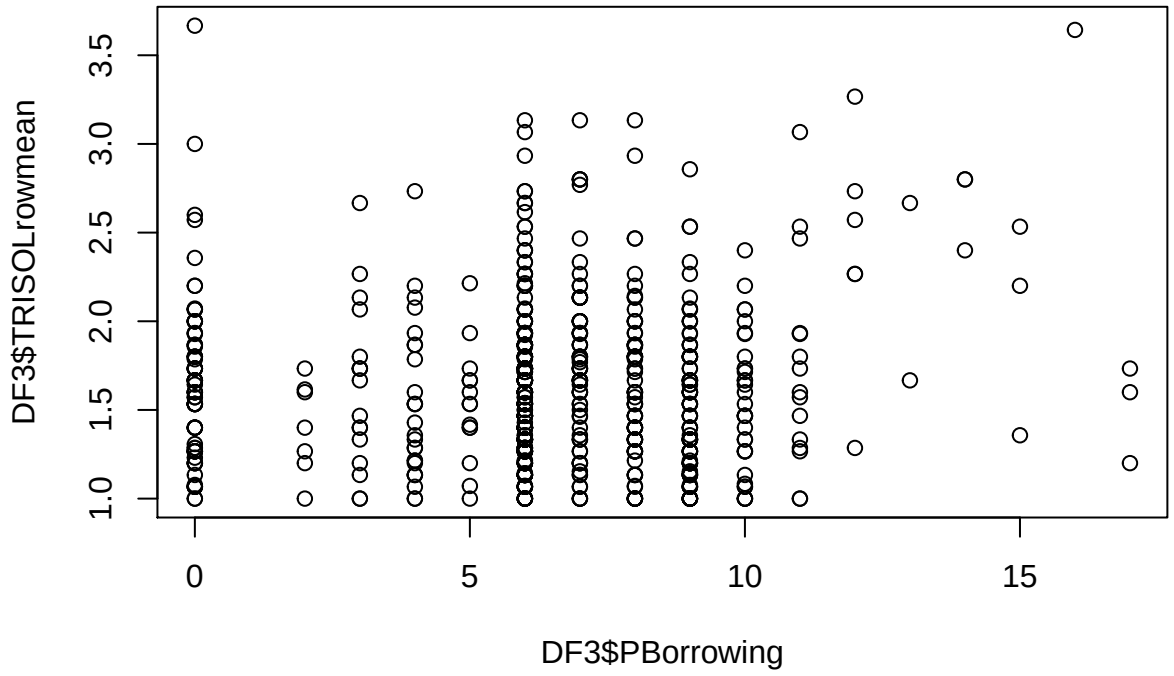
```
##
## Call:
## lm(formula = CLOrowmean ~ FinAssets, data = DF2)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.88275 -0.32321 -0.01718  0.29385  2.36743
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)  1.63257    0.03828  42.645   <2e-16 ***
## FinAssets    0.01472    0.00590   2.494   0.0128 *
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4584 on 741 degrees of freedom
##   (78 observations deleted due to missingness)
## Multiple R-squared:  0.008327,   Adjusted R-squared:  0.006988
## F-statistic: 6.222 on 1 and 741 DF,  p-value: 0.01284
```

Answer: There is no relationship between parent's use of family assets to pay for college and their PECTAC expectations.

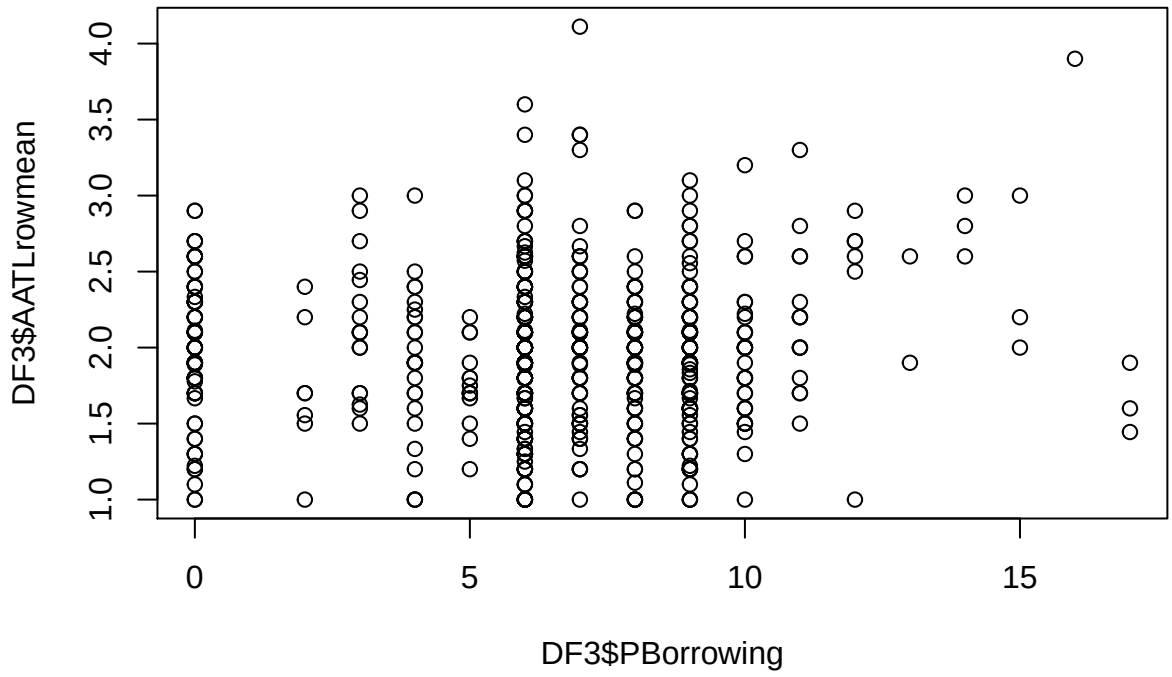
Question 3 – Is there a relationship between parent's use of borrowing to pay for college with their PECTAC expectations?

```
# Matrix that contains each parent's use of Financial Assets to Pay for College with their (mean) score
DF3 <- as.data.frame(cbind(PBorrowing, TRISOLrowmean, AATLrowmean, ACFrowmean, ACUCrowmean, BIPWProwmean
```

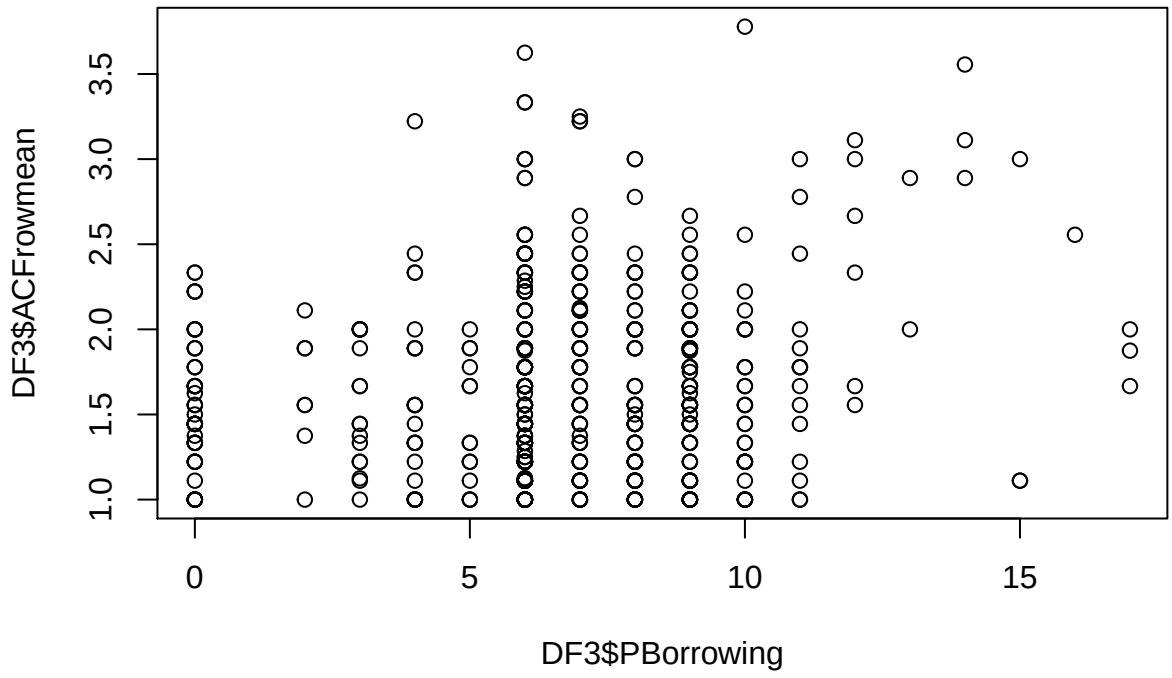
```
plot(DF3$PBorrowing, DF3$TRISOLrowmean)
```



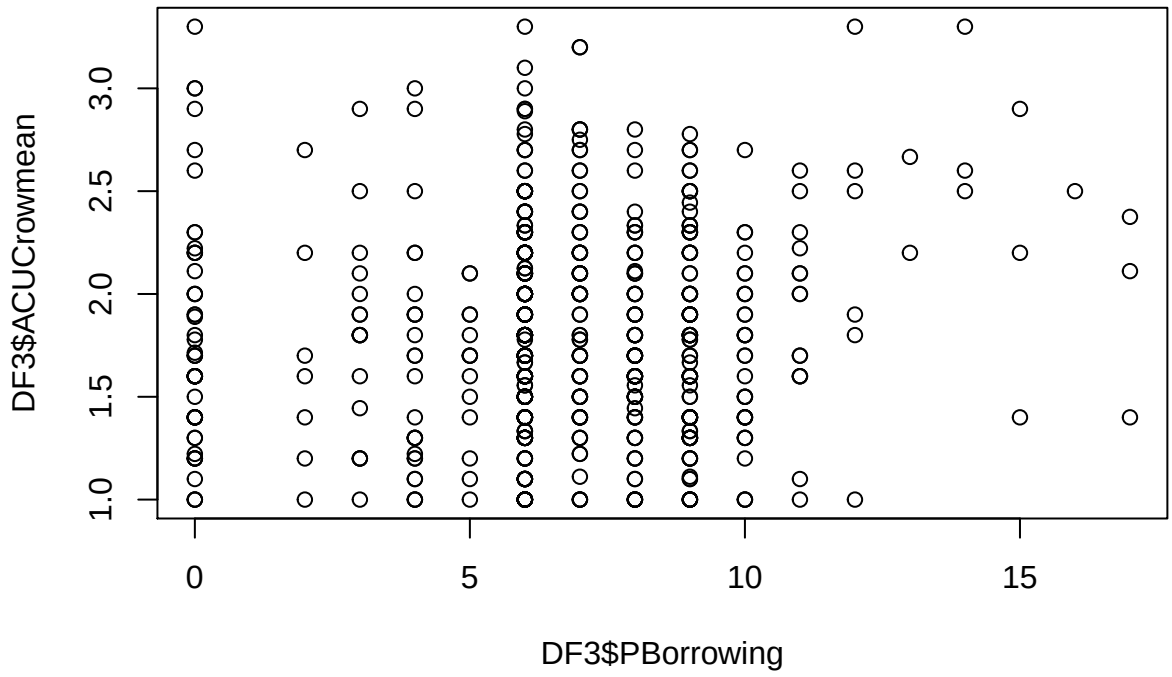

```
plot(DF3$PBorrowing, DF3$AATLrowmean)
```



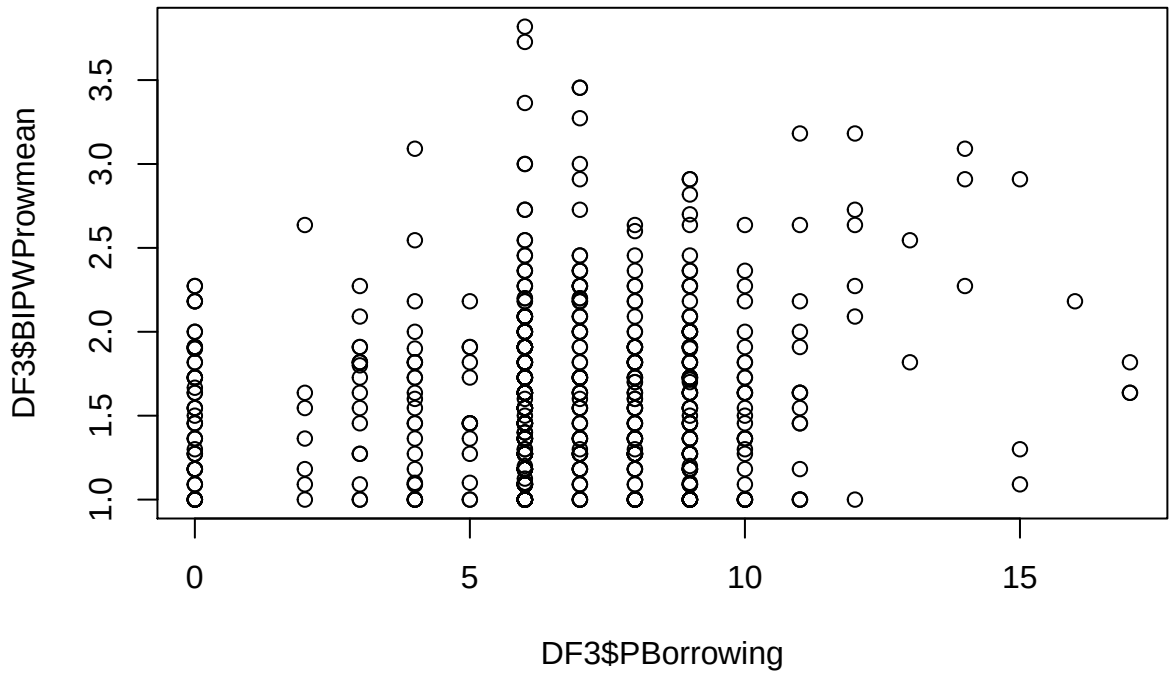

```
plot(DF3$PBorrowing, DF3$ACFrowmean)
```



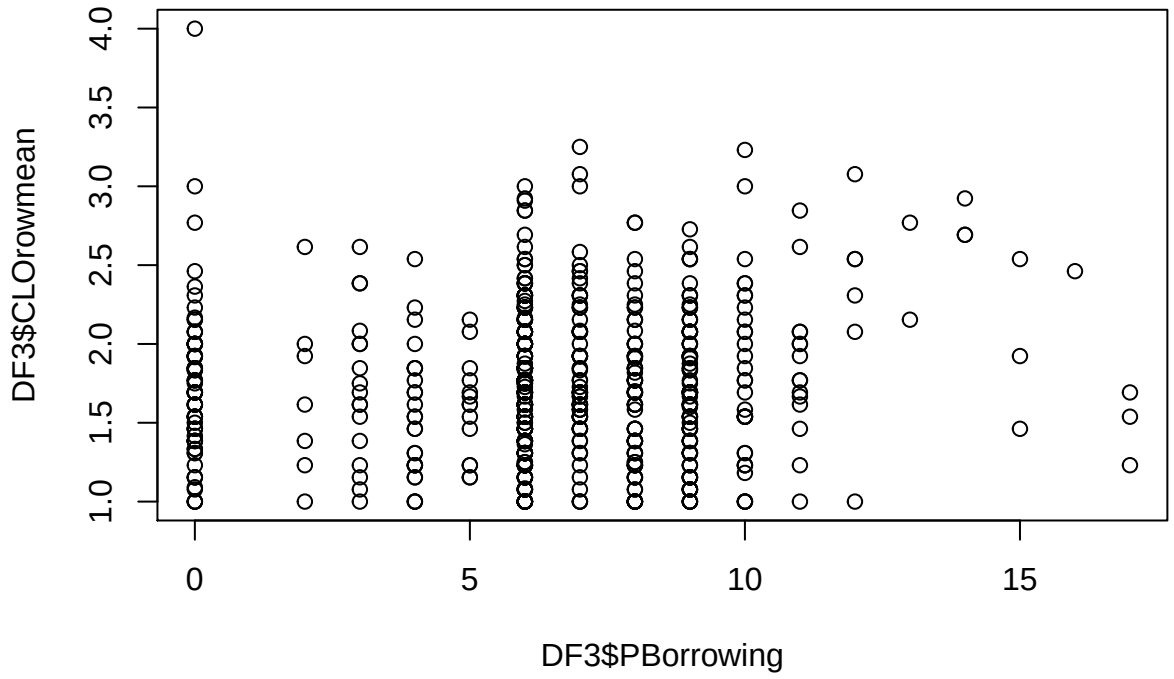

```
plot(DF3$PBorrowing, DF3$ACUCrowmean)
```




```
plot(DF3$PBorrowing, DF3$BIPWProwmean)
```




```
plot(DF3$PBorrowing, DF3$CLOrowmean)
```




```
# Lin reg for Scale Expectancy ~ Tax Income
lm1 <- lm(TRISOLrowmean ~ PBorrowing, data = DF3)
summary(lm1)
```

```
##
## Call:
## lm(formula = TRISOLrowmean ~ PBorrowing, data = DF3)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.63507 -0.33971 -0.03862  0.24307  2.09472
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 1.571949   0.038341  40.999   <2e-16 ***
## PBorrowing  0.005738   0.005435   1.056    0.291
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4461 on 744 degrees of freedom
##   (75 observations deleted due to missingness)
## Multiple R-squared:  0.001496,   Adjusted R-squared:  0.0001539
## F-statistic: 1.115 on 1 and 744 DF,  p-value: 0.2914
```

```
lm2 <- lm(AATLrowmean ~ PBorrowing, data = DF3)
summary(lm2)
```

```
##
## Call:
## lm(formula = AATLrowmean ~ PBorrowing, data = DF3)
##
```

```
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.96940 -0.34194 -0.01448  0.25806  2.16459
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 1.914478   0.041028  46.663   <2e-16 ***
## PBorrowing  0.004577   0.005812   0.788    0.431
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4756 on 742 degrees of freedom
##   (77 observations deleted due to missingness)
## Multiple R-squared:  0.0008352,  Adjusted R-squared:  -0.0005114
## F-statistic: 0.6202 on 1 and 742 DF,  p-value: 0.4312
```

```
lm3 <- lm(ACFrowmean ~ PBorrowing, data = DF3)
summary(lm3)
```

```
##
## Call:
## lm(formula = ACFrowmean ~ PBorrowing, data = DF3)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.69896 -0.42215 -0.09283  0.31636  2.10410
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 1.420817   0.049410  28.756  < 2e-16 ***
## PBorrowing  0.025286   0.006879   3.676 0.000255 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.5118 on 714 degrees of freedom
##   (105 observations deleted due to missingness)
## Multiple R-squared:  0.01857,    Adjusted R-squared:  0.0172
## F-statistic: 13.51 on 1 and 714 DF,  p-value: 0.0002547
```

```
lm4 <- lm(ACUCrowmean ~ PBorrowing, data = DF3)
summary(lm4)
```

```
##
## Call:
## lm(formula = ACUCrowmean ~ PBorrowing, data = DF3)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.83876 -0.36934 -0.05777  0.33066  1.60008
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 1.699915   0.047937  35.461   <2e-16 ***
```

```
## PBorrowing  0.011570   0.006667   1.735   0.0831 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4919 on 711 degrees of freedom
##   (108 observations deleted due to missingness)
## Multiple R-squared:  0.004218,   Adjusted R-squared:  0.002817
## F-statistic: 3.012 on 1 and 711 DF,  p-value: 0.08311
```

```
lm5 <- lm(BIPWProwmean ~ PBorrowing, data = DF3)
summary(lm5)
```

```
##
## Call:
## lm(formula = BIPWProwmean ~ PBorrowing, data = DF3)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.69984 -0.39628 -0.05294  0.29041  2.24008
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 1.456366   0.047702  30.531  < 2e-16 ***
## PBorrowing  0.020289   0.006643   3.054  0.00234 **
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4916 on 711 degrees of freedom
##   (108 observations deleted due to missingness)
## Multiple R-squared:  0.01295,    Adjusted R-squared:  0.01156
## F-statistic: 9.327 on 1 and 711 DF,  p-value: 0.002342
```

```
lm6 <- lm(CLOrowmean ~ PBorrowing, data = DF3)
summary(lm6)
```

```
##
## Call:
## lm(formula = CLOrowmean ~ PBorrowing, data = DF3)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.76682 -0.33020 -0.03118  0.28518  2.33719
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept) 1.662814   0.039943  41.629   <2e-16 ***
## PBorrowing  0.008667   0.005651   1.534    0.126
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.4596 on 741 degrees of freedom
##   (78 observations deleted due to missingness)
## Multiple R-squared:  0.003165,   Adjusted R-squared:  0.00182
## F-statistic: 2.353 on 1 and 741 DF,  p-value: 0.1255
```

Answer: There is no relationship between parent's borrowing money to pay for their children's college and their PECTAC expectations.

Part 2 – Using individual Question data to find out if any particular items in a scale are more valuable than others

Question 1 – Admissions folks knowing what is important would enable them to market more effectively. Could use this information to tailor resources or orientations accordingly. Use an ANOVA to determine if there are any questions that appear to have a significant difference in mean from the others? (First need to test for homoskedasticity.)

```
#ColMeans for each scale
TRISOLmeans <- colMeans(TechResourcesInSupportOfLearning, na.rm = TRUE)
ATLmeans <- colMeans(ActiveAndTeamLearning, na.rm = TRUE)
OOCLmeans <- colMeans(ClassLearningOpportunities, na.rm = TRUE)
ACFmeans <- colMeans(ACaringFaculty, na.rm = TRUE)
ACUCmeans <- colMeans(ACaringUniversityCommunity, na.rm = TRUE)
BPPmeans <- colMeans(BeingInParternshipWithParents, na.rm = TRUE)
TRISOLmeans
```

```
##             TechAAvWeb       TechWebAccessRDA        TechWebAccessTF
##               1.666667               1.454054               1.324288
##        TechWebAccessFA             TechSAAWeb              TechEmail
##               1.315217               1.642276               1.657182
##              TechBooks              TechCLabs    TechInternetResHall
##               1.583106               1.556463               1.357823
##           TechWireless            TechLibrary         TechUnivLaptop
##               1.308844               1.663501               2.772169
##       TechFacultyEmail TechAcademicContentWeb            TechAAEmail
##               1.563859               1.762943               1.516915
```

```
ATLmeans
```

```
##          ATLDiscuss          ATLPresent       ATLOutperform
##            1.780488            1.842818            1.906377
##     ATLGroupProject           ATLOnline ATLCommunityService
##            2.684783            2.713115            2.024523
## ATLInternetResearch        ATLWebAssign           ATLMoreIT
##            1.638587            2.155433            1.371429
##         ATLFeedback
##            1.334239
```

```
OOCLmeans
```

```
##         OCLResponsible               OCLClubs        OCLAdditionalAA
##               1.737483               1.781547               1.262585
##         OCLInternships         OCLRaceCulture      OCLServeVolunteer
##               1.253061               2.160763               1.839506
```

```
##                OCLArea  OCLRemedialDisibility OCLAccessTutorASupport
##               1.863946               1.976871               1.471956
##         OCLSocialGroup     OCLPracticumIntern       OCLCareerCounsel
##               1.857337               1.836066               1.278689
##              OCLMorals
##               2.000000
```

```
ACFmeans
```

```
##          CFContactAA            CFMajorAA           CFKnownByF
##             1.457865             1.459916             1.562412
##  CFKnownByInstructor      CFFairTreatment   CFAccessOutOfClass
##             1.648876             1.251758             1.766854
##       CFGiveFeedback CFAdditionalTutoring              CFFOrTA
##             1.867606             1.668563             1.597458
```

```
ACUCmeans
```

```
##           CUCWProgram         CUCLeadership             CUCUnique
##              1.460674              1.695346              1.579690
##        CUCOrientation CUCParentSupChallenge             CUCHealth
##              1.553343              1.815864              1.584986
##          CUCComOthers           CUCRAFriend              CUCFaith
##              1.833570              2.155050              2.289958
##         CUCCounseling
##              1.789474
```

```
BPPmeans
```

```
## BPPNotifyASuccess          BPPCheat      BPP24CallRet         BPPSecure
##          1.791785          1.580508          1.682652          1.110638
##     BPPMDProgress      BPPDicipline  BPPAATutorMentor     BPPIllegalSub
##          1.757835          1.610482          1.295615          1.529078
##  BPPOrientInvolve     BPPCounseling   BPPIllegalDrink
##          1.830028          1.568406          1.752475
```

```
#Creating data frame of only the 1-100% scales data
financesdata <- alldata[,153:166]

#Imputing values
newfinancesdata <- financesdata
newfinancesdata[newfinancesdata == 1 | is.na(newfinancesdata) == TRUE] <- 0
newfinancesdata[newfinancesdata == 2] <- .125
newfinancesdata[newfinancesdata == 3] <- .375
newfinancesdata[newfinancesdata == 4] <- .67

#Sum of imputed shares before rescaling
newfinancesdata$totals <- rowSums(newfinancesdata, na.rm = TRUE)

#Set aside very incomplete cases (sum < 0.38)
newfinancesdata$totals[newfinancesdata$totals < 0.38] <- NA
incompletesremoved <- filter(newfinancesdata, is.na(newfinancesdata$totals) == FALSE)
```

```r
#Rescale values
rescaledDF <- incompletesremoved[,1:14] <-  incompletesremoved[,1:14]/incompletesremoved[,15]
rescaledDF$totals <- rowSums(rescaledDF)
```

```
## Warning in rescaledDF$totals <- rowSums(rescaledDF): Coercing LHS to a list
```

```r
#Append question 93 to df
```