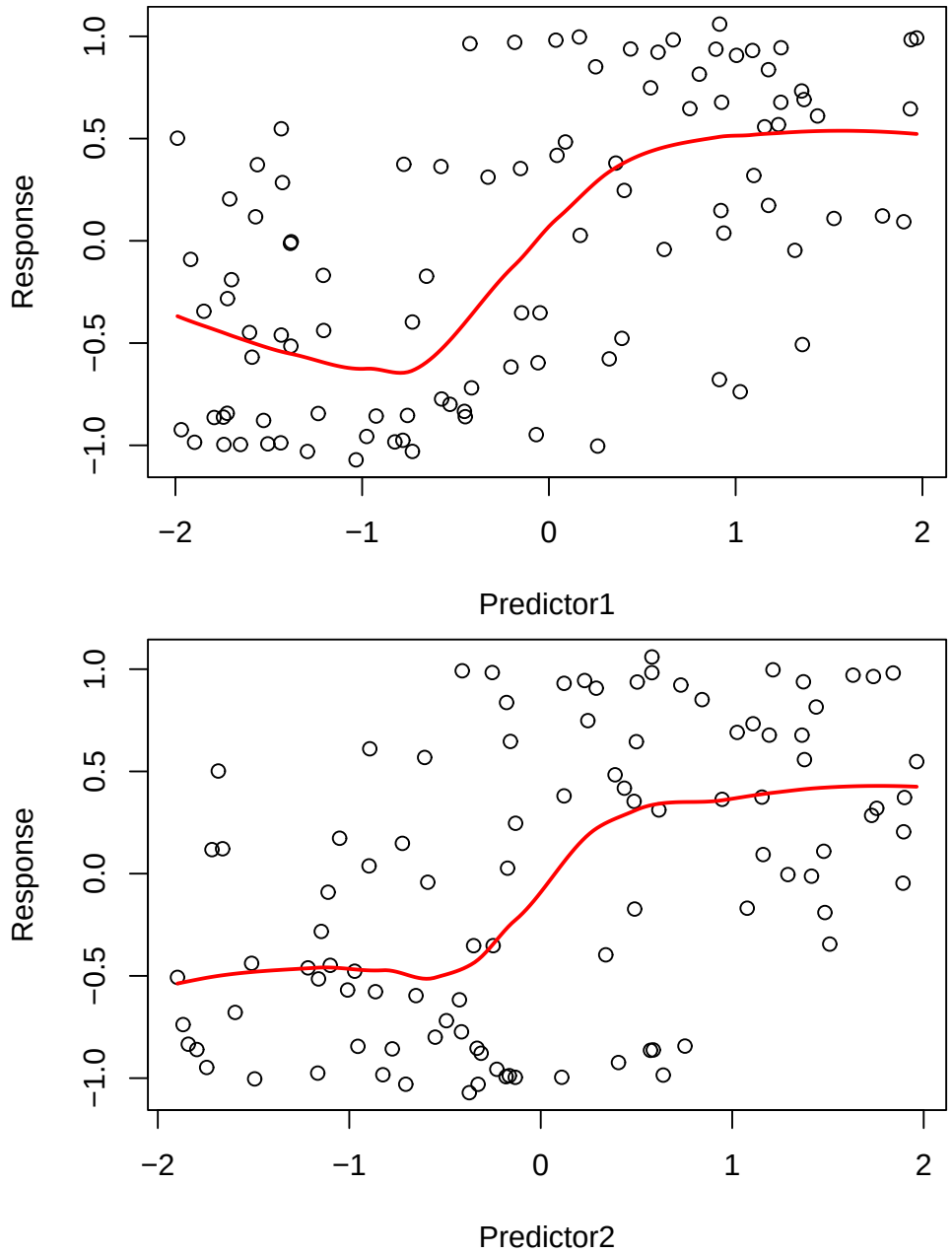
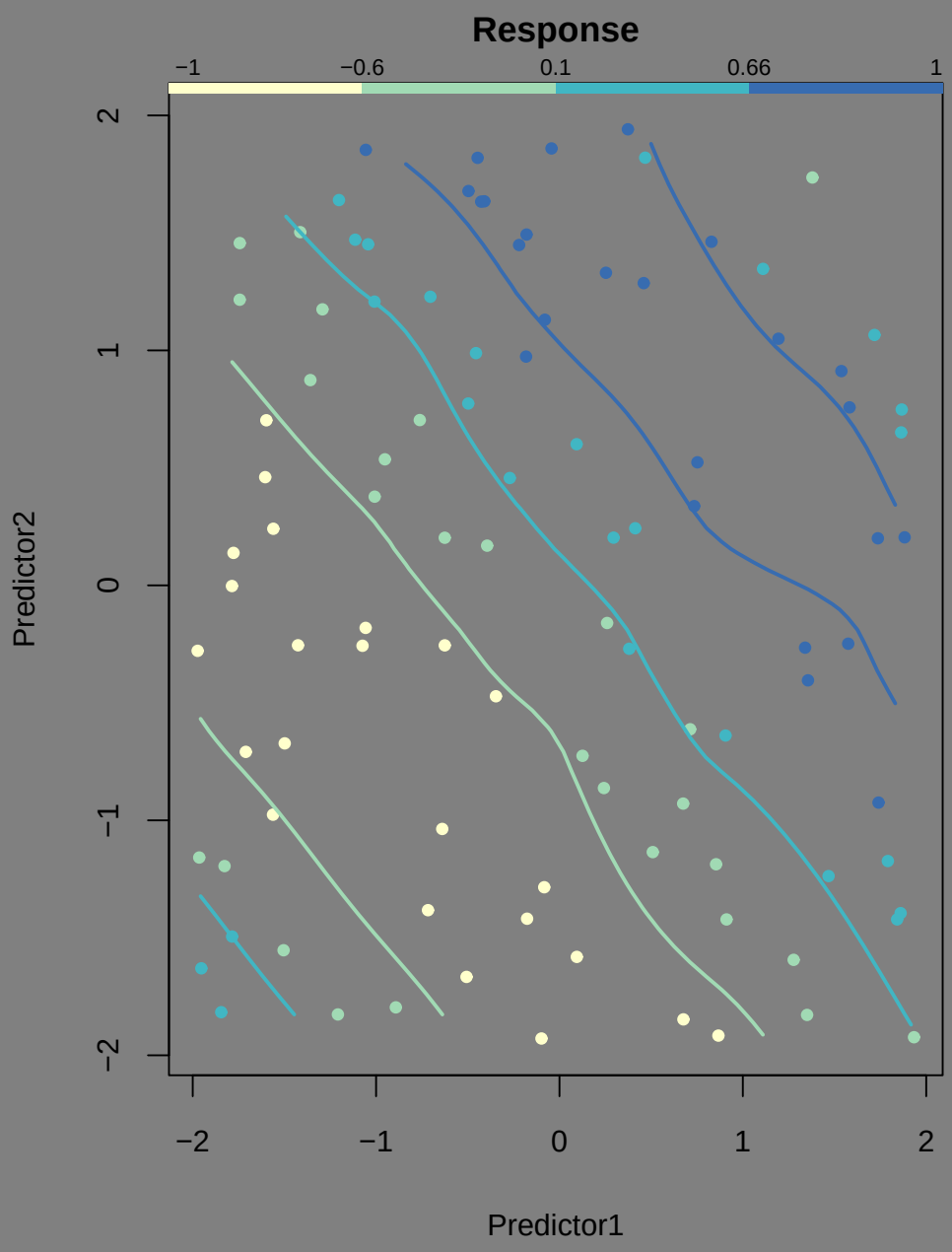
36-315: Statistical Graphics and Visualization

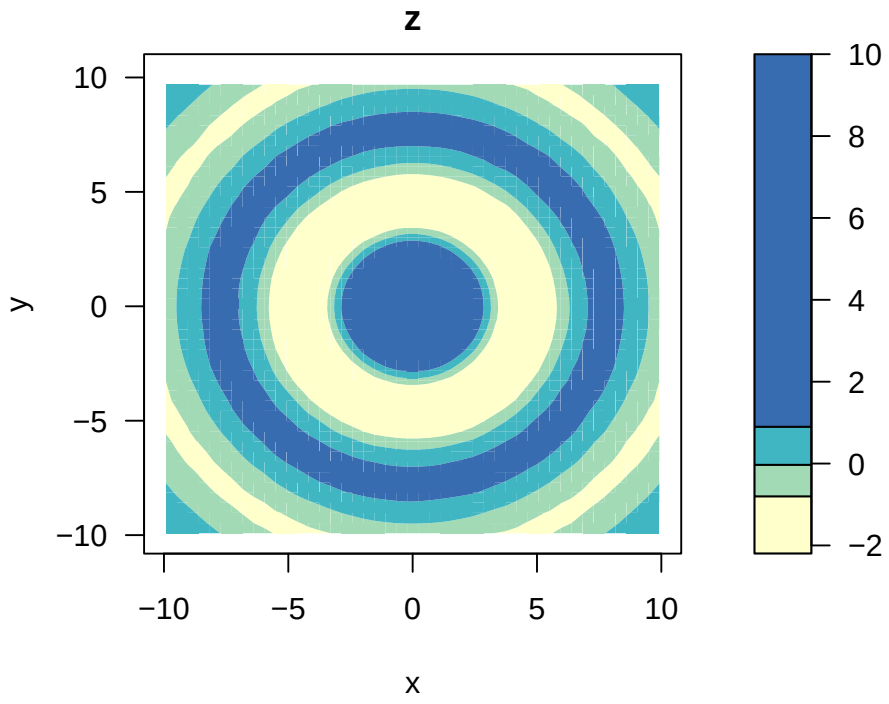
Handout 16
Date: March 12, 2003

Interpreting three-dimension plots: Outliers and strength comparison

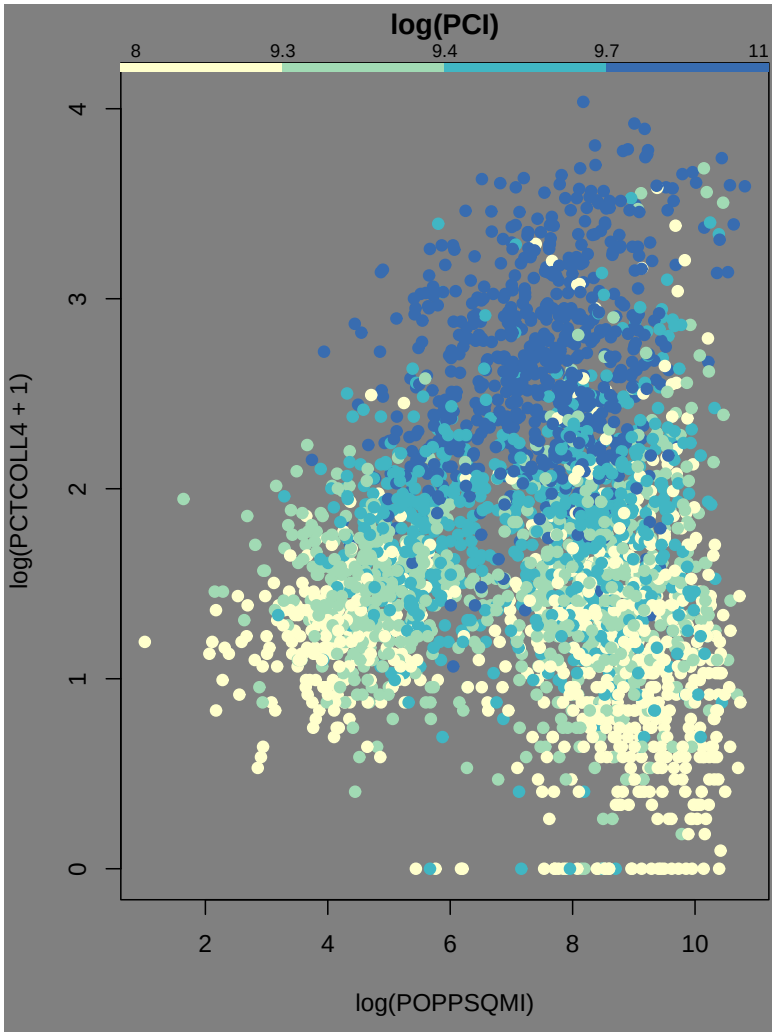
Contour practice:



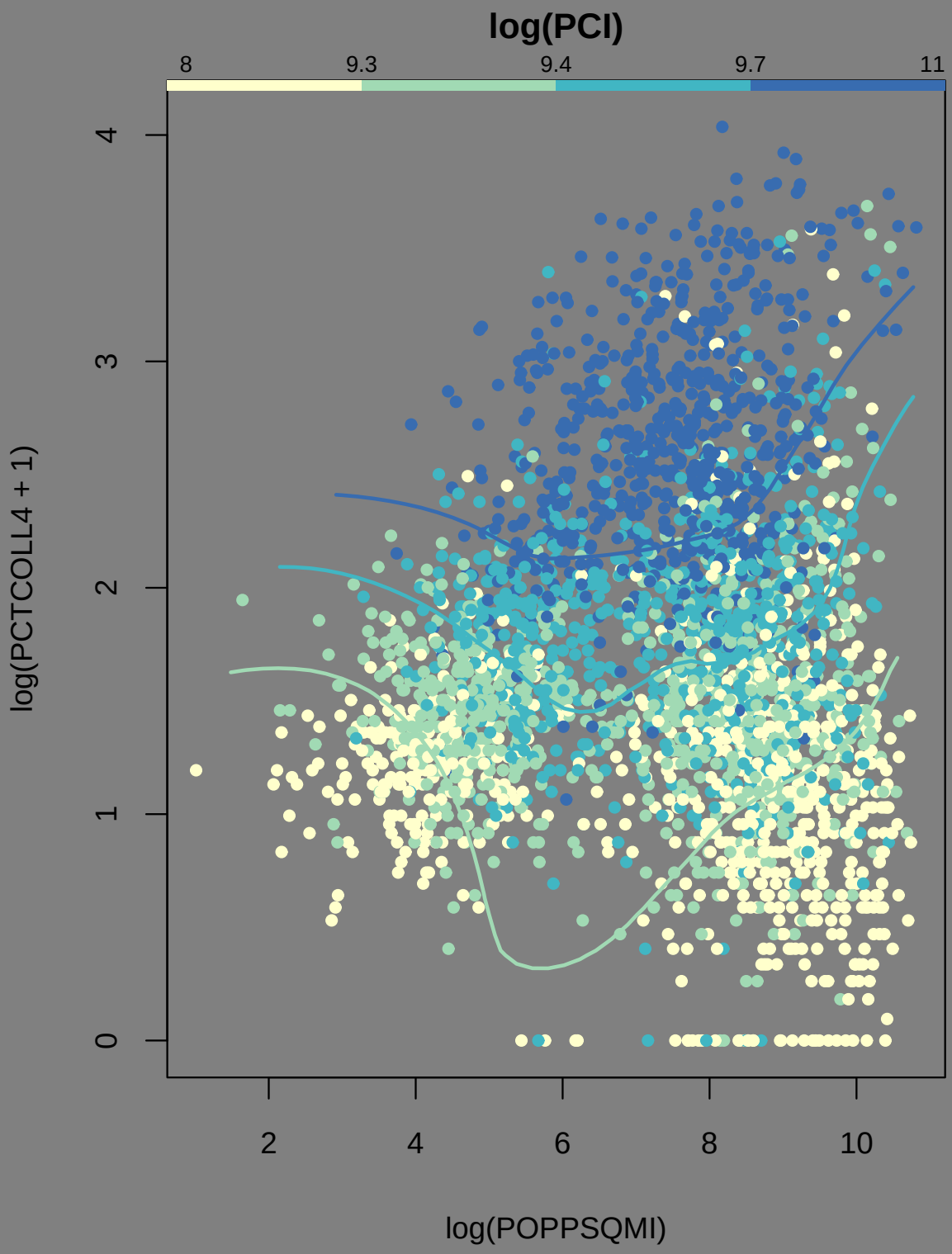

Response
−1
−0.6
0.1
0.66
1
Predictor2
Predictor1
−2
−1
0
1
2

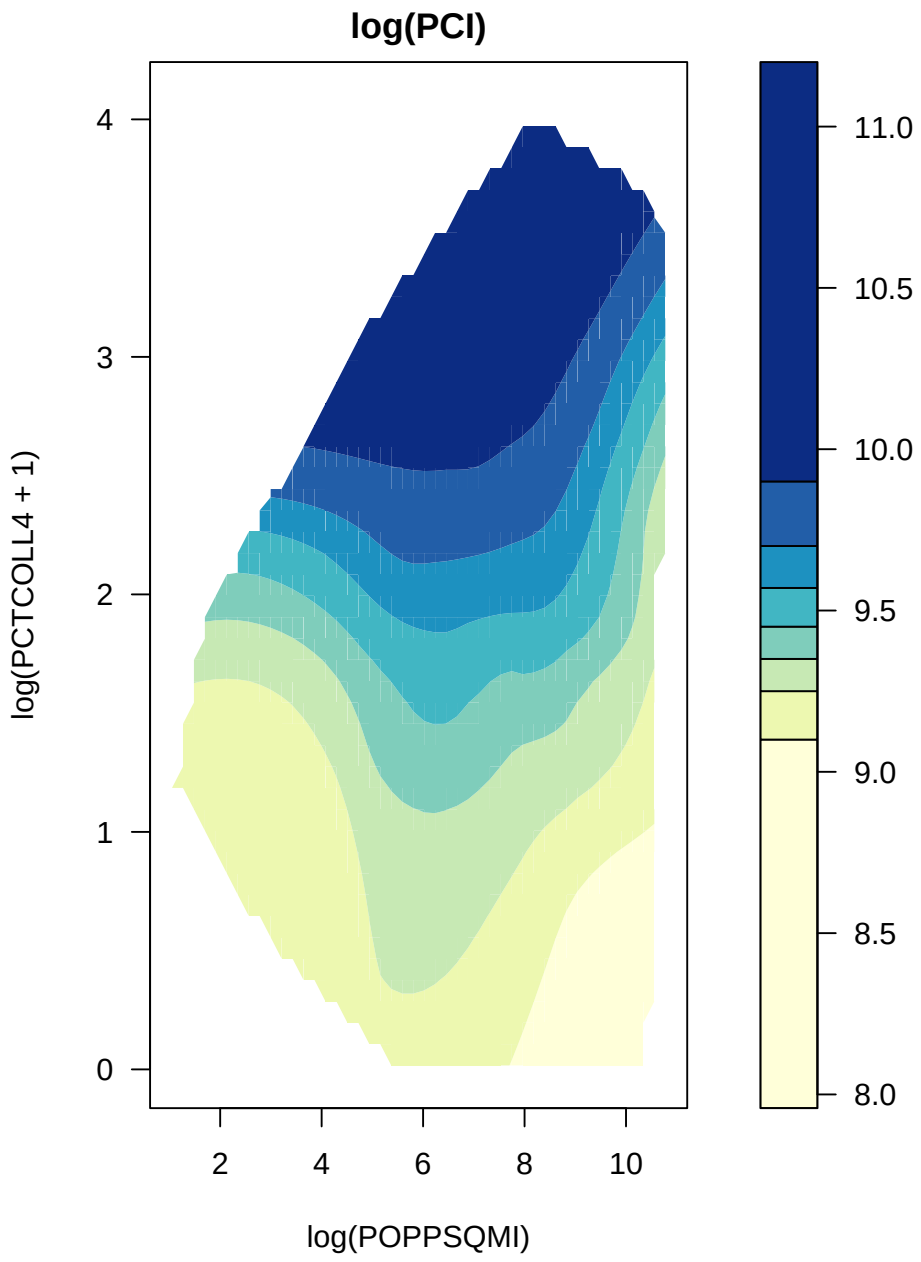

z
10
5
0
−5
−10
y
−10
−5
0
5
10
x
10
8
6
4
2
0
−2

A surprise in lab 9:



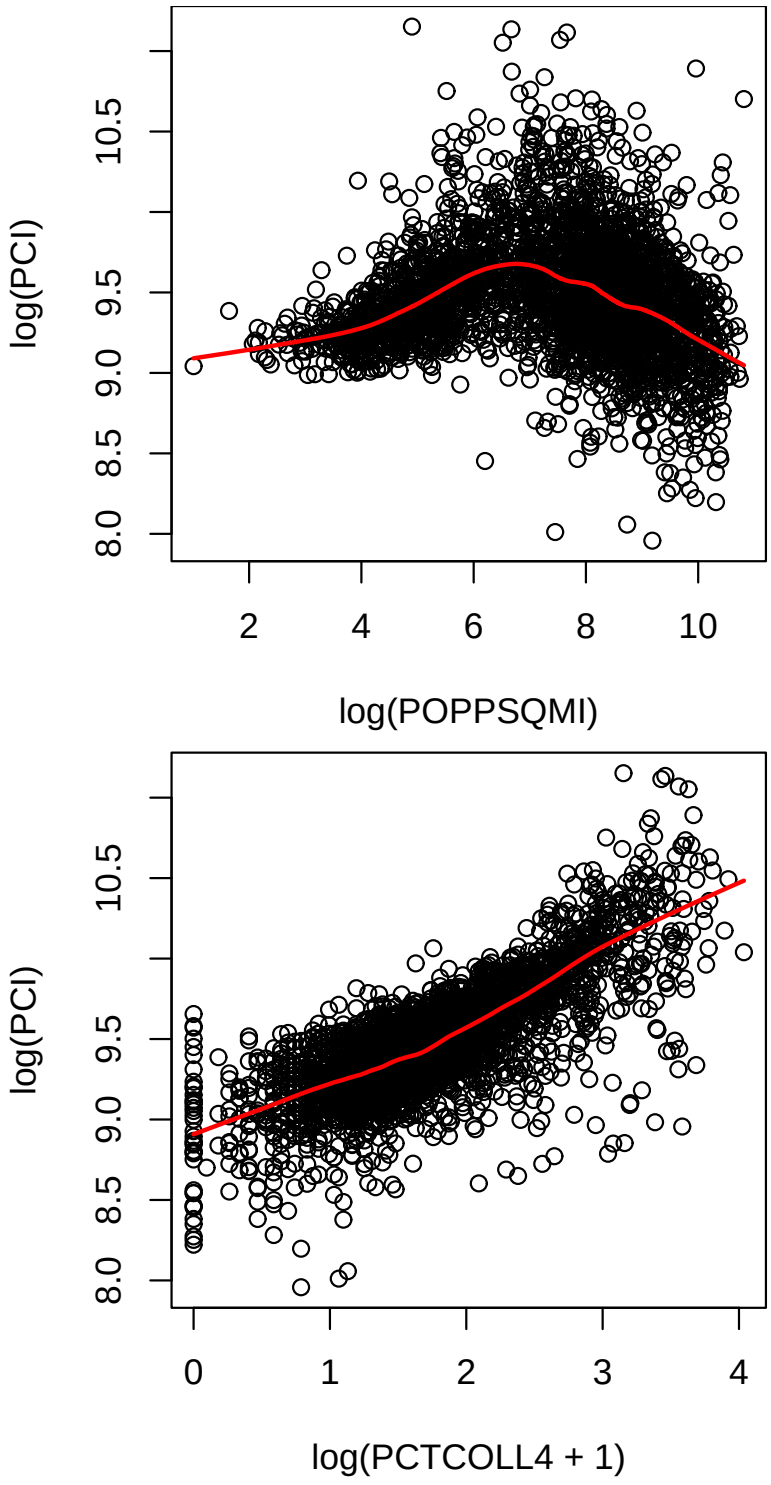
Is education all that matters?

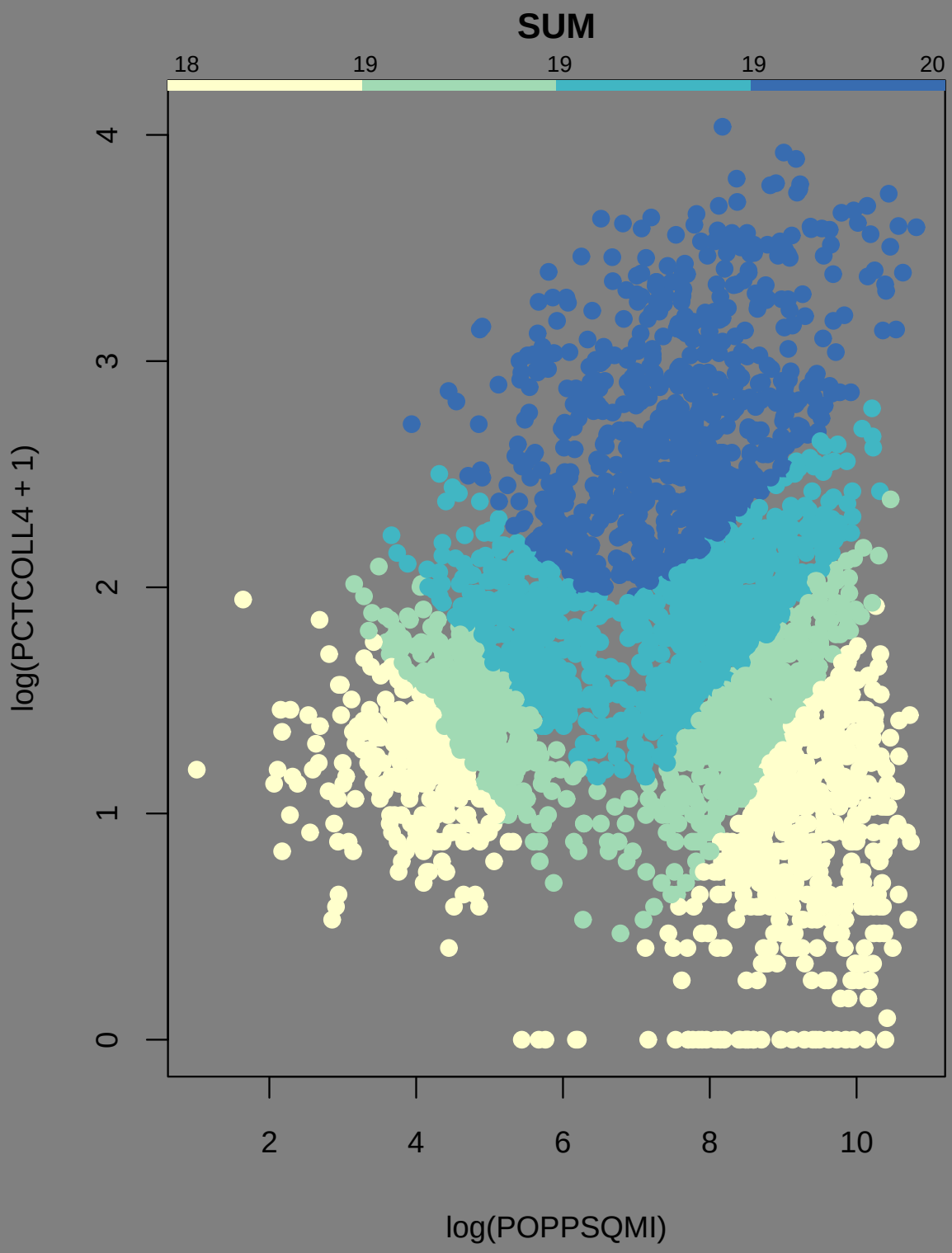

log(PCI)
8
9.3
9.4
9.7
11
log(PCTCOLL4 + 1)
0
1
2
3
4
2
4
6
8
10
log(POPPSQMI)

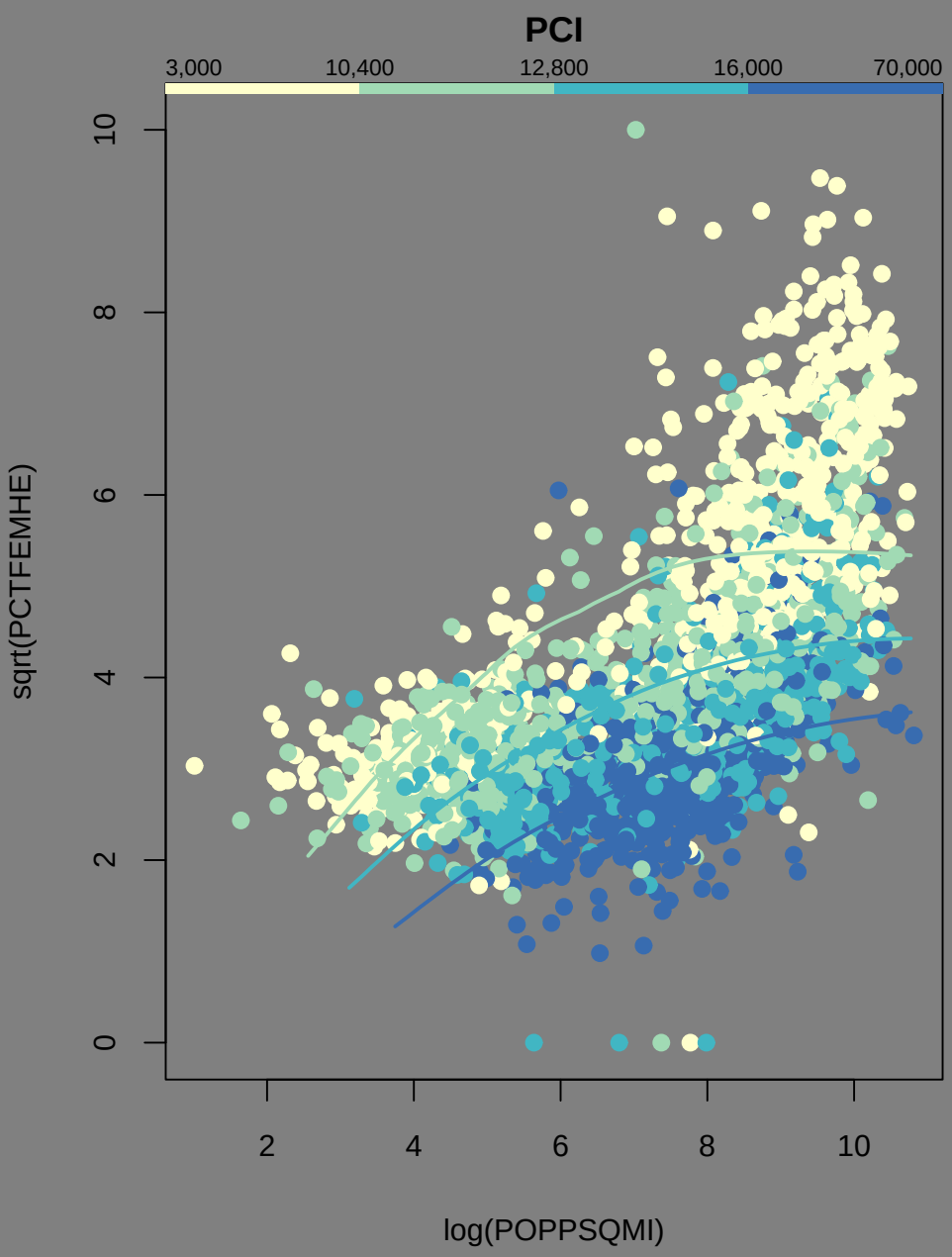


Education is the main predictor of income outside of the city. In the city, population density will decrease income, even for the same education level.

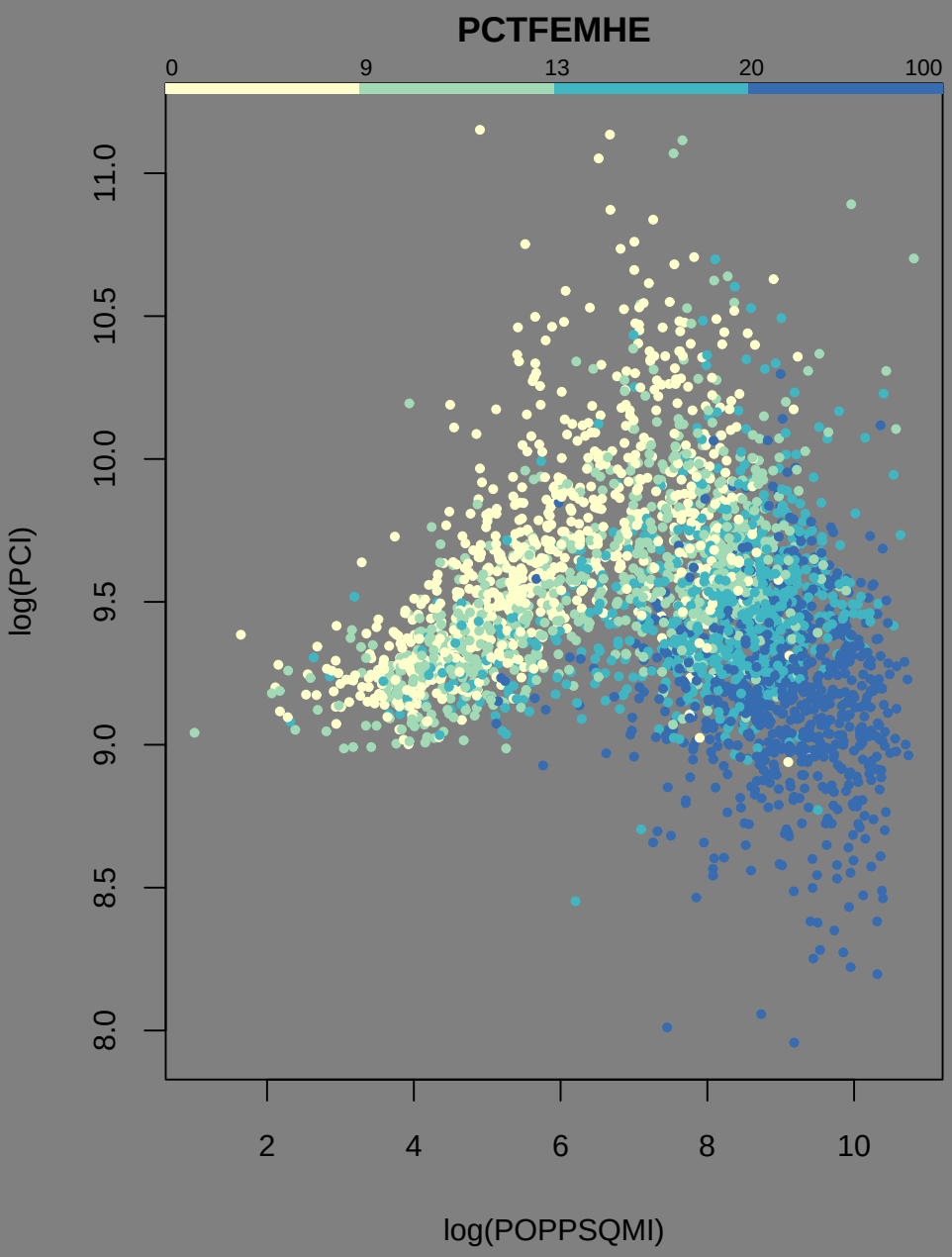
What if we added the pairwise trends:



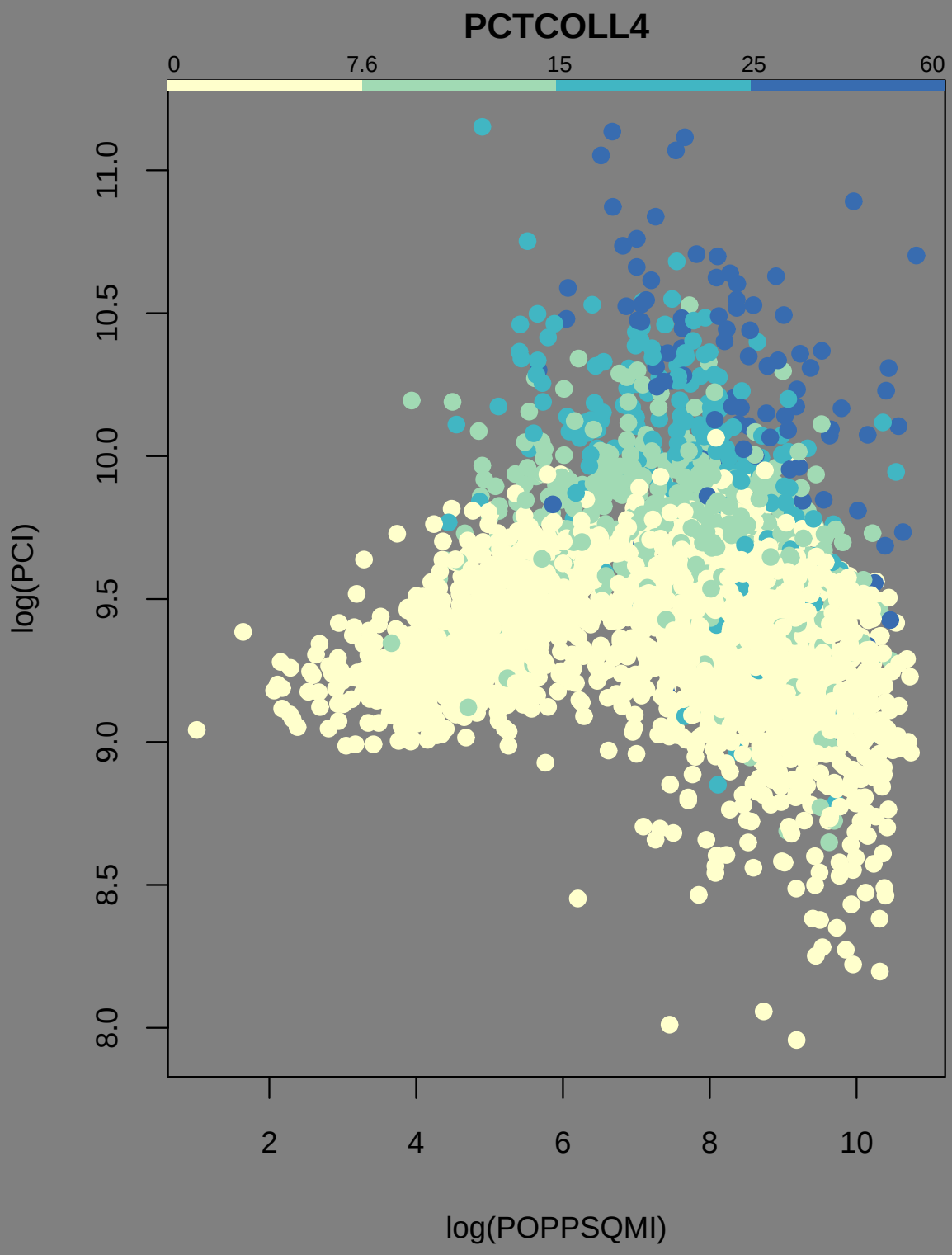

SUM
18
19
19
19
20
log(PCTCOLL4 + 1)
0
1
2
3
4
2
4
6
8
10
log(POPPSQMI)



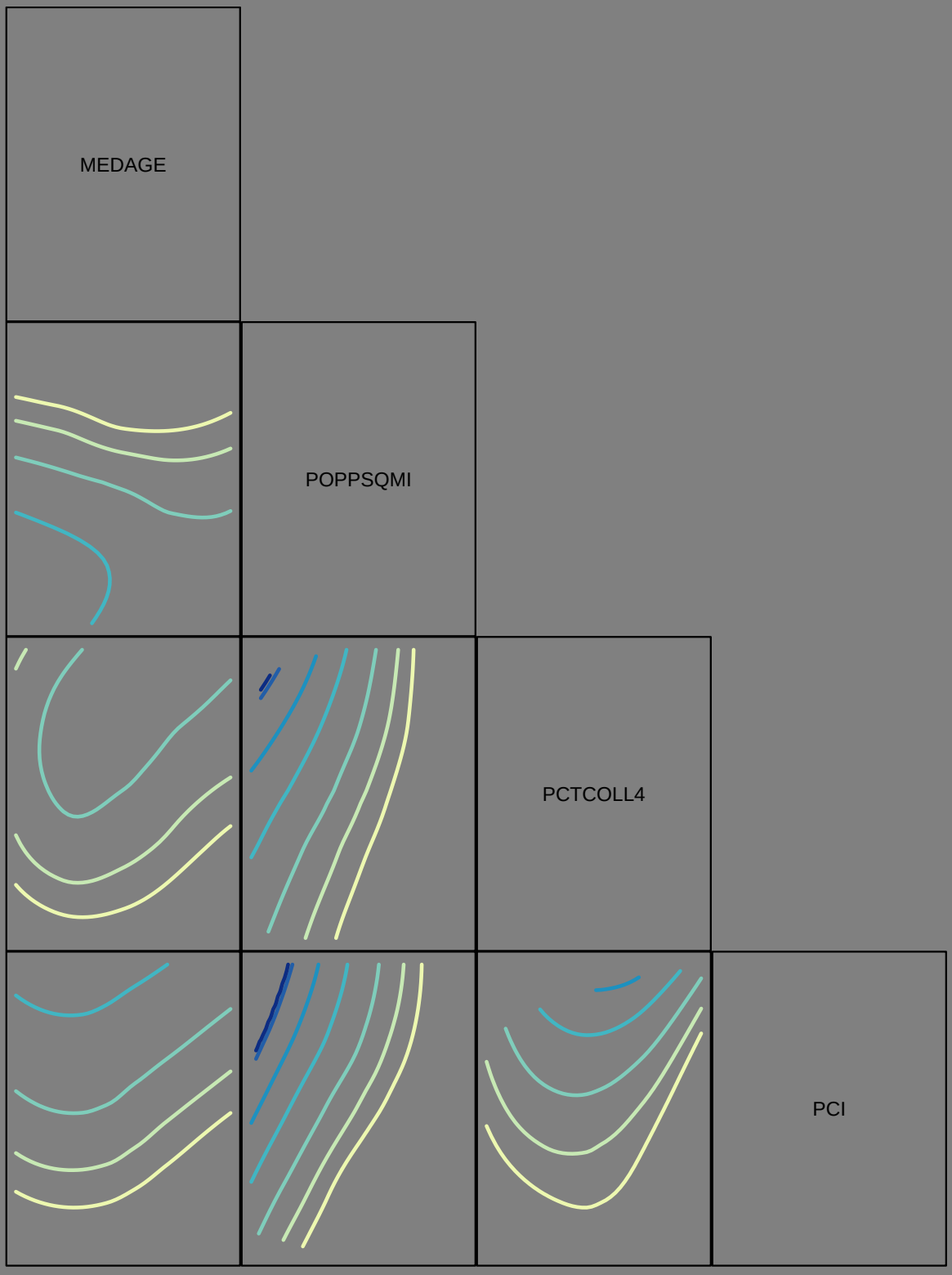
People are often attracted to cities by the promise of higher income. According to the plot, this assumption is true for some segments of the population, but not others. In particular, if you are not in a female-headed household, your prospects for income strictly increase in the city. But, if you are in a female-headed household, your income will be significantly lower, and will not change with population density. In the pairwise scatterplot, income decreases in the city, but this is only because the proportion of female-headed households is changing.



Most tracts in the city have low income, but these two have quite high incomes. This can be explained by noting that most city tracts have a high percentage of female-headed households, while these two tracts do not, and that sets them apart. If you restrict your attention to tracts with the same percentage of female-headed households, then these two tracts are not that unusual—they follow the same income vs. density trend that the other tracts do.



Fill in the interpretation.



Predicting the year houses were built
Want to order the predictors by strength