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An Assessment of the Monroe County Department of Social Services and Health Department Altreya Consulting LLC Assessment and Recommendations Updated Report – October 25, 2002

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The October 25, 2002 Altreya Consulting LLC Assessment and Recommendations Updated Report relies on regression results to assert that Monroe County has "too many" public assistance cases and that therefore the county could save significant resources by closing thousands of cases. On pages eight and nine of the report their methodology and findings are summarized as follows:

> "During our assessment we analyzed the number of Temporary Assistance cases across nine comparable New York State counties and conducted regression analyses utilizing County Population, the County Unemployment Rate, and the DSS Staff Levels as explanatory variables. ...The result is a model, which predicts the number of Temporary Assistance cases each county "should" have based upon the variables utilized. The regression analysis model predicts that Monroe County "should" have 6,319 cases instead of the 12,133 Actual cases. Based upon these variables, Monroe County has an inordinate number of cases, and in fact has the largest variance, both in number and percentage, of all the counties analyzed."

Multiple regression analysis is used to evaluate models which posit that one or more "independent" variables are responsible for the value of a single "dependent" variable. In this case the Altreya analysts assert that the population, unemployment rate and DSS staff level "determine" the number of public assistance cases. The multiple regression analysis estimates coefficients for each of the independent variables that enable us to calculate the predicted values for the dependent variable, in this case the predicted number of Temporary Assistance cases.

Multiple regressions analyses generally report two basic statistics that enable us to evaluate the robustness of the model — the ability of the independent variables chosen to explain the dependent variable. These two statistics are the R-Squared of the model and the t-statistics for each individual coefficient. The R-Squared is a measure of the overall effectiveness of the model. The R-Squared usually has a value between 0 and 1 and is often interpreted as the percentage of the variation in the dependent variable that can be explained by the model. A t-statistic is reported for the coefficient associated with each independent variable. If the t-statistic is greater than 1.95 we can say that the estimate of the coefficient is statistically significant. If the t-statistic is less than 1.95 the estimated coefficient is not statistically different than zero. In simple terms this means that the model has not shown any relationship between this particular independent variable and the dependent variable.

While the Altreya analysis did not report these key statistics, I was able to use the data included in their tables to replicate their regression results. Table 1 summarizes these regression results, including both the R–Squareds and t-statistics. Altreya estimated separately the models used to predict the number of Safety Net cases and the model used to predict the number of Family Assistance cases. For both models, the regression results had R-Squareds above .70, implying that

the model explained more than 70% of the variation in the numbers of cases across counties. Generally, these would be considered acceptable R-Squareds.

The t-statistics from these regressions are more problematic. The estimates for the coefficients for the unemployment rate and the population are not statistically significant. We are therefore only looking at a regression that shows a statistically significant relationship between the number of cases and the number of staff persons. In fact, when the other two variables are left out of the regression analysis, the R-Squareds of the regression analyses are almost identical. *See Table Two* .

Therefore, all that has been "proven" is that there is a strong relationship between DSS staffing levels and Temporary Assistance caseloads. This brings us to the issue of causation. The fact that there is a strong relationship between these two variables does not enable us to determine which variable is "causing" the other variable to change. One could reasonably argue that caseloads drive staffing requirements. These regressions would "predict" that a county with a caseload equal to that of Monroe County "should" have a DSS staff of 481 rather than 317. *See Table Three.*

Assuming that the chain of causation is reversed would imply that cutting DSS staff would result in decreased caseloads. In fact the report argues just the opposite on page ten:

> "Given that Temporary Assistance eligibility requirements are standard across New York State, and the number of TA cases in a particular county is dependent upon the variables of population and unemployment, staffing levels within the respective DSS departments become a significant factor. The lower caseload levels in other counties appear to allow the workers to more thoroughly screen applicants and prevent ineligible cases from being granted benefits. It appears to allow the caseworkers to devote more time and energy to actively managing the existing cases and working diligently to enable the TA recipient to achieve the desired outcome of self-sufficiency."

There are many other problems with the "specification" of the Altreya model. First, there is no justification given for the selection of the eight counties used in the analysis. Second, there are many more independent variables would be required to explain the differences in the number of Temporary Assistance cases across counties. The report notes that the inclusion of poverty rates did not change the results significantly. Most economists would posit a much more complex model looking at a variety of economic and demographic indicators and considering not just their levels at a single point in time but the changes in these indicators over time. A review of the literature using statistical techniques to analyze welfare caseloads shows that most studies attempt to explain changes in caseloads rather than absolute levels of caseloads.

In conclusion, the statistical analysis completed for the Altreya model cannot legitimately be used to support their policy recommendations. Their analysis does not show that Monroe County's caseloads are "too large" and therefore does not show that significant reductions in that caseload will result from changing the public assistance system in the county.

Table One: Replication of Altreya Regression Results

Safety Net Caseload

Regression Output:

Constant	-1393.07
Std Err of Y Est	1143.44
R Squared	0.75
No. of Observations	8
Degrees of Freedom	4

	Population	Unemployment Rate	DSS Staff
X Coefficient(s)	0.000241	51.091438	11.800979
Std Err of Coef.	0.001144	387.119392	4.395257
T-Statistics	0.210567	0.131979	2.684935

Family Assistance Caseload

Regression Output:

Constant	-556.40
Std Err of Y Est	1244.84
R Squared	0.72
No. of Observations	8
Degrees of Freedom	4

	Population	Unemployment Rate	DSS Staff
X Coefficient(s)	0.000245	21.968500	11.911539
Std Err of Coef.	0.001245	421.447106	4.785005
T-Statistics	0.197044	0.052126	2.489347

Table Two: Regression Results Using DSS Staff as the Single Independent Variable

Safety Net Caseload

Regression Output:

Constant	-1133.22
Std Err of Y Est	938.99
R Squared	0.74
No. of Observations	8
Degrees of Freedom	6

	DSS Staff
X Coefficient(s)	12.331301
Std Err of Coef.	2.961916
T-Statistics	4.163285

Family Assistance Caseload

Regression Output:

Constant	-428.07
Std Err of Y Est	1021.53
R Squared	0.71
No. of Observations	8
Degrees of Freedom	6

	DSS Staff
X Coefficient(s)	12.448777
Std Err of Coef.	3.222290
T-Statistics	3.863333

Table Three: Using the Regression Model to Predict DSS Staffing Levels

County	Safety Net Cases	Family Assistance Cases	Total Temporary Assistance Cases	Population	Unemployment Rate	DSS Staff	Predicted Staff (120.93 + .029669 X Total Temporary Assistance Cases)
Albany	1,379	2,052	3,431	294,007	2.9	143	223
Erie	5,775	6,597	12,372	944,408	5.5	453	488
Nassau	1,562	2,365	3,927	1,334,648	3.7	188	237
Niagara	916	1,306	2,222	218,509	6.9	153	187
Oneida	662	1,254	1,916	233,659	4.9	259	178
Onondaga	1,927	3,422	5,349	457,866	4.8	268	280
Suffolk	2,725	3,498	6,223	1,438,973	3.9	385	306
Westchester	3,783	4,141	7,924	928,888	3.9	405	356
Monroe	**5,792**	**6,341**	**12,133**	**733,607**	**5.4**	**317**	**481**

Relationship between Caseload and Staff

Regression Output:	
Constant	120.93
Std Err of Y Est	66.60
R Squared	0.74
No. of Observations	8
Degrees of Freedom	
	DSS Staff
X Coefficient(s)	0.029669
Std Err of Coef.	0.007269
T-Statistics	4.081505