



Summary of Findings Related to Milk Selection in Eugene School District

Whether to include or omit chocolate milk from school lunchrooms is hotly debated. While omitting chocolate milk does reduce available calories and sugars in a student's lunch, students may not consume milk at all. As a result they may not receive the protein, calcium, vitamin A, and vitamin D that are very important for young people, and that are available in chocolate milk. In the report below, we demonstrate that this is a real concern and that further research is needed to draw clearer conclusions.

We received milk selection data from Eugene School District for 21 schools but in the analysis we omitted 9 because the school either closed after the 2010-2011 school year, or had large swings in enrollment between the 2010-2011 and 2011-2012 school years. The 11 schools we used in analysis are Chavez, Corridor, Edison, Fox Hollow, Gilham, Holt, Howard, McCornack, River Road, Spring Creek, and Twin Oaks.

To begin, our analysis echoes the results from in the School District's report that participation in the school lunch program decreased despite increased enrollment in schools. In Figure 1 we show that average enrollment decreased by 0.4% ($p = 0.512$)¹ but average daily participation decreased by 6.8% ($p < 0.000$). This result suggests that omitting chocolate milk may have an impact on participation in the school lunch program. It is important to follow this up with further research.

Participation in the school lunch program is only one of the effects of omitting chocolate milk. We find that omitting chocolate milk also affects overall milk selection which may potentially have negative health consequences. In Figure 2 we demonstrate that daily milk selection decreased by nearly 11% ($p < 0.000$) after chocolate milk was no longer offered. Even though many students opted to take more 1% milk, nearly 15 students per day decided not to take milk at all.

We dug deeper into the milk selection data to determine the health consequences of removing chocolate milk from the cafeterias. Figures 3a-e demonstrate that although average daily calories consumed per student from milk decreased, there were not increases in calcium, vitamin A, or vitamin D from milk to accompany the calorie decrease. Specifically, Figure 3a shows that average daily milk calories per student decreased by 21.3% ($p < 0.088$). Without further thought this appears to be a positive gain. Notice, however, that average daily grams of protein per student increased by 4% ($p = 0.749$), average milligrams of calcium decreased by 3.5% ($p = 0.784$), average daily quantity of vitamin A per student decreased by 3.5% ($p = 0.784$), and average daily quantity of vitamin D per student decreased by 3.5% ($p = 0.784$). Unfortunately, only the amount of protein increased, though by an extremely small amount, but amounts of the other ingredients decreased, also by small amounts. This calls for a more in depth analysis to more fully understand how students are affected.

¹ This is a p-value. P-values less than 0.05 are statistically significant.



These results bring up two very interesting points. First of all, the decrease in average daily calories per student from the decrease in milk selection does not account for the decrease in total lunch calories reported in the nutrient analysis provided by Eugene School District. Since this decrease in total lunch calories happened at the same time chocolate milk was no longer available, we conjecture that there are important but unknown substitutions between foods when chocolate milk is no longer offered. If we understand these substitutions, we can better understand what foods main and side dishes students prefer with different types of milk. This will provide insight into the combinations of foods students choose to meet their caloric needs. Unmet caloric targets in the Eugene School District also suggest that students meet these needs with potentially higher calorie foods from vending machines or home.

Another very important implication of our results is that the “marginal”, or fence sitting, student no longer consumes milk once chocolate milk is taken from the line. These students may be those who need the most attention in terms of health and without chocolate milk, they are not receiving the calcium, and other vitamins available in chocolate milk. Furthermore, they could very well be filling their stomachs with higher energy dense foods once they return home.

These results are only a step towards understanding the effects of omitting chocolate milk from cafeterias. This is fruitful ground for a carefully designed experiment that will enable us to draw much clearer conclusions regarding the impacts keeping or removing chocolate milk. In an experiment, we propose that out of the 17 non-consolidated schools, chocolate milk be re-introduced to 8 randomly assigned schools. Those 9 schools that keep the 1%/skim combination will act as the control group. Before chocolate milk is re-introduced in the 8 schools, we also propose that waste measurements on two separate occasions at each school. Our team has developed a relatively quick and efficient method for measuring waste and we will pass this information along. Once chocolate milk is reintroduced in the 8 randomly assigned schools, we propose that waste be measured again on two separate occasions in all schools. These waste measurements will be essential in determining combinations of foods children select, and consume, with or without chocolate milk *and* the nutrient effect of offering chocolate milk.

We believe a study of this type will provide strong evidence for parents that food service staff and school administrators are very involved in promoting health in schools and take strong interest in providing the best option for their children. It will also be an important element in the current debate regarding chocolate milk in schools.



Figure 1: Average Enrollment Dropped Very Little But Average Participation in the School Lunch Program Dropped More

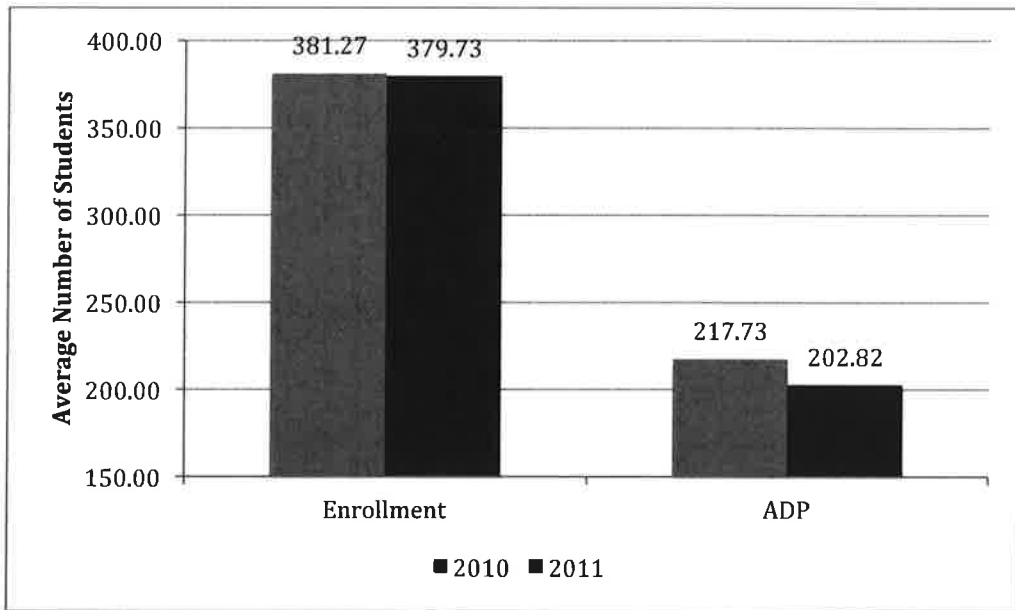


Figure 2: After Chocolate Milk was Removed Milk Selection Decreased by 11%

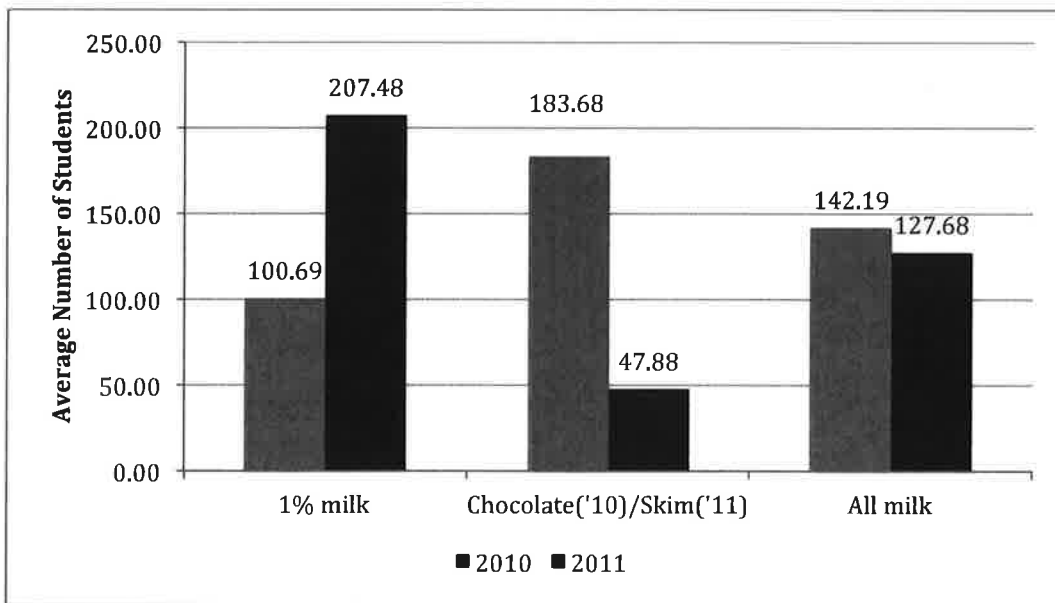




Figure 3a: Average Daily Calories per Student Decreased

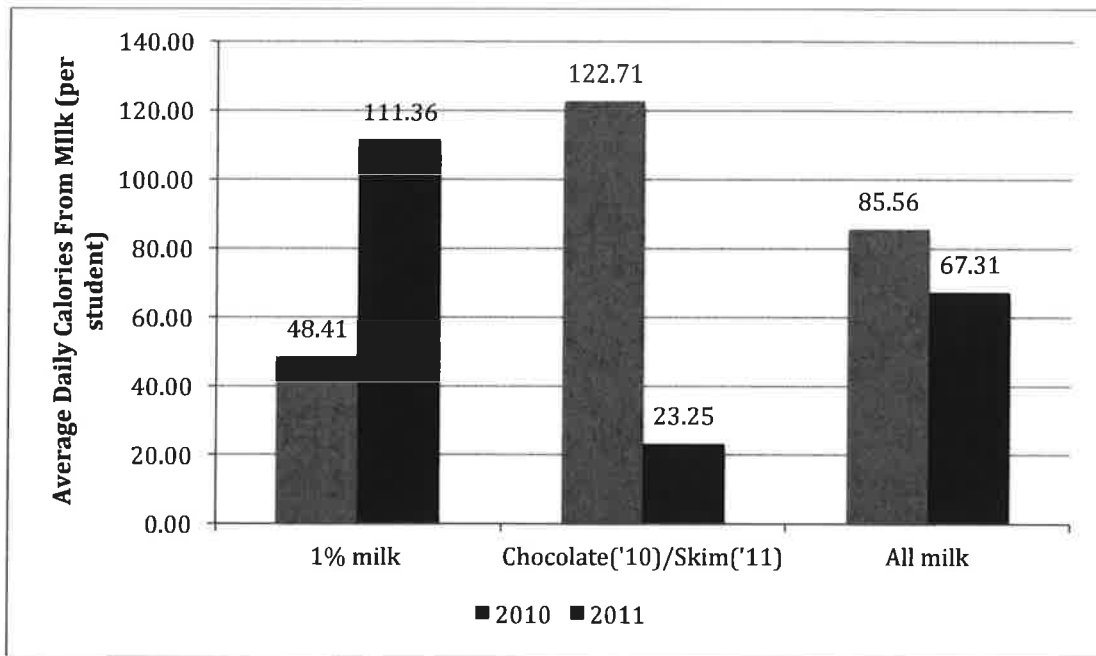


Figure 3b: Average Daily Grams of Protein per Student Slightly Increased

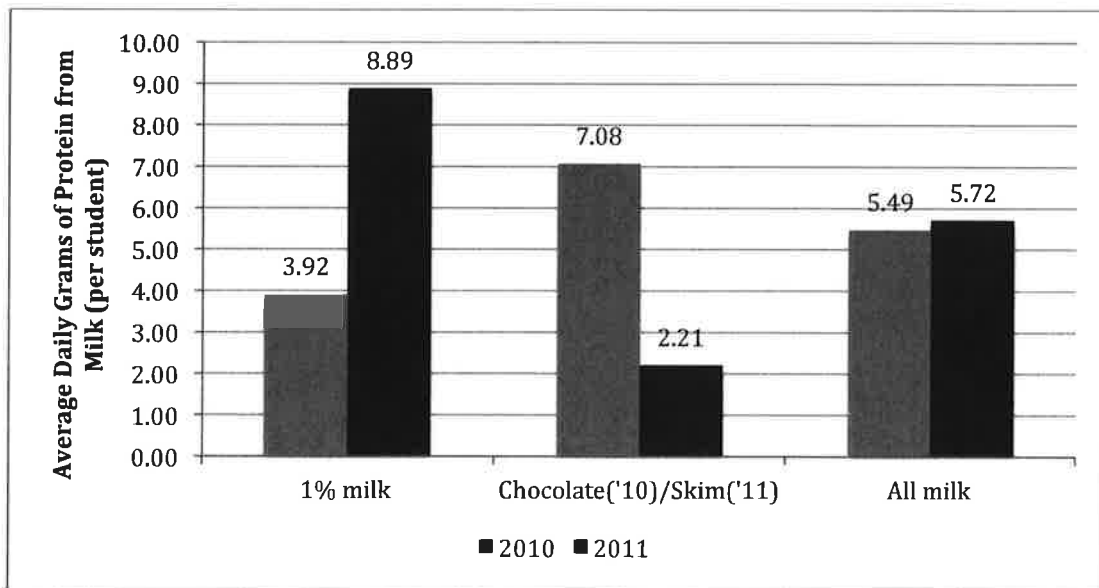




Figure 3c: Average Daily Milligrams of Calcium per Student Decreased

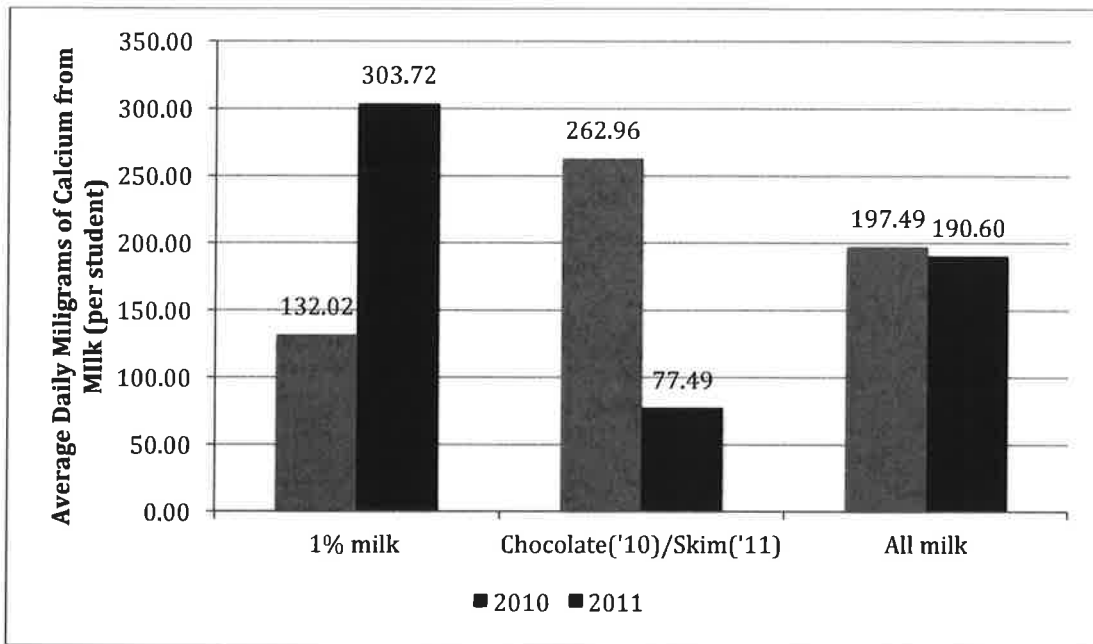


Figure 3d: Average Daily Quantity of Vitamin A per Student Decreased

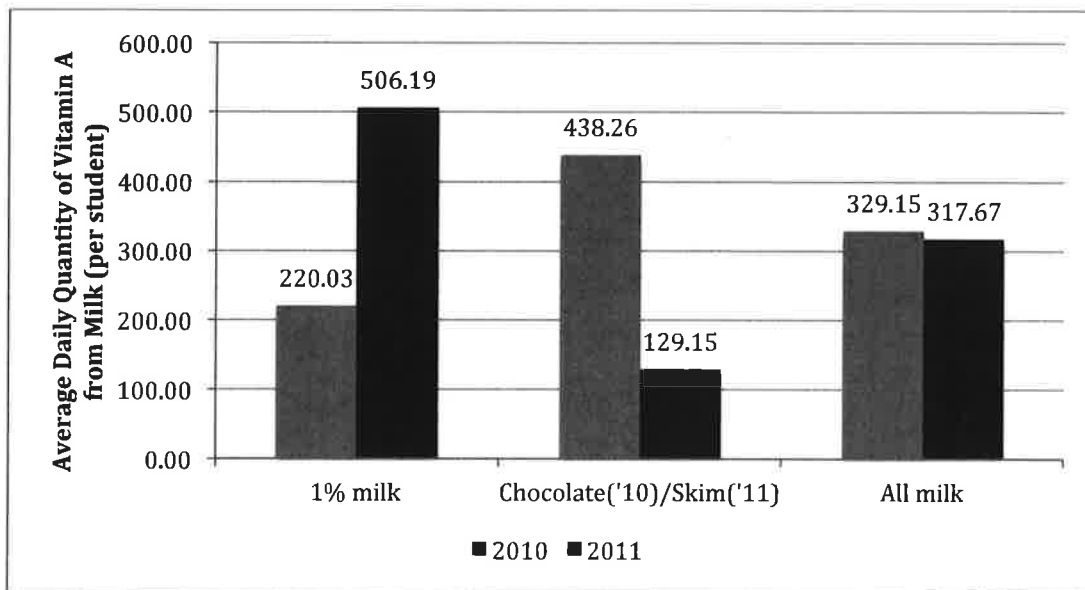




Figure 3e: Average Daily Quantity of Vitamin D per Student Decreased

