Ugandan women with higher dietary diversity scores are more likely to belong to higher than lower BMI quantiles: Findings from rural north and south west Uganda

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Background

- Dietary diversity maybe associated with nutritional outcomes in reproductive age women.

- This relationship is complex given the increasing prevalence of double burden of malnutrition in many developing country populations.

- DHS data from Uganda (2011) indicate an increasing prevalence of overweight and obesity in women of reproductive age. Geographic differences have been observed.
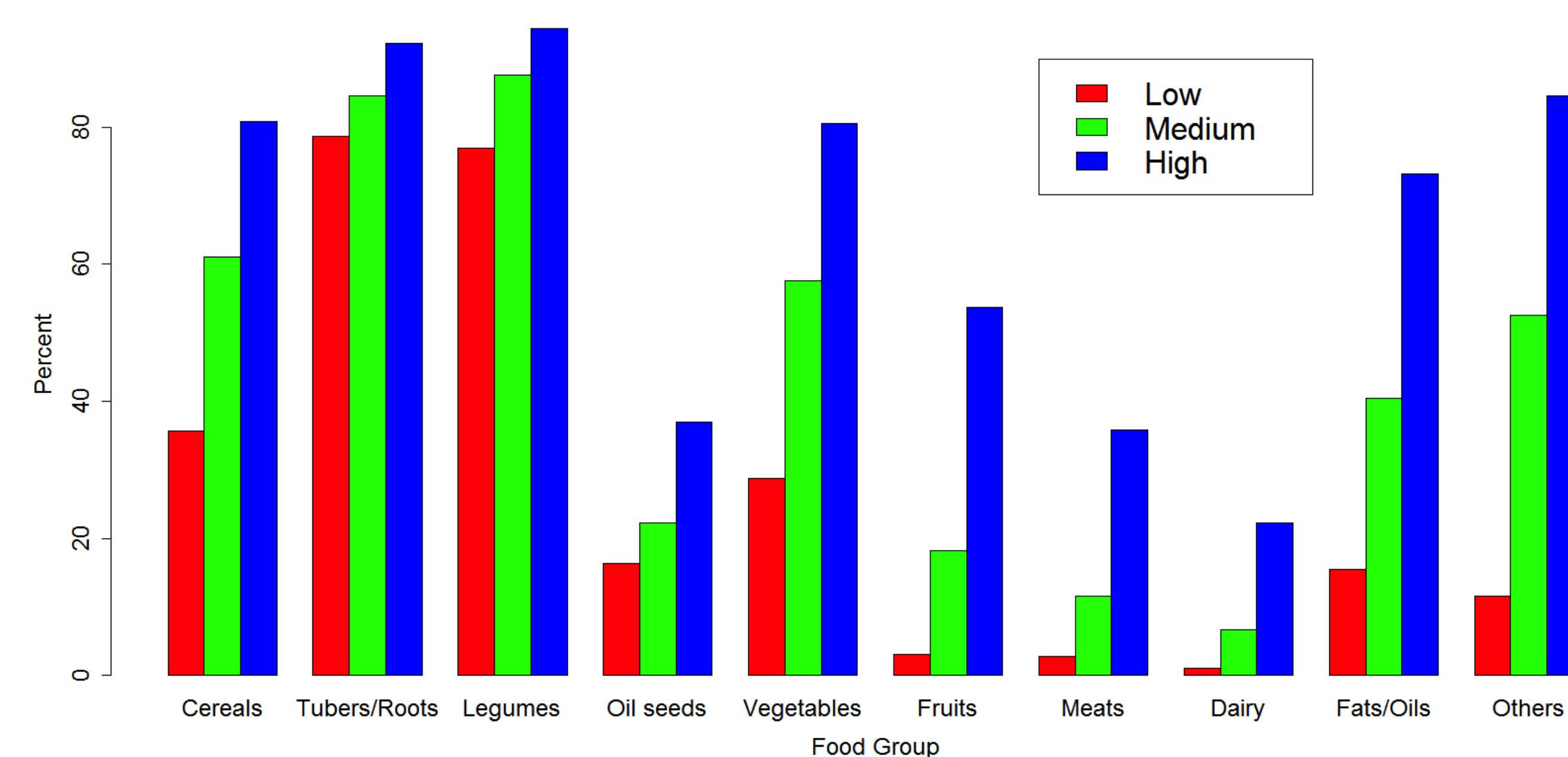
Objectives and Methods

- The objective of the study is to examine the association of maternal food group dietary diversity and BMI in Northern versus South Western rural Uganda among women of reproductive age . The study utilizes two different regression methods to understand interactions between dietary diversity and variability in BMI

- Data used for this analysis are from two balanced panels, one collected in 2012 and the second in 2014

- Data from 5638 women and 2819 households in 3 North and 3 South West districts of Uganda were included both panels

- The sample is a random self-weighting sample representative of 4 sub-counties in each district surveyed

- Variables included in the analysis are food group diversity, women's dietary diversity (WDD), wealth index, maternal education and maternal BMI

- Women's dietary diversity is defined as the number of food groups consumed in the past 24 hours. We used 10 food group classification defined in the questionnaire: cereals, tubers and roots, legumes, oil seeds, vegetables, fruits, meats, diary, fats/oils, others.

- The dietary diversity scores were 0-10, and were divided into terciles to distinguish diets of high (DDS>=6), medium (DDS=4,5) and low diversity (DDS<=3). The choice of cut-offs to define terciles was based on the distribution of DDS observed in the pooled data.

- BMI was computed. Cutoffs for BMI used were as follows: under weight (BMI<18.5kg/m^2), normal weight (18.5kg/m^2<=BMI<25kg/m^2) , or overweight (BMI>=25kg/m^2)

- Statistical analysis included descriptive statistics, bi-variate associations with advanced analyses included the use of mixed effects models with estimates of ordinary least squares and quantile regression analysis.

Results

Table 1: Descriptive statistics- total, 2012 and 2014 panel surveys

	2012 (n=2819)	2014(n=2819)	Total (n=5638)
	Mean(sd) / %	Mean(sd) / %	Mean(sd) / %
Women's Dietary Diversity Score	4.44(1.56)	4.14(1.36)	4.3(1.48)
Percentage Low	30.1	35	32.6
Percentage Medium	46	49.6	47.8
Percentage High	23.9	15.4	19.7
Women's Body Mass Index	21.6(2.83)	22.05(3.36)	21.81(3.09)
Percentage Overweight	10.4	14.6	12.5
Percentage Underweight	9.3	8	8.6
Women's Age in Years	30.52(8.1)	32.05(8.14)	31.23(8.15)
Women's Education (Years Completed)	4.05(3.28)	3.99(3.1)	4.02(3.2)
Gender of Household Head			
Female	8.6	13.3	11
Male	91.4	86.7	89

Figure 1: Percent of Women consuming each food group as a function of dietary diversity score

- Thirty two percent of women had low DD, 48% had medium DD and 20% had high DD scores (pooled data). 12.5% were overweight while only 8.6% were underweight. Overweight prevalence increased between 2012 and 2014

- Women with lower DD scores consumed cereals, tubers and legumes, medium DD scores added vegetables, and high DD scores added fruits, fats and oils, meat and dairy (Figure 1).

- A positive non-significant relationship (β=0.0278) was found between BMI and WDD (mixed effects OLS regression or quantile regression analysis) adjusting for wealth index, household head type, maternal education, region and survey year.
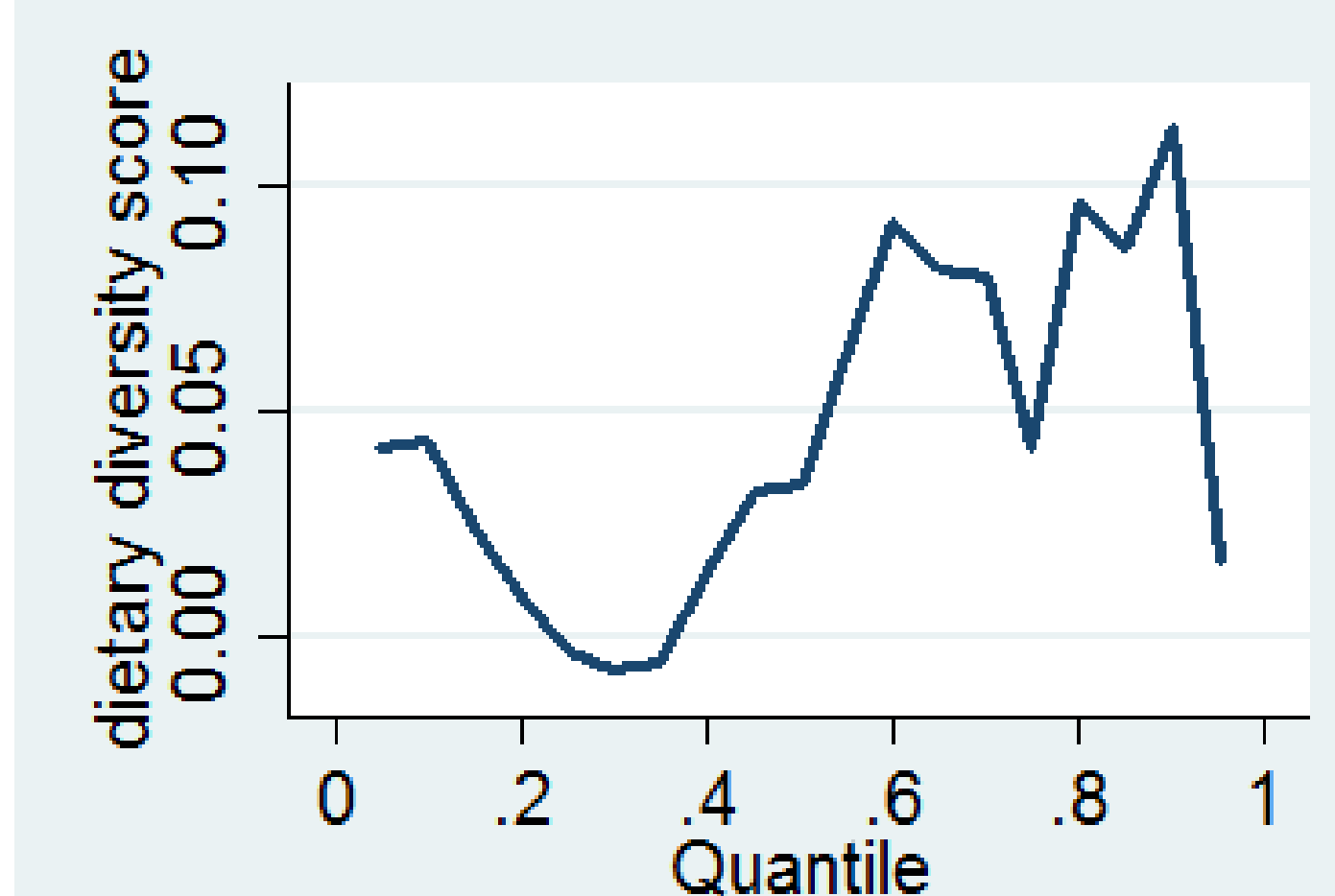
- Closer examination of data by year shows different relationship trends. Overall the relationship between DD and BMI was not clear (Figure 2A) but disaggregating we find that In 2012, DD scores decreased with increasing BMI quantiles (Figure 2B) while in 2014, DD Scores increased (Figure 2C)

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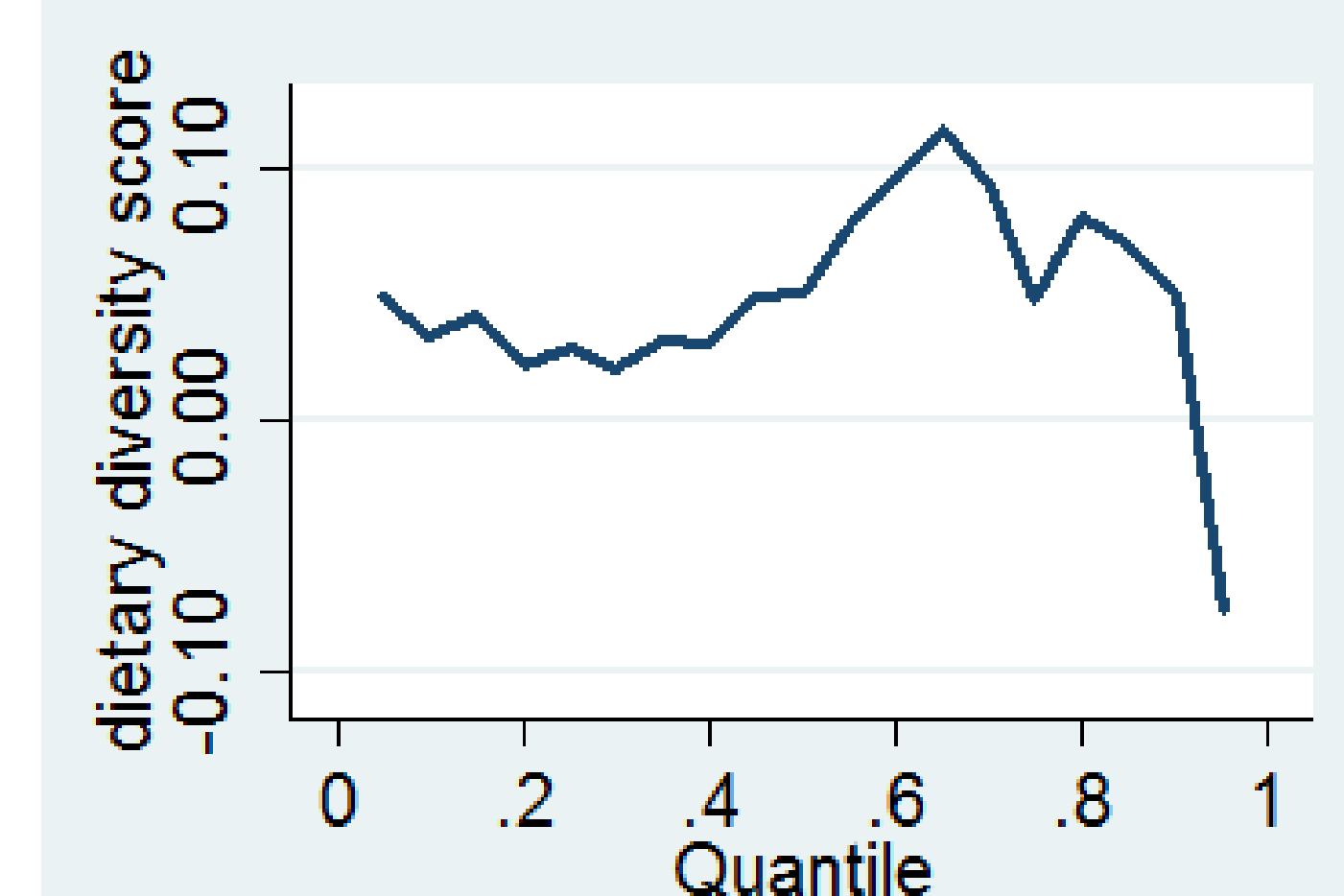
Conclusions

- Overweight prevalence among women of reproductive age has significantly increased across the two panels in north and southwest rural Uganda.

- Rates observed are similar to those reported in the 2011 DHS report in the north (7.2%) but higher in the southwest (23%).

- Particularly concerning is that more than 25% of women in the south west of Uganda are overweight or obese.

- The relationship between DD and BMI was not clear and was confounded by year of survey

- In 2012, DD decreased with increasing BMI while in 2014, DD increased with increasing BMI

- Pooled data analysis using both OLS and quantile regressions were not significant.

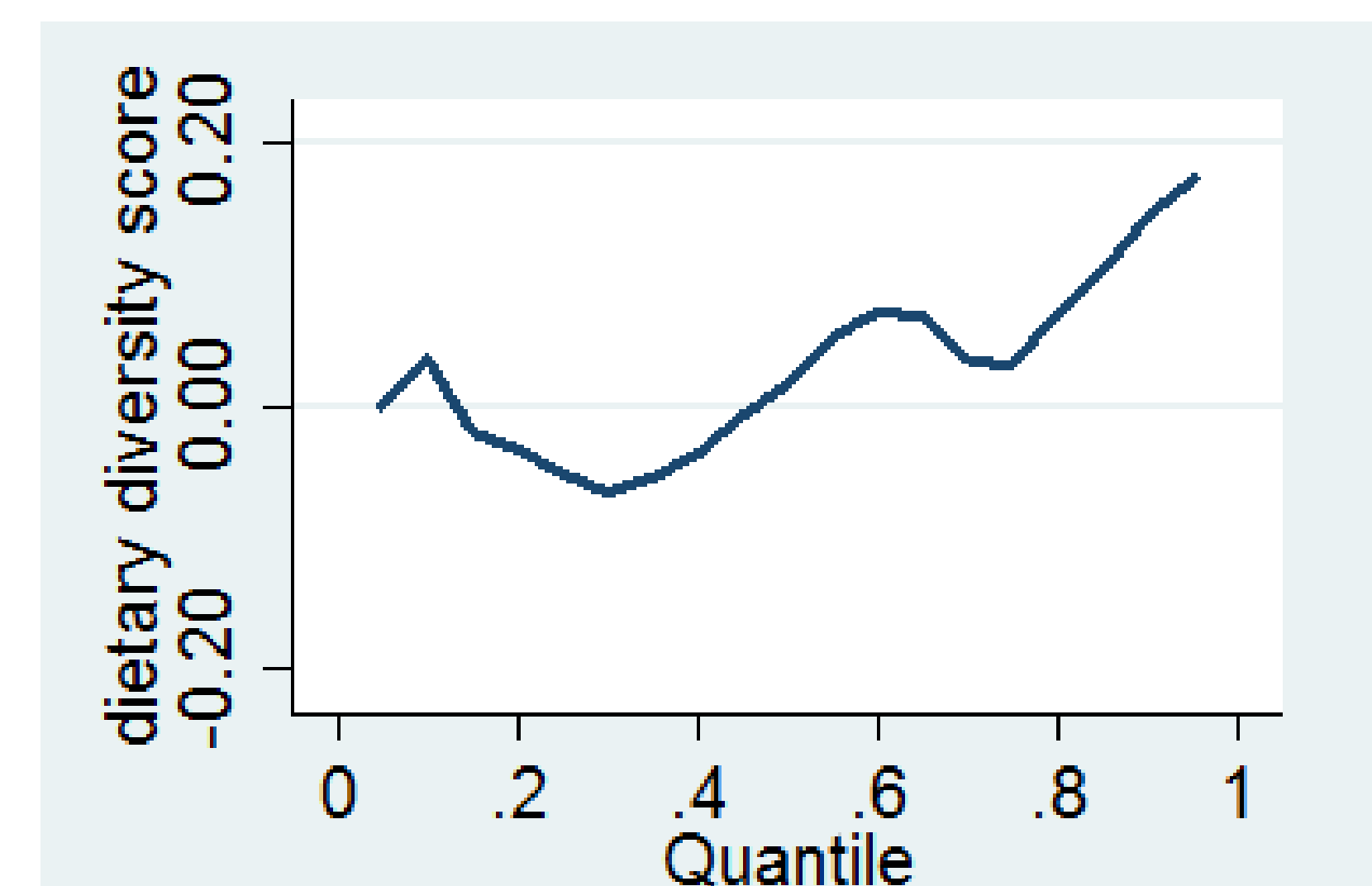Figure 2: Regression plots comparing DD to BMI quantiles (Pooled, 2012 and 2014)

A. Pooled Data

B. 2012 Data

C. 2014 Data

Acknowledgements

References