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Who eats what? The eating behaviour of high school students in Braşov

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Abstract: *The article presents the results of a quantitative marketing research conducted on students from two high schools in Braşov regarding their eating behaviour at school and at home during the school year and holidays. The purpose of this research is to identify what kind of products students consume on their way to school, during breaks and on their way back from school, what kind of food do they eat at home during weekdays and weekends, the complementary behaviours while eating and their eating behaviour in their free time. The results are presented cross tabulated with gender and residence status.*

Key-words: *quantitative research, eating behaviour, gender and residence status segmentation*

1. Introduction

Research shows students learn better when they are well nourished. Healthy eating has been linked to higher grades, better memory, more alertness, faster information processing and improved health leading to better school performance. Conversely, unhealthy eating habits can negatively affect learning.

So how healthy is the food Romanian students eat? The purpose of this research is to identify the kind of products students consume on their way to school, during breaks and on their way back from school, what do they kind of food do they eat at home during weekdays and weekends, the complementary behaviours while eating and their eating behaviour in their free time.

2. Literature review

The latest research in public health care and nutrition makes the law that governs healthy eating in school and high school units (law 123 from 2008) be obsolete in terms of its content and the latest marketing research are based on the premise that the law is also outdated from in its implementation. Thus the work of J. Keon (2010)

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draws attention to the danger posed to all those who consume animal-derived milk. Milk consumption is associated with high levels of fat and cholesterol, iron deficiency, diabetes and ovarian cancer.

In their article, "Red meat consumption and mortality: results from two prospective cohort studies" (2012), Pan et. al describe a long-term study (28 years) on a sample large (120,000 people) which demonstrated that meat consumption from mammals is related to an increased risk of cardiovascular disease, certain types of cancer and metabolic diseases.

Romania ranks 10th in the world in consumption of milk per capita per year, with 266.19 litter (Food and Agriculture Organization, 2007). This statistic also includes dairy products and other products that contain processed milk. When it comes to consuming meat, Romania ranks 53 in the world with 64.7 kg per capita per year in 2009, of which 33 kg of pork and 3.3 kg of animal fats (Food and Agriculture Organization, 2009). EU residents on average eat 36.86 kg of pork per year. Even if meat consumption is below the European average, consumption of animal and vegetable fats is above the European average.

Romanians consume 200 kg of grain per year, including pastries and bread, the European average is 109 kg of grain per year. Romanians consume on average less than 7 kg of oranges, 5 kg of apples and 2 kg of pears, against a European average of 57 kg of oranges, apples and pears.

Studies on all age groups from kindergarten to high school showed that the behaviour of children and teenagers when it comes to food consumption may be influenced if necessary motivation is added. Thus kindergarten and primary school children associate healthy food with the heroes of cartoons and comics (Wansink et al., 2012), and for students in middle school and high school, eating fast food it is "at hand" in terms of time. If healthy food might seem more convenient, and eating fast food may seem less accessible, students would change their consumption behaviour (Hanks et al., 2012).

An unbalanced diet has long-term consequences on health. One of the indicators that contribute to describe the health status of the population of Romania is the number of patients that leave the hospital, by class of diseases. In 2007, the most common reasons for which Romanians were admitted to hospital are related to respiratory diseases (616,000 people), cardiovascular diseases (609 000 people), digestive diseases (464 000 persons), pregnancy and childbirth (384,000 people) and tumours (325,000 people). Of these classes of diseases, the ones associated with an unbalanced diet are cardiovascular diseases, digestive diseases and tumours. For all classes of diseases, since 1993, the number of patients has increased. The number of patients diagnosed with endocrine, nutritional and metabolic diseases has doubled by 2007 compared to 1993. The number of patients suffering from diabetes has increased by 64%, and for those diagnosed with tumours has increased by 80% (Pop, 2009).

3. Material and methods

To capture the eating behaviour of high school students in Brasov, the author developed a 19 questions quantitative questionnaire. The questionnaire was printed out and distributed in two high schools in Brasov: "Andrei Şaguna" National College and "Remus Răduleț" Technical College with the help of sports teachers from both organisations. These two high schools were not chosen randomly, but for a precise segmentation: "Andrei Şaguna" National College has both higher percentages of baccalaureate graduation and higher admissions marks than "Remus Răduleț" Technical College.

The sampling method used was not random and produced a somewhat imbalance between male students and female students, as more male students are registered to the technical high school. Thus the distribution is of 138 male students to 53 female students. The school distribution is of 63 students from "Andrei Şaguna" National College and 128 students from "Remus Răduleț" Technical College. Another identification variable is the urban area versus rural area. As all high school students live in the metropolitan area, there is no point in talking about rural areas but semi-urban areas. This variable is important for the research as students from semi-urban areas are believed to have a different eating behaviour as they need to travel further to reach their high-schools and thus they eat earlier in the morning and later in the afternoon as opposed to their counterparts that live in the city.

The school - gender cross distribution and the school - residence status cross distribution are shown in the following tables.

		Gender		
		Male	Female	Total
School	Remus Răduleț TC	112	16	128
	Andrei Şaguna NC	26	37	63
Total		138	53	191

Table 1. *The sample segmented between school and gender*

		Residence		
		Urban	Semi-urban	Total
School	Remus Răduleț TC	61	65	126
	Andrei Şaguna NC	54	9	63
Total		115	74	189

Table 2. *The sample segmented between school and residence*

The data gathering process lasted for two weeks in September 2015. For data analysis, the author used IBM's SPSS 19.0 software.

4. Results and discussions

The first direction of research was the consumption of food and beverages of students on their way to school, at school and on their way back to school. The following charts include the mean values for how often different segments of high school students consume food on their way to school (left) and on their way back from school (right). The questions were designed as ordinal variables so that a small mean translates into a high frequency of occurrence and high mean translates into a low frequency of consumption.

The first segmentation variable was the school the students attend. Students from "Remus Răduleț" Technical College have smaller means for all groups of food tested for both on their way to school and for on their way back to school. Water and fizzy drinks have the smallest means for both segments and for both time spans. Fresh and dried fruits have the largest averages for both segments and for both time spans.

The second segmentation variable was urban – semi-urban variable. As all students have their classes in the morning starting at 8 o'clock, it makes sense that students that commute from semi-urban areas are not likely to have time to eat properly at home and thus have to buy food on their way to school (left table). All means are smaller for semi-urban students as opposed to urban students. On their way back from school (right table) the consumption behaviour is less obvious as the means are closer for all groups of food products. Again water and fizzy drinks have the highest frequency of consumption and fresh and dried fruits the lowest frequency of consumption.

The third segmentation variable was students' gender. Male students consume all groups of food to a larger extent than female students on their way to school. Things change on students' way back from school: female students consume fresh pastries and pretzels and coffee to a larger extent than male students. Water is still the most consumed group tested, but one can see a great difference in the consumption of fizzy drinks: male students drink significantly more than female students on both occasions.

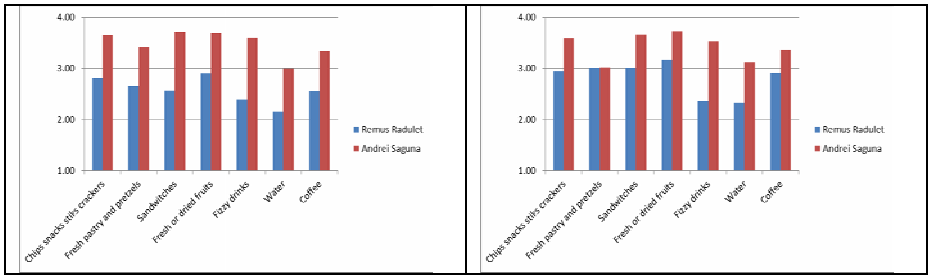

Fig. 1. *What students consume on their way to (left) and on their way back from school (right) crossed with school*

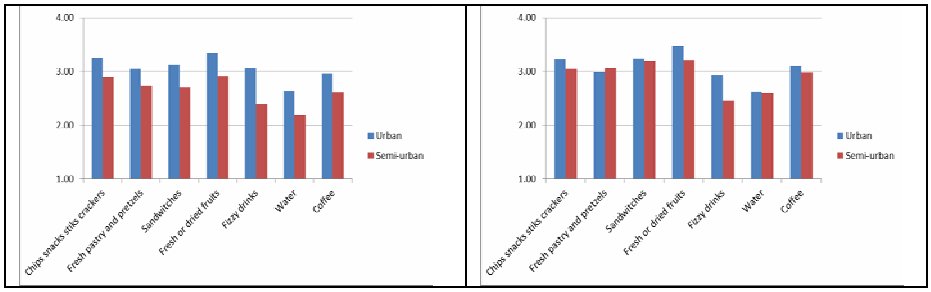

Fig. 2. *What students consume on their way to (left) and on their way back from school (right) crossed with residence*

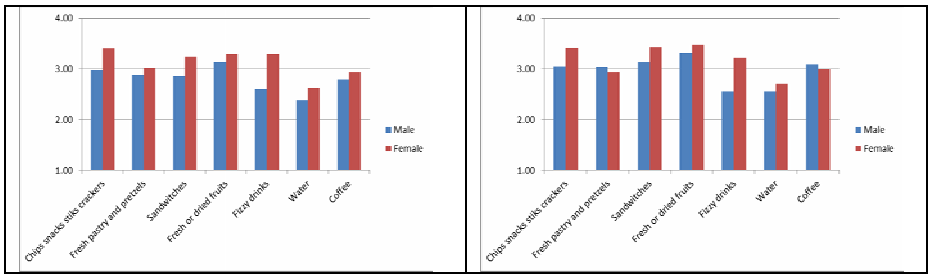

Fig. 3. *What students consume on their way to (left) and on their way back from school (right) crossed with gender*

The second question was a multi-choice question on what products do students have consumed during breaks in the past week. The results are shown in percentages of students who did consume the tested groups of food in the week previous to the research in the following charts using two segmentation variables: urban – semi-urban and gender.

Students from semi-urban areas consume homemade sandwiches, fizzy drinks and coffee. The most consumed products are homemade sandwiches, water and tea, fizzy drinks and coffee. The percentage of fresh and dried fruits is roughly the same, 26%. Male and female students consume homemade sandwiches to the same extent, female students drink more water and tea but male students drink more fizzy drinks. Female students consume more fresh and dried fruits but also drink more coffee.

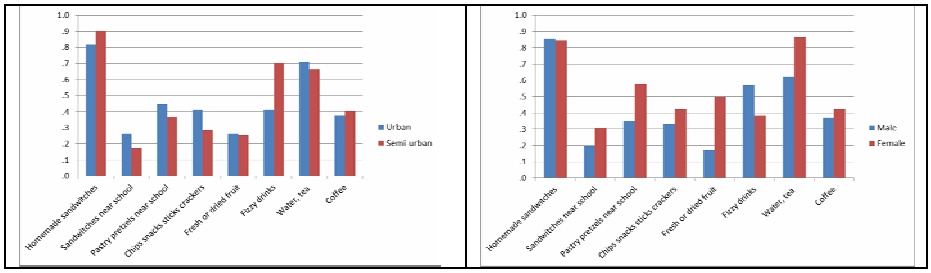

Fig. 4. *What students consume on breaks crossed with residence (left) and gender (right)*

The meals students eat at home during weekdays were analysed next. The first thing to be noted is that all students from urban areas eat at least two meals per day and 75% of students eat three meals per day. In the semi-urban areas, 94.2% of students eat two meals per day and 75.7% eat three meals per day. The following two tables include the data gathered from urban students and semi-urban students. Some students eat after 12 o'clock at night, thus 1 o'clock the following day was recorded as 25 so that the mean could be computed.

Although the means are close for all three meals (10 to 11 o'clock for the first meal, 16.30 to 17 o'clock for the second meal and 20 o'clock for the third), one may see that the standard deviation for semi-urban students is larger than urban students for all three meals. This translates into a flatter distribution that means that students from semi-urban areas eat more chaotic than they should mainly because of commuting.

	N	Minimum	Maximum	Mean	Std. Deviation
Time of 1st meal	112	5	18	10.007	3.9025
Time of 2nd meal	112	11	23	16.630	2.4354
Time of 3rd meal	84	14	25	19.932	1.7511

Table 3. *Indicators for meals during weekdays for urban students*

	N	Minimum	Maximum	Mean	Std. Deviation
Time of 1st meal	70	4.5	18	10.871	4.5712
Time of 2nd meal	66	8	24	16.689	2.9688
Time of 3rd meal	53	12	25.5	20.383	2.3956

Table 4. *Indicators for meals during weekdays for semi-urban students*

The groups of food students eat at home in the week prior to the research are shown in the charts below cross tabulated with two segmentation variables: gender and urban – semi-urban. The question was designed as an ordinal variable so that a small mean translates into a high frequency of occurrence and high mean translates into a

low frequency of consumption. Male students eat bread and pastries, meat and fats more often than female students, whereas female students eat sweets, milk and dairy products, fresh fruit and fresh vegetables more often that male students. Urban students eat fresh vegetables, cooked vegetable, meat and fats more often than semi-urban students, whereas semi-urban students eat fresh fruit, milk and dairy products, bread and pastries more often than urban students.

The lowest means that translate into high frequency of consumption are found for bread and pastries, meat, sweets, soup and fresh fruit. The highest means are found for fats, fresh vegetables and cooked vegetables.

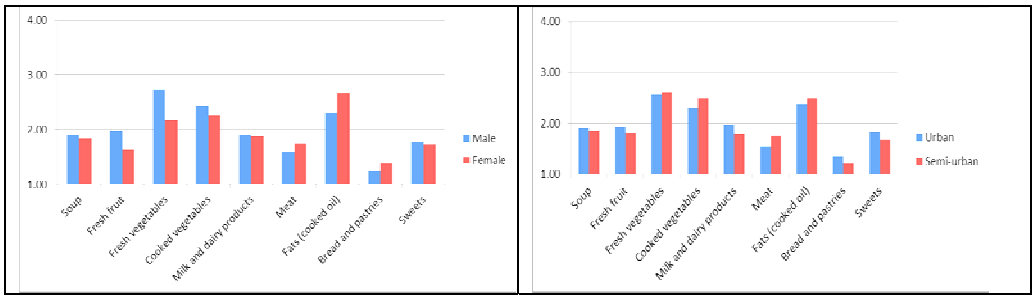

Fig. 5. *What students eat at home crossed with gender (left) and residence (right)*

When it comes to complementary behaviours while eating, the means show that students use their phones and tablets, listen to music and watch television, in this order. The question was designed as an ordinal variable so that a small mean translates into a high frequency of occurrence and high mean translates into a low frequency of occurrence. Female students use their phones and tablets, listen to music, watch television and eat while standing more often than male students. Male students sit at their computers more often.

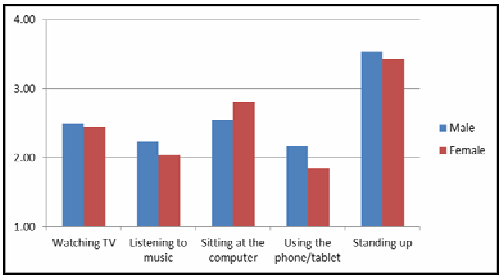

Fig. 6. *Complementary behaviours while eating*

The following questions involved the behaviour of students during weekends and holidays. The first thing to be noted is that all students from urban areas eat at least

two meals per day and 91.7% of students eat three meals per day. In the semi-urban areas, all students eat two meals per day and 90.5% eat three meals per day. The following two tables include the data gathered from urban students and semi-urban students. 1 o'clock the following day was recorded as 25 so that the mean could be computed.

Although the means are close for all three meals (10 o'clock for the first meal, 14.30 to 15 o'clock for the second meal and 20 o'clock for the third), one may see that the standard deviations are far smaller than in the case of meals during weekdays. This means that students from both urban and semi-urban areas eat more organized.

	N	Minimum	Maximum	Mean	Std. Deviation
Time of 1st meal	109	6	18	10.032	1.6657
Time of 2nd meal	109	12	19	14.639	1.5329
Time of 3rd meal	100	16	24	19.850	1.7196

Table 5. *Indicators for meals during weekends for urban students*

	N	Minimum	Maximum	Mean	Std. Deviation
Time of 1st meal	74	4	14	9.905	1.5630
Time of 2nd meal	74	12	23	14.863	2.2209
Time of 3rd meal	67	16	27	19.933	1.7962

Table 6. *Indicators for meals during weekends for semi-urban students*

When students go out on weekends and holidays they consume the following products in descending order: ice-cream (seasonal product, the research was conducted in September), fizzy drinks, pizza, sandwiches and shaorma and coffee. Male students spend on average 40 lei with a standard deviation of 24 lei and female students spend on average 29 lei with a standard deviation of 15 lei. The difference is statistically significant. There's no statistic difference between urban students and semi-urban students.

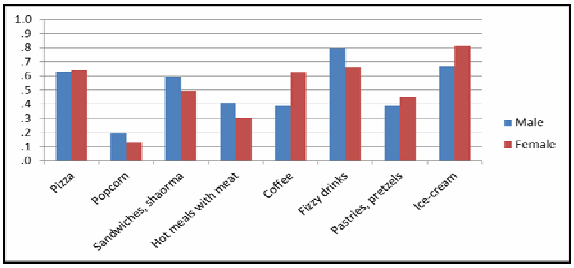

Fig. 7. *What students consume when they go out*

As the research happened in September, just after the beginning of the school year, the legislation states that all students should have attended their general physician in order to go to school. Thus the author found useful to ask the students when was the last time they went to see their general physician. The mean is 3.9 months with a standard deviation of 5.4 months and a maximum of 48 months. Only 36.5% of students have seen their general physician in the month prior to the beginning of the school year and 7.3% of students haven't seen theirs in a year or more.

The last two questions students were asked how much physical activity they undertake outside school and if they considered they eat healthy. The results are shown in the following figures cross tabulated with the gender. As expected male students do more physical activity than female students (the mode for males is "much", the mode for females is "so and so"), with twice as much females answering "very little".

The same pattern applies when students were asked how healthy they considered they eat. No females answered "very healthy" and twice as many females answered "very unhealthy".

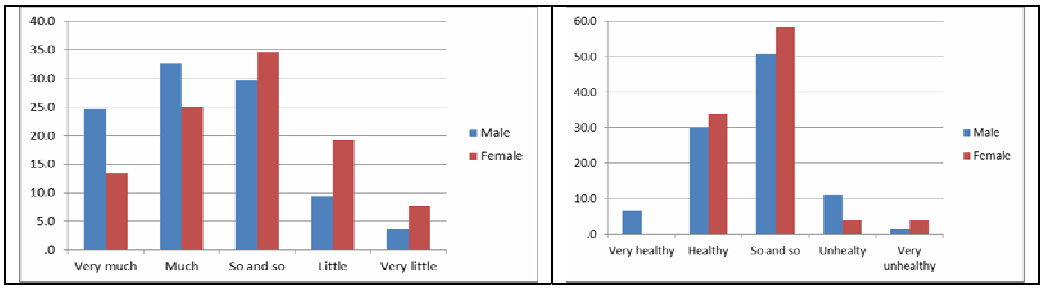

Fig. 8. *Physical activities outside school (left) and how healthy students eat (right)*

5. Conclusions

The first direction of research was the eating behaviour related to school. As they spend more time commuting, semi-urban students consume more food and beverages on their way to and from school. Male students consume more food and beverages on their way to school, but females consume more pastries and coffee on their way back from school, products that are associated with socializing among peers. During school breaks most students eat homemade sandwiches and generally female students eat and drink healthier than male students. More than 50% of males drink fizzy drinks and more than 40% of females drink coffee at school.

The time of students' meals is a source of great concern. Students eat very chaotic that translated in large standard deviations for the time of their meals, semi-

urban students have significantly larger standard deviations due to commuting. 75% of students eat three meals per day.

At home students eat bread and pastries, meat, soups and milk and dairy products. Fresh fruit is the least consumed category for all segments. Besides eating poorly and at irregular time, students engage in complementary activities while eating: using their phones and tablets, listening to music, watching TV and eat while standing.

Taking into account all the information given by students in the questioner, the most striking fact is that most of them answered that they believe that they eat "healthy" and "so and so". Besides the bad habits and unhealthy behaviour, students also lack the information about healthy nutrition at their age.

The limitation of this quantitative research comes from the fact that the sampling is not random, and thus the results cannot be extrapolated to the whole researched population. Also the reasons why students choose certain groups of food and beverages were not taken into account at this point. Further research is needed to map the whole behaviour of students with details on buying behaviour, reasons for choosing certain products and their attitudes towards a healthy life style.

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