

## 20121101 - Nutritional balance of potato crisps (descriptive statistics) - 2012

[Data] [[<Normal page](#)] [**PEREZGONZALEZ Jose D (2012)**. *Nutritional balance of potato crisps (descriptive statistics)*. Journal of Knowledge Advancement & Integration ([ISSN 1177-4576](#)), 2012, pages 316-319.]

### Potato crisps' BNI (description)

Perezgonzalez assessed the nutritional balance of potato crisps<sup>3</sup> in 2012<sup>2</sup>, as part of a research on the nutritional composition of snacks in New Zealand. This article provides descriptive information both about the sample of products under research ([foodBNI](#)) as well as about a hypothetical diet based on those products ([dietBNI](#)).

### foodBNI

The distribution of nutritional balance, as shown in illustration 1, clustered into two groups, namely due to the small number of products under research. The median was located at BNI 67.85 and the middle 68% of products ranged between BNI 33 (P<sub>16</sub>) and BNI 78 (P<sub>84</sub>). There was a slight negative skewness (mean=61.02, zSkew=-1.29) as most of the products were grouped towards the unbalanced end.

The distribution of nutritional balance varied slightly according to the [recommended dietary intakes \(RDIs\)](#) of reference, although all followed a pattern similar to the one just described. Even so, this group of products appeared less unbalanced under US's, Australia's and UK's RDIs than under WHO's RDIs.

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**Illustration 1: Food's nutritional balance distribution**

Scale	BNI	International RDIs			
		WHO	US/CAN	AUS/NZ	UK
=0					
≥0					
≥10		1	1		
≥20	1	2	2	1	3
≥30	2			2	
≥40					3
≥50		2	6	4	4
≥60	5	3	1	3	1
≥70	2	2	1	1	
≥80	1	1			
≥90					
≥100					

<b>≥110</b>					
<b>≥120</b>					
<b>≥130</b>					
<b>≥140</b>					
<b>≥150</b>					
<b>≥160</b>					
<b>≥170</b>					
<b>≥180</b>					
<b>≥190</b>					
<b>≥200</b>					
<b>Median</b>	<b>67.85</b>	<b>63.09</b>	<b>56.07</b>	<b>57.10</b>	<b>48.00</b>
<b>SPR</b>	<b>22.57</b>	<b>27.81</b>	<b>22.14</b>	<b>17.42</b>	<b>18.58</b>
<b>P<sub>16</sub></b>	<b>32.65</b>	<b>19.84</b>	<b>19.84</b>	<b>30.29</b>	<b>22.61</b>
<b>P<sub>84</sub></b>	<b>77.78</b>	<b>75.46</b>	<b>64.12</b>	<b>65.12</b>	<b>59.76</b>
<b>RSkew</b>	<b>-12.64</b>	<b>-15.44</b>	<b>-14.09</b>	<b>-9.40</b>	<b>-6.82</b>
<b>Mean</b>	<b>61.02</b>	<b>53.58</b>	<b>47.96</b>	<b>52.90</b>	<b>45.81</b>
<b>StDev</b>	<b>20.06</b>	<b>24.13</b>	<b>19.66</b>	<b>16.14</b>	<b>15.16</b>
<b>zSkew</b>	<b>-1.29</b>	<b>-1.02</b>	<b>-1.40</b>	<b>-1.41</b>	<b>-1.07</b>
<b>zKurt</b>	<b>-0.35</b>	<b>-0.71</b>	<b>-0.36</b>	<b>-0.22</b>	<b>-0.72</b>
<b>Unst.Effect<sup>4</sup></b>	<b>large≈15</b>	<b>medium≈10</b>	<b>small≈4</b>	<b>(Avg.StDev=19)</b>	

Relationships between indexes were also high, especially Pearson correlation coefficients, thus supporting the idea of a common pattern in the distribution of nutritional balance across international indexes for this particular group of products.

<b>Illustration 2: Correlations (Pearson and Spearman)</b>					
<b>r / rho</b>	<b>BNI</b>	<b>WHO</b>	<b>US/CAN</b>	<b>AUS/NZ</b>	<b>UK</b>
<b>BNI</b>		0.918	0.925	0.897	0.861
<b>WHO</b>	0.978		0.989	0.724	0.670
<b>US/CAN</b>	0.996	0.987		0.735	0.680
<b>AUS/NZ</b>	0.988	0.937	0.978		0.991
<b>UK</b>	0.964	0.901	0.947	0.986	

## dietBNI

As part of a hypothetical diet where all products contributed the same weight of crisps, the resulting nutritional unbalance would decrease sensibly. Such diet would "benefit" more under BNI's and WHO's RDIs (17 units on the scale) than under the other RDIs (around 12 units on the scale).

<b>Illustration 3: Diet's nutritional balance</b>						
<b>Protein</b>	<b>Carbs</b>	<b>Sugar</b>	<b>Fat</b>	<b>Sat.fat</b>	<b>Fiber</b>	<b>Sodium</b>
3.9	63.4	2.7	21.9	6.0	3.2	0.622
<b>International RDIs</b>		<b>BNI</b>	<b>WHO</b>	<b>US/CAN</b>	<b>AUS/NZ</b>	<b>UK</b>
<b>(diet)</b>		44.98	42.85	31.43	40.66	32.58
<i>(Values per 100g)</i>						

## Methods

### Research approach

Exploratory study for mapping the nutritional balance of potato crisps<sup>3</sup> in New Zealand.

### Sample

A sample of 11 potato crisp products<sup>2</sup>, including diverse brands and flavors, and other relevant categories. Notwithstanding this, the actual products were collected in a convenient manner from four major national supermarket chains. The final sample covered most of the population of potato crisp products available at those supermarkets.

### Variables

Variables of interest for this research were the following:

- Weight contribution of seven nutrients (protein, carbohydrate, sugar, fat, saturated fat, fiber and sodium) to 100g of a food product.
- The Balanced Nutrition Index (BNI) of each food product, as calculated from above variables.
- Aggregated information for the sample of products (foodBNI).
- Aggregated information about the individual nutrients for the simulation of hypothetical diets (dietBNI).

### Materials & analysis

Relevant data were collated after purchasing the food products or by capturing such information from producers' websites if this information was available and was deemed reliable. The data were then assessed using the [Balanced Nutrition Index™ \(BNI™\)](#) technology (see [Perezgonzalez, 2011<sup>1</sup>](#)).

SPSS-v18 was used for the computation of variables, including BNI and international indexes, and for descriptive statistical analyses.

### Generalization potential

Although the research sample captured a large proportion of the potato crisp products available at the time, the resulting sample is still too small as for inferring anything beyond the group of products here described. It is recommended to collate the data from this group with that of related group of products if inferential analyses are intended.

### References

1. **PEREZGONZALEZ Jose D (2011)**. [Balanced Nutrition Index™ \(BNI™\)](#). Journal of Knowledge Advancement & Integration ([ISSN 1177-4576](#)), 2011, pages 20-21.
2. **PEREZGONZALEZ Jose D (2012)**. [Crispy crisps](#). The Balanced Nutrition Index ([ISSN 1177-8849](#)), 2012, issue 7.

+++ **Notes** +++

- 3. Snacks made from dehydrated potato, potato flakes, etc (thus, not including [potato chips](#)).
- 4. This is the estimated unstandardized effect size for group differences (Cohen's d and Glass's Δ) given an average standard deviation and following Cohen's d effect size interpretation. It can be used to ascertain the relative importance of descriptive data without the need to perform inferential tests.

## Want to know more?

### BNI analysis of individual potato crisp products

You can access either the [BNI™ database](#) or the '[BNI™ journal \(2012, issue 7\) - Crispy crisps](#)' for individual nutrition analyses of each food product in the sample.

### [Wiki of Science - Nutritional balance of potato crisps \(introduction\)](#)

This Wiki of Science page provides a descriptive summary of the nutritional balance of potato crisps.

### [Wiki of Science - Nutritional balance of foods](#)

This Wiki of Science page collates information about several foods on a single page and provides useful links to the appropriate files.

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