**TITLE: CONSUMPTION OF ULTRA-PROCESSED FOODS AND THE EATING LOCATION: CAN THEY BE ASSOCIATED?**

British Journal of Nutrition

Authors:

Thays Nascimento Souza\*1,3 (ORCID: https://orcid.org/0000-0001-5405-5398)

Giovanna Calixto Andrade2,3 (ORCID: https://orcid.org/0000-0002-1901-3093)

Fernanda Rauber1,2,3 (ORCID: https://orcid.org/0000-0001-9693-7954)

Renata Bertazzi Levy2,3 (ORCID: https://orcid.org/0000-0001-5388-7002)

Maria Laura da Costa Louzada1,3 (ORCID: https://orcid.org/0000-0002-3756-2301)

1Department of Nutrition, School of Public Health, University of São Paulo, São

Paulo 01246-904, Brazil

2Department of Preventive Medicine, School of Medicine, University of São Paulo,

São Paulo 01246-903, Brazil

3Center for Epidemiological Research in Nutrition and Health, University of São

Paulo, São Paulo 01246-904, Brazil

\*Corresponding author: thaysnascimento.souza@gmail.com

**Supplementary 1** Distribution of total energy intake according to NOVA classification in each reported eating location by life stages.

United Kingdom population aged 4 years or over (2014-2016).



Children 4-10 years; Adolescents 11-18 years; Adults ≥ 19 years old or over.

¹School, care's home, community centre/ day centre/ drop-in, nursery/ kindergarten, and work.

²Not at home - unspecified, other place, outside, place of worship, public hall/ function room, unspecified.

**Supplementary 2** Distribution of total energy intake according to ultra-processed foods subgroups in each reported eating location.

United Kingdom population aged 4-10 years old (2014-2016).

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Home** | **Institutional places1** | **Sit-down** **restaurants** | **On the go** | **Coffee shops** | **Leisure and sports places** | **Fast food** | **Friends and relatives' house** | **Other places2** |
|  | Mean  | SE | Mean  | SE | Mean  | SE | Mean  | SE | Mean  | SE | Mean  | SE | Mean  | SE | Mean  | SE | Mean  | SE |
| Ultra-processed breads | 17.4 | 0.7 | 22.9 | 1.5 | 9.7 | 2.4 | 4.2 | 1.2 | 8.7 | 3.0 | 7.6 | 1.7 | 0.8 | 0.4 | 13.1 | 1.9 | 8.6 | 1.4 |
| Salty snacks | 3.9 | 0.3 | 5.9 | 0.7 | 2.9 | 2.3 | 12.4 | 3.2 | 9.6 | 3.8 | 8.5 | 2.2 | 0.2 | 0.2 | 7.3 | 1.7 | 9.1 | 1.9 |
| Pizza | 4.8 | 0.5 | 4.0 | 0.6 | 12.9 | 4.1 | 1.5 | 1.0 | 4.7 | 2.8 | 1.5 | 0.7 | 0.0 | 0.0 | 4.4 | 1.3 | 3.3 | 1.2 |
| Breakfast cereals | 14.5 | 0.8 | 0.6 | 0.1 | 1.0 | 0.8 | 1.5 | 0.8 | 0.0 | 0.0 | 1.3 | 1.1 | 0.0 | 0.0 | 5.2 | 1.5 | 1.9 | 0.7 |
| Processed meat | 5.9 | 0.4 | 8.4 | 0.8 | 6.9 | 2.0 | 0.6 | 0.4 | 5.3 | 2.0 | 2.7 | 0.9 | 9.3 | 3.0 | 8.6 | 1.4 | 2.1 | 0.6 |
| Packaged pre-prepared meals, sandwiches, and hamburgers | 15.3 | 0.8 | 14.3 | 1.1 | 27.6 | 4.1 | 7.7 | 2.3 | 18.4 | 4.5 | 1.1 | 3.0 | 73.4 | 3.8 | 15.4 | 1.9 | 9.6 | 1.8 |
| Milk based drinks | 6.1 | 0.5 | 5.0 | 0.6 | 2.9 | 1.6 | 2.1 | 0.7 | 8.4 | 5.0 | 2.8 | 1.5 | 7.3 | 2.2 | 3.5 | 1.1 | 1.7 | 0.5 |
| Other ultra-processed foods | 0.8 | 0.2 | 1.7 | 0.4 | 0.6 | 0.6 | 0.3 | 0.3 | 0.2 | 0.1 | 0.4 | 0.3 | 0.1 | 0.1 | 0.5 | 0.3 | 0.4 | 0.2 |
| Soft drinks | 3.0 | 0.5 | 1.7 | 0.3 | 8.5 | 1.8 | 4.9 | 1.4 | 6.3 | 2.7 | 13.8 | 3.5 | 2.3 | 0.6 | 2.5 | 0.5 | 7.0 | 1.8 |
| Sugary products | 23.5 | 0.9 | 30.3 | 1.5 | 22.9 | 4.5 | 63.8 | 4.2 | 35.8 | 6.6 | 49.2 | 4.9 | 4.5 | 1.6 | 34.8 | 3.2 | 53.3 | 3.4 |
| Sauces and margarine | 4.8 | 0.3 | 5.3 | 0.4 | 3.9 | 1.3 | 0.9 | 0.3 | 2.7 | 1.3 | 0.8 | 0.3 | 2.2 | 0.9 | 4.7 | 0.6 | 3.0 | 1.0 |

¹School, care's home, community centre/ day centre/ drop-in, nursery/ kindergarten, and work.

²Not at home - unspecified, other place, outside, place of worship, public hall/ function room, unspecified.

**Supplementary 3** Distribution of total energy intake according to ultra-processed foods subgroups in each reported eating location.

United Kingdom population aged 11-18 years old (2014-2016).

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Home** | **Institutional places1** | **Sit-down** **restaurants** | **On the go** | **Coffee shops** | **Leisure and sports places** | **Fast food** | **Friends and relatives' house** | **Other places2** |
|  | Mean  | SE | Mean  | SE | Mean  | SE | Mean  | SE | Mean  | SE | Mean  | SE | Mean  | SE | Mean  | SE | Mean  | SE |
| Ultra-processed breads | 17.5 | 0.9 | 26.4 | 1.8 | 9.4 | 2.6 | 13.4 | 2.6 | 24.6 | 4.8 | 8.7 | 2.5 | 8.7 | 2.5 | 12.6 | 2.3 | 12.3 | 1.9 |
| Salty snacks | 3.6 | 0.3 | 8.4 | 1.0 | 1.0 | 0.4 | 13.8 | 3.1 | 1.2 | 0.8 | 5.2 | 2.5 | 1.1 | 0.8 | 5.1 | 1.6 | 9.2 | 1.8 |
| Pizza | 6.5 | 0.7 | 3.7 | 0.7 | 8.1 | 2.9 | 0.1 | 0.1 | 1.0 | 0.9 | 0.5 | 0.4 | 0.8 | 0.8 | 5.9 | 1.6 | 2.8 | 1.4 |
| Breakfast cereals | 12.1 | 0.8 | 0.4 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 1.0 | 0.7 | 0.4 | 0.4 | 0.0 | 0.0 | 2.5 | 0.8 | 2.8 | 1.5 |
| Processed meat | 5.5 | 0.4 | 4.9 | 0.6 | 6.1 | 1.6 | 1.4 | 0.4 | 8.4 | 2.5 | 0.8 | 0.3 | 4.7 | 2.0 | 5.6 | 1.5 | 2.3 | 0.5 |
| Packaged pre-prepared meals, sandwiches, and hamburgers | 21.1 | 0.9 | 15.0 | 1.4 | 32.5 | 4.4 | 19.3 | 3.2 | 13.9 | 4.1 | 1.5 | 4.2 | 53.5 | 4.9 | 19.5 | 2.9 | 17.8 | 2.6 |
| Milk based drinks | 2.9 | 0.3 | 3.1 | 0.9 | 3.7 | 2.5 | 2.3 | 1.0 | 18.0 | 4.5 | 2.7 | 1.2 | 6.8 | 2.2 | 1.1 | 0.4 | 5.0 | 1.8 |
| Other ultra-processed foods | 1.0 | 0.2 | 0.5 | 0.2 | 6.4 | 2.4 | 0.0 | 0.0 | 0.5 | 0.3 | 0.5 | 0.4 | 0.8 | 0.4 | 2.4 | 1.0 | 0.7 | 0.4 |
| Soft drinks | 4.5 | 0.4 | 5.2 | 0.9 | 20.8 | 3.0 | 14.9 | 3.0 | 6.5 | 2.4 | 30.0 | 5.1 | 11.1 | 3.4 | 9.7 | 2.1 | 12.3 | 1.7 |
| Sugary products | 19.1 | 0.9 | 24.9 | 1.6 | 7.5 | 2.0 | 31.4 | 3.5 | 18.9 | 5.2 | 33.2 | 5.5 | 9.3 | 3.8 | 31.5 | 3.9 | 30.6 | 2.9 |
| Sauces and margarine | 6.1 | 0.4 | 7.6 | 1.1 | 4.5 | 1.3 | 3.5 | 1.2 | 6.0 | 1.3 | 3.4 | 1.3 | 3.2 | 1.1 | 4.0 | 0.7 | 4.1 | 1.1 |

¹School, care's home, community centre/ day centre/ drop-in, nursery/ kindergarten, and work.

²Not at home - unspecified, other place, outside, place of worship, public hall/ function room, unspecified.

|  |
| --- |
| **Supplementary 4** Distribution of total energy intake according to ultra-processed foods subgroups in each reported eating location. United Kingdom population aged 19 years old or over (2014-2016).  |
|  | **Home** | **Institutional places1** | **Sit-down** **restaurants** | **On the go** | **Coffee shops** | **Leisure and sports places** | **Fast food** | **Friends and relatives' house** | **Other places2** |
|  | Mean  | SE | Mean  | SE | Mean  | SE | Mean  | SE | Mean  | SE | Mean  | SE | Mean  | SE | Mean  | SE | Mean  | SE |
| Ultra-processed breads | 21.1 | 0.6 | 23.9 | 1.2 | 10.8 | 1.6 | 12.0 | 2.2 | 24.5 | 2.4 | 10.8 | 2.5 | 12.2 | 4.7 | 16.3 | 1.9 | 12.8 | 1.6 |
| Salty snacks | 2.8 | 0.2 | 6.1 | 0.7 | 1.4 | 0.5 | 8.6 | 1.8 | 0.8 | 0.4 | 3.1 | 1.2 | 0.0 | 0.0 | 3.0 | 0.7 | 6.0 | 1.4 |
| Pizza | 3.6 | 0.4 | 0.5 | 0.3 | 4.4 | 1.2 | 0.0 | 0.0 | 1.3 | 1.1 | 0.0 | 0.0 | 0.0 | 0.0 | 3.1 | 1.0 | 0.3 | 0.2 |
| Breakfast cereals | 10.7 | 0.5 | 4.0 | 0.7 | 0.0 | 0.0 | 0.3 | 0.3 | 0.6 | 0.6 | 1.5 | 1.3 | 0.0 | 0.0 | 1.3 | 0.5 | 0.9 | 0.4 |
| Processed meat | 6.2 | 0.3 | 4.0 | 0.4 | 8.8 | 1.4 | 2.7 | 0.7 | 8.2 | 1.2 | 2.7 | 0.8 | 0.5 | 0.4 | 5.9 | 1.0 | 4.1 | 0.9 |
| Packaged pre-prepared meals, sandwiches, and hamburgers | 21.1 | 0.6 | 17.9 | 1.3 | 27.6 | 2.2 | 17.5 | 2.5 | 14.2 | 2.1 | 14.3 | 3.1 | 70.9 | 5.7 | 20.0 | 2.4 | 12.2 | 1.9 |
| Milk based drinks | 3.0 | 0.2 | 4.8 | 0.6 | 1.4 | 0.5 | 3.3 | 1.0 | 7.4 | 1.7 | 3.5 | 1.6 | 2.5 | 2.2 | 5.3 | 1.7 | 3.9 | 1.4 |
| Other ultra-processed foods | 3.7 | 0.4 | 2.6 | 0.6 | 8.3 | 1.4 | 1.4 | 0.6 | 1.8 | 0.8 | 5.8 | 1.8 | 0.3 | 0.2 | 3.6 | 0.8 | 4.7 | 1.3 |
| Soft drinks | 2.9 | 0.3 | 5.2 | 0.8 | 12.9 | 1.7 | 12.7 | 2.4 | 4.4 | 1.2 | 15.4 | 4.0 | 6.7 | 1.3 | 6.5 | 1.5 | 12.0 | 2.0 |
| Sugary products | 17.9 | 0.6 | 22.6 | 1.5 | 11.3 | 1.5 | 36.7 | 3.5 | 30.1 | 3.2 | 39.4 | 4.7 | 1.6 | 0.9 | 24.9 | 2.4 | 37.4 | 3.0 |
| Sauces and margarine | 7.0 | 0.2 | 8.5 | 0.7 | 13.2 | 1.6 | 4.9 | 1.3 | 6.9 | 1.1 | 3.5 | 1.3 | 5.4 | 2.5 | 10.1 | 1.7 | 5.5 | 0.9 |

¹School, care's home, community centre/ day centre/ drop-in, nursery/ kindergarten, and work.

²Not at home - unspecified, other place, outside, place of worship, public hall/ function room, unspecified.