mais **dados**
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Brazilian people's perceptions of risk factors for cancer

Brazil, June 2026

mais dados mais saúde

MORE DATA BETTER HEALTH
BRAZILIAN PEOPLE'S PERCEPTIONS OF RISK FACTORS FOR CANCER

Support

devive

Conducted by

UMANE

Vital Strategies

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The research project was submitted to the Research Ethics Committee of the School of Medicine of the Federal University of Pelotas (UFPel) and approved under ruling Nr. 7.044.351.

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Executive Summary

The report *More Data Better Health - Brazilian people's perceptions of risk factors for cancer* presents the results of a national survey representative of the Brazilian adult population, aiming to analyze the knowledge, attitudes and behaviors related to cancer prevention. The study provides an exploratory analysis of the responses of 6,566 people aged 18 and over, collected between September and October 2025.

It is organized around three axes: **(i)** general perceptions of cancer, including people's knowledge and experiences; **(ii)** knowledge about its risk and protective factors; and **(iii)** behavioral factors and health-related conditions, such as alcohol consumption, diet, physical activity, excess weight, and smoking. This structure allows us to analyze, in an integrated way, how knowledge relates to practices and intentions for change.

The data show that cancer is widely known by the population: 99.1% of Brazilians say they know or have heard of the disease. However, about 27% do not recognize that cancer can be prevented, evidencing an important gap in the understanding of the disease. This gap is also reflected in an unequal recognition of risk factors for cancer. Smoking is widely recognized as a risk factor (90.5%), followed by genetic inheritance (89.4%) and excessive sun exposure (88.3%). In contrast, other lifestyle factors are less recognized, such as excess weight (54.1%) and red meat consumption (27.5%).

It is also observed that 40.5% of the population does not recognize breastfeeding as a protective factor for cancer, while 61.3% mistakenly believe that the use of vitamin and mineral supplements reduces the risk of cancer.

Regarding diet, high consumption of ultra-processed foods, sweetened beverages, red meats and processed meats was observed. Although a relevant portion of the population reports attempted reduction, there is still a low perception of risk associated with these products.

As for physical activity, just over half of the population claims to practice it, while about 40% of those who do not, express an intention to start, indicating a latent demand for behavior change.

The results also show that young people and people with lower income have a lower level of knowledge about risk factors and greater exposure to behaviors that are harmful to health.

Transversally, it is observed that a significant portion of the population shows intention to adopt healthier habits, which points to a strategic opportunity for public policies that coordinate information, regulation and promotion of healthy environments, with a focus on reducing health inequities.

Regarding behaviors, 11.3% of the population reported currently smoking and 18.3% identified themselves as former smokers. Despite the high recognition of smoking as a risk factor, only 13.4% of smokers or former smokers reported having had access to cessation treatment. With regard to alcohol consumption, approximately half of the population (50.1%) said they did not consume alcoholic beverages. Among those who consume, most report attempted reduction.

Introduction

This report presents the results of the study *More Data Better Health - Brazilian people's perceptions of risk factors for cancer*. This is the fourth edition of More Data Better Health, a program of innovation in health data collection, carried out by Vital Strategies and Umane, with the support of the Devive Institute. This edition had the partnership of the National Cancer Institute (INCA)'s technical staff for Food, Nutrition, Physical Activity and Cancer. Thank you to the INCA for the technical contribution in this edition of the study, focusing on the chapters on alcohol consumption, physical activity and screen time, diet and body weight.

More Data Better Health starts from the premise that knowing the challenges faced in detail is the first step to strengthening more equitable and effective public policies for the entire Brazilian population. With this objective, the program seeks to innovate both in data collection methodologies and in the investigation of topics relevant to public health, especially those that are still little explored or emerging. More Data Better Health is also configured as a continuous space for innovation, allowing its approaches to be adapted, tested and improved in response to public health needs.

In this sense, the program consolidated a 100% digital, agile and low-cost methodology, capable of generating representative evidence for the Brazilian population on a national scale. By generating ***more data*** **centered in the public, it is possible to support governments, organizations and people in their everyday lives in making decisions that help ensure** ***better health*** **for everyone.**

The initiative originates from Covitel (2022 and 2023), a telephone survey on noncommunicable diseases and their risk factors conducted during the pandemic. Based on this experience, the program expanded its approach and has already collected data for and published three modules: Primary Health Care (2024), Experience of Everyday Discrimination by the Brazilian Population (2025) and Climate and Health in the Legal Amazon (2025).

This fourth edition addresses cancer, a topic of increasing urgency for Brazilian public health. **Brazil is expected to register 781,000 new cases of cancer per year between 2026 and 2028, according to INCA estimates, which confirms this health condition as one of the main causes of illness and death in Brazil, approaching cardiovascular diseases.** These figures reflect an ageing population, persistent regional inequalities and challenges in accessing prevention, early diagnosis and timely treatment.

In this scenario, strengthening actions for cancer surveillance, prevention and control depends, to a large extent, on the knowledge people have about the disease, its risk factors and the possibilities of prevention. It is precisely this gap that the present survey seeks to fill.

To do this, the knowledge, attitudes and practices of Brazilian people related to cancer prevention were analyzed. The evidence generated is fundamental to guide more effective health education campaigns, in addition to subsidizing policies, screening programs and the organization of health services in the face of a problem of increasing magnitude in the country.

Methodological aspects

QUESTIONNAIRE AND PRE-TEST WITH FOCUS GROUP

Knowledge about risk factors for cancer in the population was assessed through a specific block of questions. For the factors included, there are those who have strong scientific evidence to support them, being the basis for INCA's recommendation for cancer prevention[1]. For other factors, there is still controversy on their association with the disease in scientific literature.

Among the behavioral and/or environmental risk factors with consolidated scientific evidence, the following were included: smoking, excessive sun exposure, air pollution, pesticides, HPV virus infection, sedentary lifestyle (physical inactivity), screen time (sedentary behavior), excess weight, alcoholic beverages, very hot drinks (such as chimarrão as it is traditionally consumed), cured meats (and/or processed meats), red meat, sweetened beverages, ultra-processed foods, insufficient consumption of fruits, vegetables, grains and whole grains. Among the factors for which there are still controversies in scientific literature, the following were included: stress; grilled, fried or barbecued meats; high-fat diet; milk and dairy products; sugar; and sweetener. As protective factors with consolidated scientific evidence, breastfeeding was included, while vitamin and mineral supplements were classified among the factors in controversy in the scientific literature. For details on evidence about each of the factors analyzed, see Annex 1 of the report.

After the first version of the questionnaire was prepared, a qualitative pre-test was conducted in order to assess the clarity, understanding and adequacy of the questions before their official application. This step is particularly important in surveys conducted through self-administered digital questionnaires, in which there is no interaction with an interviewer who can clarify doubts in real time. In this context, the quality of the writing for the questions is decisive for the reliability of the answers, since any ambiguity or difficulty in interpretation can compromise the validity of the data collected.

Pre-testing consists of identifying and correcting potential problems before large-scale application. For this, the questionnaire was submitted to a focus group that represented the demographic characteristics of the representative target population of Brazil. The activity was held on September 19, 2025, digitally (through video call), with the participation of 10 individuals from different Brazilian states (DF, RS, AM, SP, BA, MG, CE, MT, SC and PA), of different ages (21 to 49 years), educational levels (incomplete basic education to complete higher education), races/skin colors (white, Black, brown and Indigenous) and both sexes, reflecting the heterogeneity of the target population. The activity was conducted by AtlasIntel, the company responsible for the survey's data collection, who contributed technically to conducting the focus group and to improving the questionnaire methodologically, through their expertise in applying qualitative techniques.

Overall, the participants rated the questionnaire positively. The average completion time was approximately 10 minutes, reinforcing the operational viability of the instrument without overloading the respondents. In addition to the relevance of the topic, the questions were considered well formulated and the answer options coherent.

Despite the overall positive evaluation, the pre-test identified some specific points of improvement. Some formulations were ambiguous, especially in relation to the use of electronic smoking devices (ESDs), indicating the importance of adjustments in the wording to eliminate dubious interpretations. These observations were noted as punctual adjustments that did not compromise the central objective of the questionnaire, but contributed to its refinement.

DATA COLLECTION

The responses to the 6,566 completed questionnaires were collected between September 24 and October 31, 2025, totaling 37 days, for all states of Brazil. The response rate, i.e. the proportion of people who clicked on the link to answer the survey and completed the questionnaire, was 32.1%, with a variation of 10.1% in the state of Amapá, the lowest rate recorded, to 34.5% in São Paulo, the highest.

Participants were recruited exclusively through directed ad banners served on the internet. During online browsing, users were exposed to invitations through programmatic advertising and could decide, on a voluntary basis, whether they wished to participate. When they clicked on the ad link, it automatically generated a token linked to the access URL. The banners were static images, with a standard background, with no mention of

the research topic, informing only the invitation to answer a questionnaire. Only participants who accessed the survey via a valid link from these ads were able to complete their participation. There was no reward or incentive.

From the ad, the participant was automatically directed to the digital questionnaire (Annex 2), without any type of human interaction in the process. There are some advantages to eliminating human interaction. This helps to avoid a phenomenon called respondent shyness, which occurs when people do not answer certain questions with total honesty, either because of embarrassment in expressing genuine but controversial opinions; because they notice some inconsistency in their thoughts or answers; because they want to make a good impression; or even because they are afraid to tell the truth for security reasons.

SAMPLING

The sampling procedures adopted aimed to ensure the representativeness of the Brazilian population aged 18 years or older, residing in all 26 states and in the Federal District.

For the statistical inference of the results, sociodemographic variables of the population of each state (sex, age and race/skin color) were considered in the construction of sample weights, based on data from the 2022 demographic census conducted by the Brazilian Institute of Geography and Statistics (IBGE). Subsequently, an additional adjustment was made regarding the level of education, using the proportions observed in the 2019 National Health Survey (PNS), recalibrated for the population of the 2022 Census.

The weighting process is essential to assign specific values to each respondent, correcting any disproportions of subpopulations that could distort the final estimates.

STATISTICAL ANALYSIS

The analyses in *More Data Better Health - Brazilian people's perceptions of risk factors for cancer* were carried out with the data duly weighted, in order to make the sample representative of the Brazilian population aged 18 years or older.

For the proportional estimates, frequencies were calculated, followed by their respective 95% confidence intervals, based on the binomial distribution.

The confidence interval of a sample estimate may or may not coincide with the true population average. This means that it is the range of values that, with 95% confidence, will include the estimated parameter of that population. Therefore, the significant differences in prevalence estimates in those indicators and categories in which there was no overlap of the lower and upper limits of the 95% confidence intervals were taken into account, as an approximate criterion.

PRESENTATION OF RESULTS

All indicators were calculated from the questionnaire (Annex 2). For each calculated indicator, the denominator accounted for the entire sample included in the study, which is representative of the Brazilian population aged 18 years or older according to the 2022 Census. To facilitate understanding and highlight relevant themes, the results were organized by topics:

Within the topics related to the risk factors, three approaches are present, when available: **(i)** prevalence of the factor, **(ii)** comments on notable details of the sociodemographic differences and **(iii)** people's knowledge of factors related to the section's topic.

The estimates for the indicators in each chapter were presented according to the sociodemographic variables, considering the following variables: sex (male and female); age group (18 to 24 years, 25 to 59 years, and 60 years or more); per capita household income (up to R$2,000, from R$2,000 to R$3,000, from R$3,000 to R$5,000, from R$5,000 to R$10,000, and above R$10,000); use of the Unified Health System (SUS) (yes or no); race/skin color (white, Indigenous, brown, Black); place of residence (capital or countryside); and region of Brazil (North, Northeast, South, Southeast and Central-West).

The "use of the SUS" criterion was defined as SUS exclusive, comprising the exclusive use of the public health network, including health posts and basic health units, Emergency Care Units (UPA) and public hospitals.

It is noteworthy that the data from this survey come from self-reports, obtained through a self-administered digital questionnaire, without direct measurement by objective instruments or anthropometric measures. This characteristic is particularly relevant for variables such as body weight, physical activity, alcohol consumption, smoking and dietary pattern, all of which are subject to information biases.

For body weight, the tendency to underestimate it is documented in the literature; behaviors such as alcohol consumption and dietary pattern also tend to be underreported. Physical activity, on the other hand, tends to be overestimated, possibly due to social desirability bias.

Such aspects should be taken into consideration when interpreting the findings and comparing them with studies that adopt different methodologies. Still, it should be noted that the use of self-reporting is widely consolidated in large-scale population surveys, due to its operational feasibility and ability to produce relevant information with broad population coverage.

Results

The following are the main findings of the module *More Data Better Health - Brazilian people's perceptions of risk factors for cancer*. All the results presented represent estimates after the application of sample weights, aiming at the representativeness of the Brazilian population, having as parameter the 2022 population census.

POPULATION PROFILE

The figures presented in Figure 1 represent the estimated proportions of the main socio-demographic variables considered in the survey.

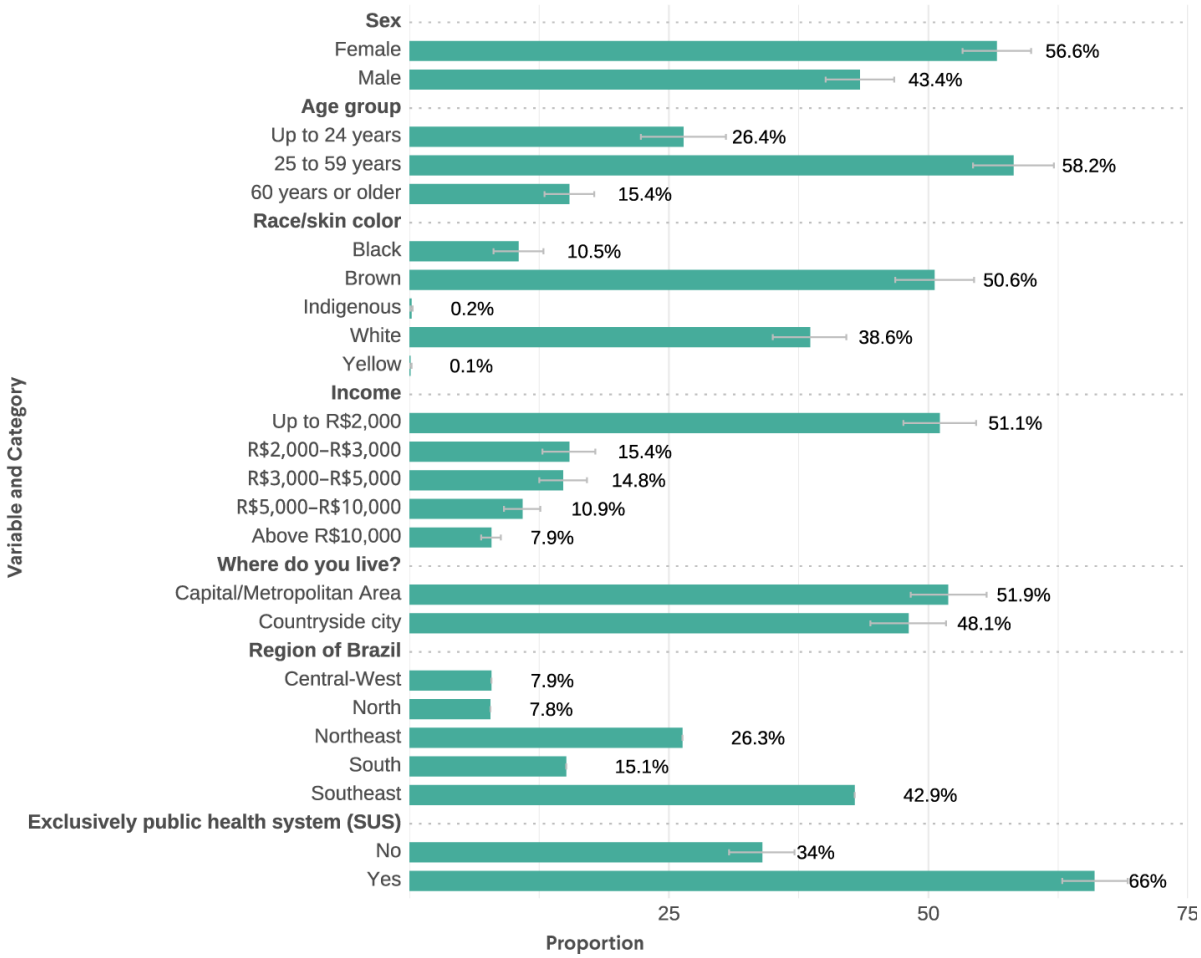

Figure 1. Proportional distribution of sociodemographic variables among adults (≥ 18 years) in Brazil. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

The analysis of sociodemographic variables in the graph above had as its main objective evaluating the distributions observed in this study, in order to ensure the representativeness of the Brazilian population.

A total of 6,566 responses were received, with the majority of participants (56.6%) being female. The majority are 25 to 59 years old (58.2%) and declared brown skin color (50.6%), followed by white (38.6%). In relation to per capita household income, half (51.1%) were in the income range of up to R$2,000. The sample showed a similar distribution among residents in capitals or metropolitan regions (51.9%) and in cities in the countryside (48.1%), mostly in the Southeast region (42.9%). Of the respondents, 66% said they exclusively use the public health care network, including health posts and basic healthcare units (UBS and UPA), and public hospitals.

PERCEPTIONS OF CANCER

Producing information about cancer and characterizing Brazilian people's perceptions of the disease are fundamental for prevention and surveillance actions, strategic components for planning cancer prevention and control policies in Brazil.

Figure 2 shows Brazilian people's knowledge about cancer. Almost all of the population reported knowing or having heard of the disease (99.1%). In total, 3.8% of Brazilians said they had already had cancer. Regarding prevention, 73.0% stated that the disease can be prevented.

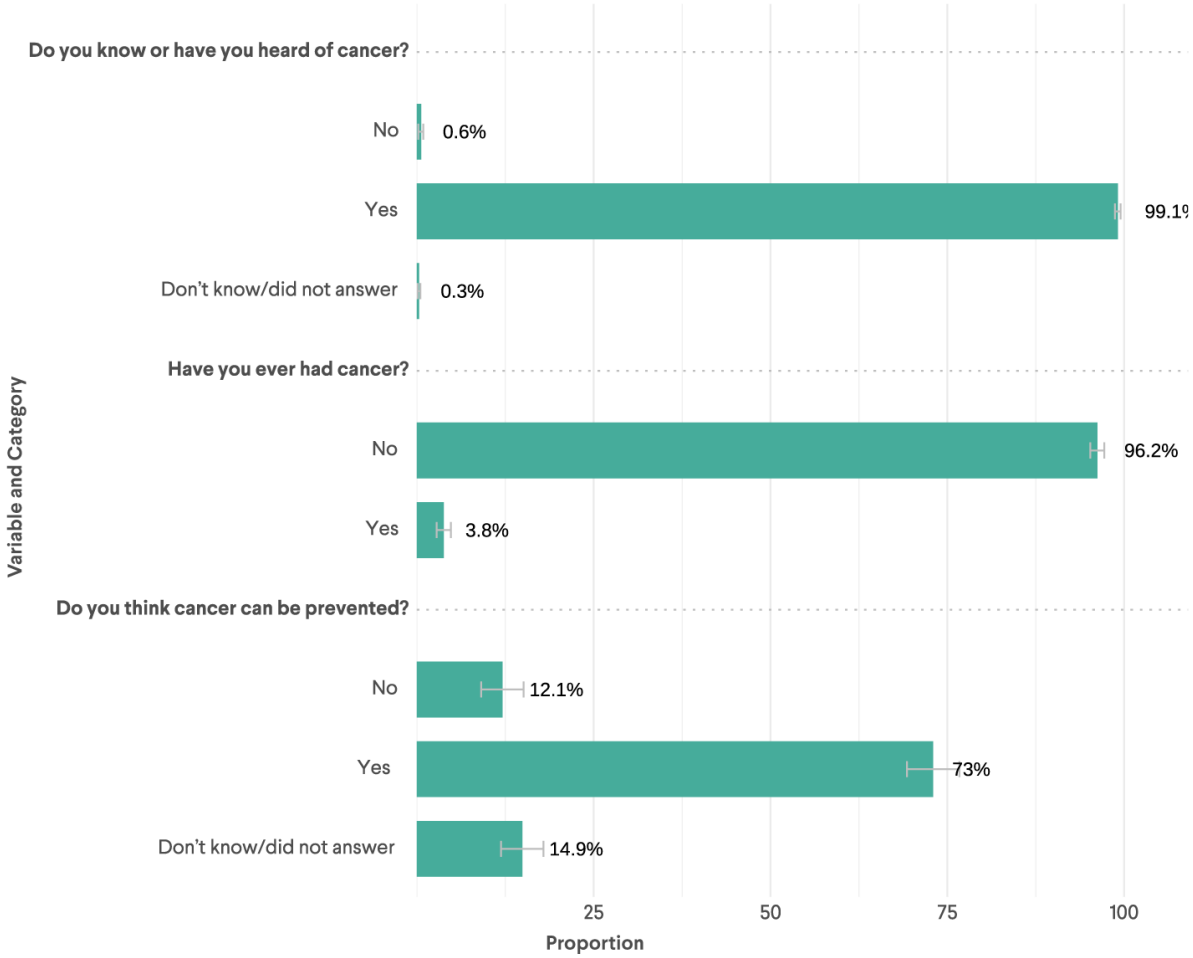

Figure 2. Perceptions of cancer among adults (≥18 years) in Brazil. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

Figure 3 shows the results for those who reported already having had cancer, according to sociodemographic variables. No differences were observed according to sex. On the other hand, there was a higher proportion of cancer reports among individuals aged 60 years or older (13.1%) and among those who self-declared their race/skin color as white (5.7%), compared to those who self-declared as Indigenous or Black (0.6% and 1.6% respectively). Additionally, individuals with a monthly income of more than R$10,000 showed a higher proportion of cancer reports (10.7%) when compared to those with an income of less than R$3,000. Finally, people who reported non-exclusive use of the SUS had a higher proportion of previous reports of cancer (5.6%).

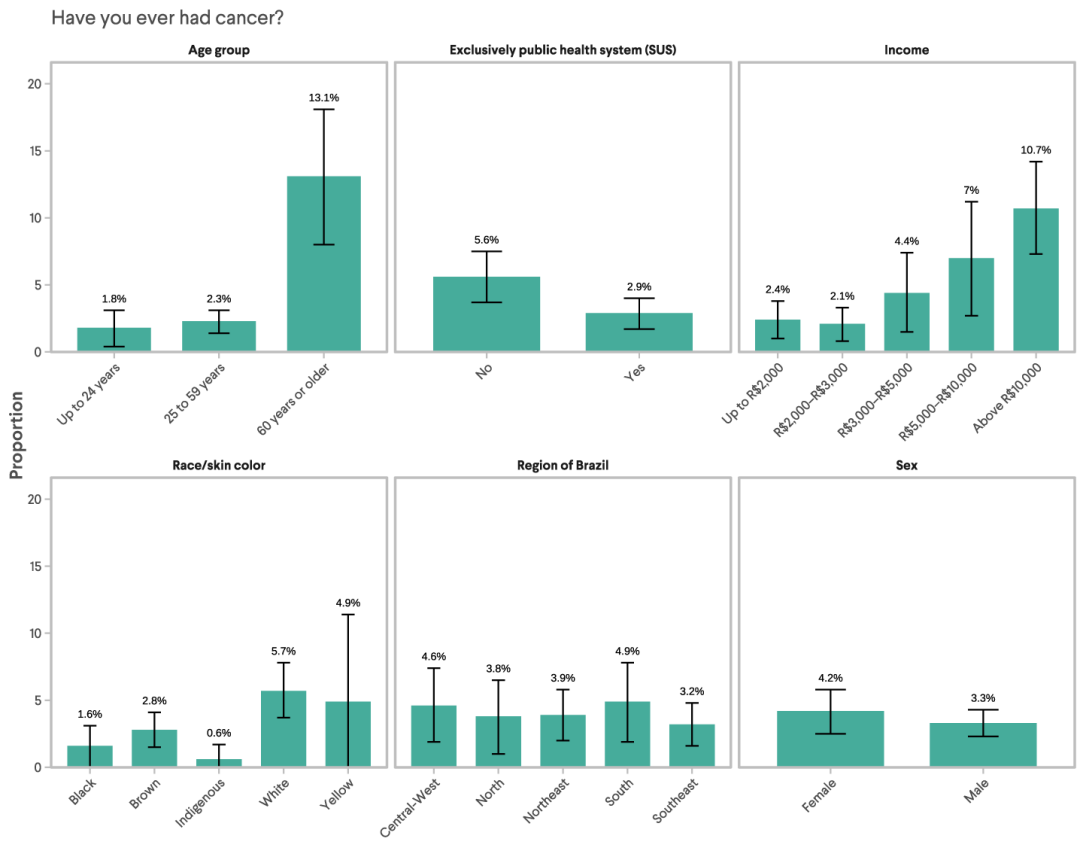

Figure 3. Perceptions of cancer among adults (≥18 years) in Brazil, according to sociodemographic variables. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

The data in this section reveal an important paradox: although almost the entire Brazilian population knows the word "cancer", a relevant portion (about 27%) still does not know or is not sure that the disease can be prevented. This data is particularly worrying in a context in which scientific estimates indicate that up to 40% of cancers could be prevented with changes in behavior and environmental exposure[2]. The belief that cancer is an inevitable condition, often associated with the weight of genetic inheritance, may represent a silent barrier to the adoption of protective behaviors and adherence to screening programs.

Likewise, the inequalities observed in the reports of previous diagnosis (with a greater frequency of reports among white people, those with higher incomes and those not exclusively dependent on the SUS) point to the need to equitably expand access to early diagnosis. Investing in communication about cancer prevention is therefore as urgent as expanding the offer of health promotion services, focused on protective factors, such as healthy eating, physical activity and tobacco control, as well as expanding access to specialized oncology care in the country.

BRAZILIAN PEOPLE'S KNOWLEDGE OF RISK FACTORS FOR CANCER

Cancer results from the complex interaction between biological, behavioral and environmental factors, and the risk of illness can vary widely between individuals and populations, as well as according to the type of cancer. In this context, knowledge about factors that increase or reduce the risk of the disease (Annex 1) is essential to guide actions for prevention, health promotion and decision-making in public health.

It is known that knowledge or awareness alone may not be enough, since there are barriers that make it difficult to start and maintain healthy practices. In Brazil, in the light of the principles of the Unified Health System (SUS), this premise is central to health promotion, considering people's concrete living conditions. This, however, does not reduce the importance of disseminating quality information, based on scientific evidence, with the aim of increasing people's recognition of these factors and subsidizing actions for cancer prevention and control, with the support of health services and professionals.

Knowledge about the factors that can increase a person's chance (risk) of developing cancer

In this section, results are presented based on the question "Do you think the following can increase a person's chance (risk) of developing cancer?".

Figure 4 shows that 90.5% of Brazilians recognized smoking as a factor that can increase a person's chance of developing cancer, followed by genetic inheritance (89.4%) and excessive sun exposure (88.3%). In contrast, a substantially smaller proportion of respondents identified excess weight (overweight and obesity) (54.1%), low fruit and vegetable intake (53.5%), sedentary lifestyle/physical inactivity (48.3%), screen time (sedentary behavior) (32.6%), and red meat consumption (27.5%) as risk factors for cancer. In addition, exposures whose evidence is still controversial were recognized as risk factors for cancer, being 57.5% for stress and 52.4% for high-fat diet.

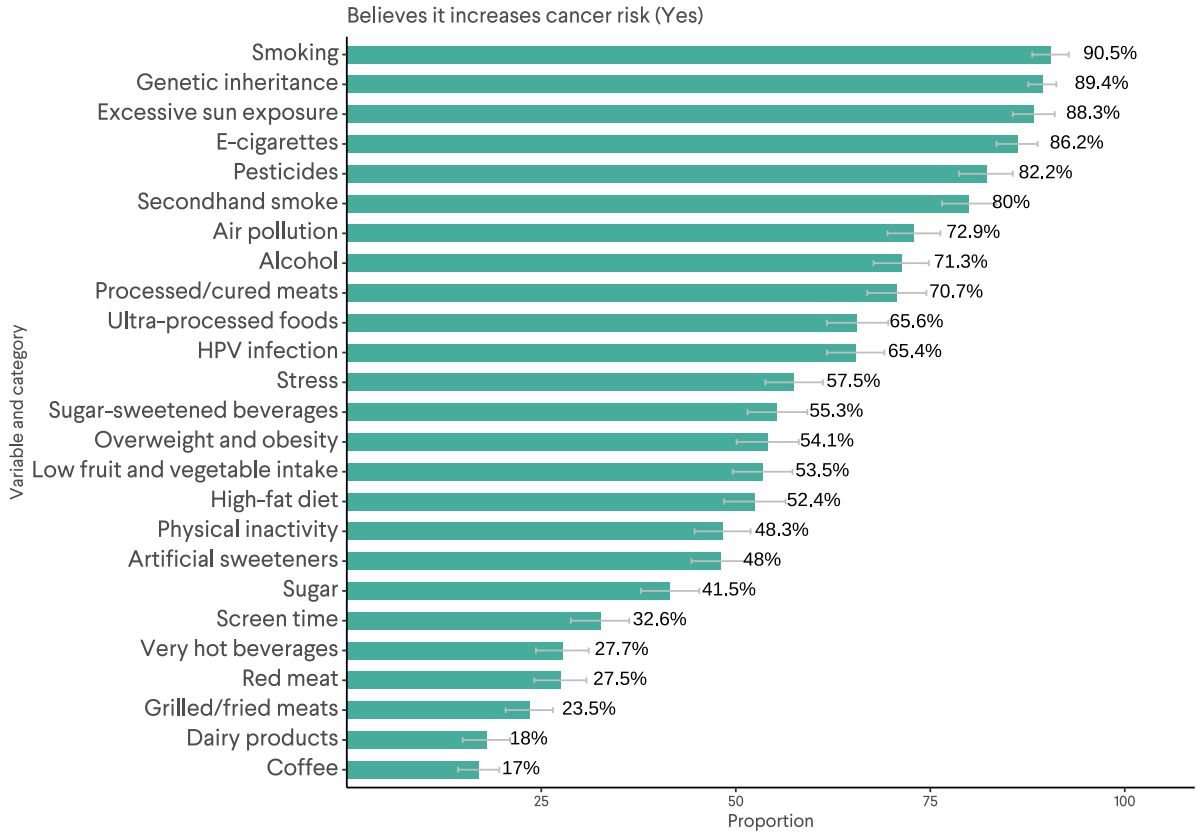

Figure 4. Knowledge about factors that may increase a person's chance (risk) of developing cancer among adults (≥ 18 years) in Brazil. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

Despite the high rate of awareness of factors widely consolidated in the public debate, such as smoking, genetic inheritance and excessive sun exposure, 3 out of 10 Brazilians still do not recognize the consumption of alcoholic beverages and cured meats as risk factors for the disease, despite its relevance for cancer prevention and control.

This pattern suggests that, although there is good assimilation of risks historically associated with the disease, especially those widely addressed in public health campaigns, important gaps persist in the knowledge of the links that other factors related to the contemporary lifestyle have with cancer. Items such as red meat consumption, very hot drinks and screen time are among the least recognized, which may reflect lower visibility of these associations in public communication and lower social perception of risk.

The data show that risk factors with extensive media coverage and history of public campaigns, such as smoking and sun exposure, are widely recognized by the population, while factors that are equally relevant from an epidemiological point of view require greater awareness as preventable risk factors. Also noteworthy is the high proportion of Brazilians who recognize genetic inheritance as a risk factor, given that, if not properly contextualized, it can reinforce the fatalistic perception of cancer as a predetermined and unavoidable condition.

Scientific evidence shows that a large proportion of cancer cases result from the interaction between genetics and modifiable factors throughout life, with a relatively small fraction of cancers attributable exclusively to hereditary predisposition. Increasing public knowledge about contemporary lifestyle-related risk factors is a priority for evidence-based prevention agendas. The HPV vaccine is an example of a highly effective preventive intervention that, although freely available in the SUS, is not yet fully understood as a cervical cancer prevention strategy.

Knowledge about the factors that can decrease a person's chance (risk) of developing cancer

In this section, results are presented based on the question “Do you think the following can decrease a person's chance (risk) of developing cancer?”.

Figure 5 shows that 40.5% of Brazilian adults did not recognize breastfeeding as a protective factor for cancer, and 61.3% identified the use of vitamin and mineral supplements as a protective factor.

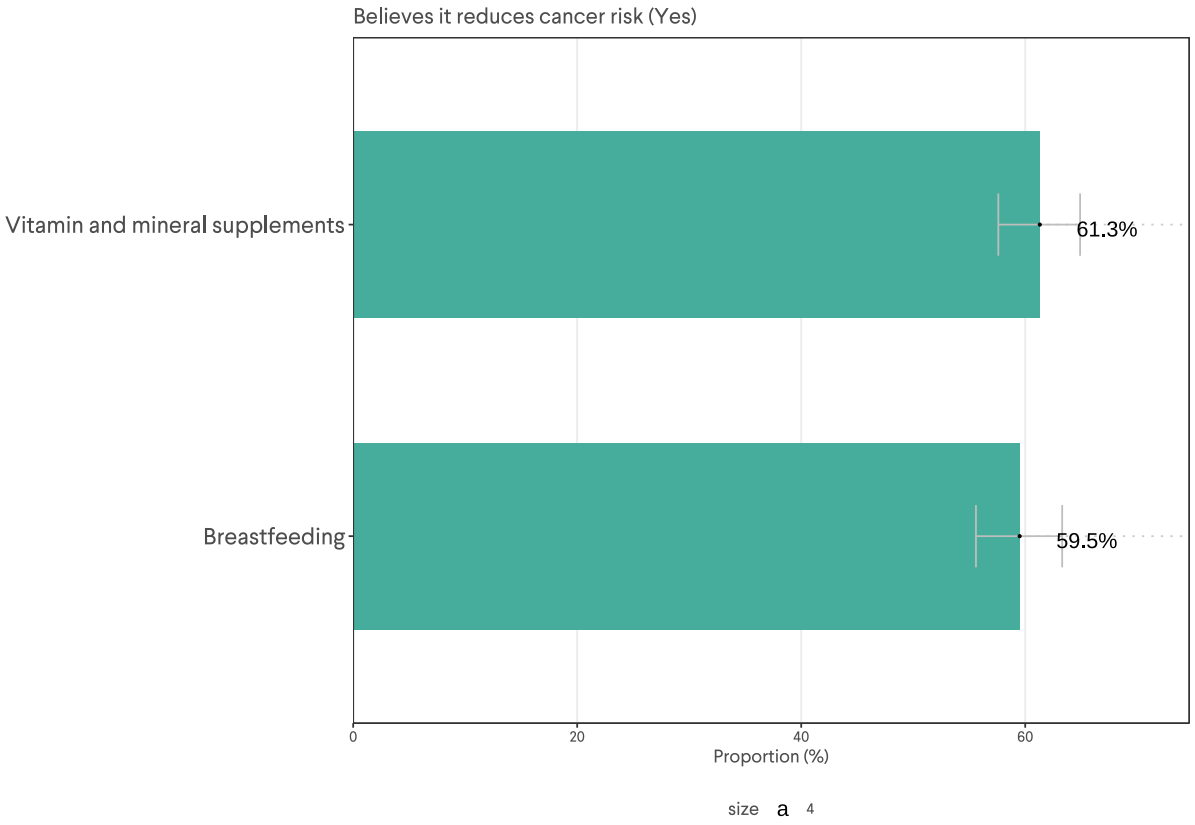

Figure 5. Knowledge about factors that may decrease a person's chance (risk) of developing cancer among adults (≥ 18 years) in Brazil. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

Breastfeeding reduces the breastfeeding person's risk of developing pre-and postmenopausal breast cancer. Additionally, this practice's protective effect follows a dose-response relationship, that is, the longer the breastfeeding time, the greater the health benefit not only for the baby, but also for the breastfeeding person.

The low prevalence of knowledge among Brazilians of the protective effect of breastfeeding against cancer, observed in this study, highlights the need to expand educational campaigns aimed at the population with a focus on the benefits of the practice for the person who breastfeeds, including breast cancer prevention.

On the other hand, although a significant portion of the population (61.3%) considers that the use of vitamin and mineral supplements reduces the chances of developing cancer, there is no evidence of benefits for cancer prevention in taking vitamin and mineral supplements. The recommendation is to obtain these nutrients from a healthy diet, rich in foods that are *in natura*, minimally processed, and of plant origin, avoiding ultra-processed foods. These supplements may be prescribed in specific clinical situations of insufficiency or deficiency of a certain micronutrient, duly indicated by qualified health professionals.

This study's findings point to the need for public awareness of protective factors and reaffirm the importance of more accurate and targeted health communication. If, on

the one hand, more than 40% of Brazilian people do not recognize breastfeeding as a protective factor for those who breastfeed, on the other hand, more than 61% mistakenly believe that vitamin and mineral supplements reduce the risk of cancer.

Both gaps have practical implications: the first points to the need to reinforce breastfeeding campaigns with messages that explicitly include the benefits for maternal health; the second signals the risk of misinformation and predatory marketing by the food supplement industry, which can generate unnecessary spending and false feelings of protection. The recommendation by INCA and international guidelines is clear: the best way to obtain protective micronutrients is through a varied diet, rich in foods that are *in natura* and minimally processed, and not through industrialized products, regardless of their form of presentation.

Diet

Ultra-processed foods, sweetened beverages, red meat and cured meats (processed meats)

Adequate and healthy diet is one of the main determinants of health, directly influencing people's morbidity and mortality profiles and the occurrence of noncommunicable diseases, such as cancer. In recent decades, important changes in dietary patterns have been observed, marked by the replacement of *in natura* or minimally processed foods (such as rice, beans, fruits and vegetables) by ultra-processed foods (products), characterized by high content of sugars, fats, sodium and industrial additives.

These products consist of formulations of ingredients, mostly of exclusively industrial use, resulting from multiple processing steps. They include products such as sweetened beverages (soft drinks, dairy drinks, fruit juices, powdered drink mixes, isotonics), packaged snacks, candies and chocolates, packaged and unpackaged breads, ready-made or semi-ready dishes, pre-prepared pizzas, nuggets, among others.

A dietary pattern rich in ultra-processed foods has been consistently associated with adverse health outcomes, including excess weight, a risk factor for several types of cancer.

The consumption of processed and cured meats in any quantity (e.g. ham, sausage, bacon, salami, mortadella and smoked turkey breast), as well as excessive consumption of red meat (above 500 grams of cooked meat per week), can increase the risk of bowel cancer.

In this context, producing systematic and timely information on people's food consumption plays a strategic role in subsidizing the formulation, implementation and evaluation of public policies aimed at health promotion.

Figure 6 shows the percentage distribution of consumption and attempted reduction of different groups of ultra-processed foods. Approximately 45% of respondents reported consuming these foods and having tried to reduce consumption, a higher proportion than that observed among those who do not consume (33.2%) and those who reported consuming without attempting to reduce (about 15%). A similar pattern was observed for sweetened beverages: approximately 53% reported consumption with an attempt to reduce, around 27% did not consume and about 15% reported consuming without attempted reduction.

In relation to red meat, there was a higher proportion of individuals who reported consuming without having attempted to reduce (just over 45%), followed by those who consume and attempt to reduce (approximately 40%), with non-consumption being less frequent (around 10%).

For cured meats (processed meats), 45% reported consumption with attempted reduction, more than 33% reported not consuming and about 16% reported consuming without attempted reduction.

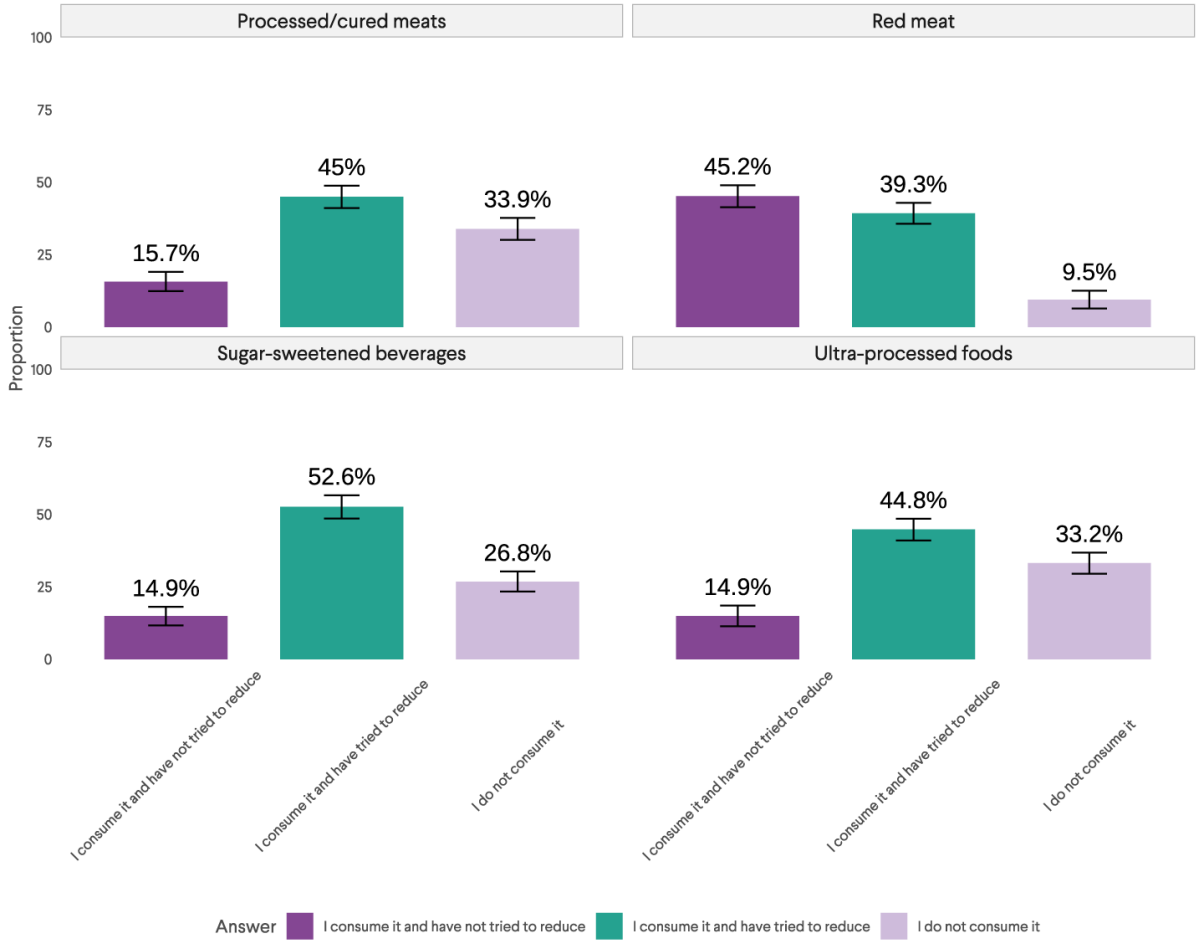

Figure 6. Percentage of adults (≥18 years) who reported consumption of ultra-processed foods, sweetened beverages, red meats and cured/processed meats in Brazil. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

Note: The figure does not include the categories "I do not know/Not sure

With regard to diet, young people up to 24 years of age presented the worst scenario, with the highest proportions of consumption with and without attempted reduction of ultra-processed foods (32.3%), sweetened beverages (24.4%), red meat (49.1%) and cured and/or processed meat (29.5%) (Figure 7).

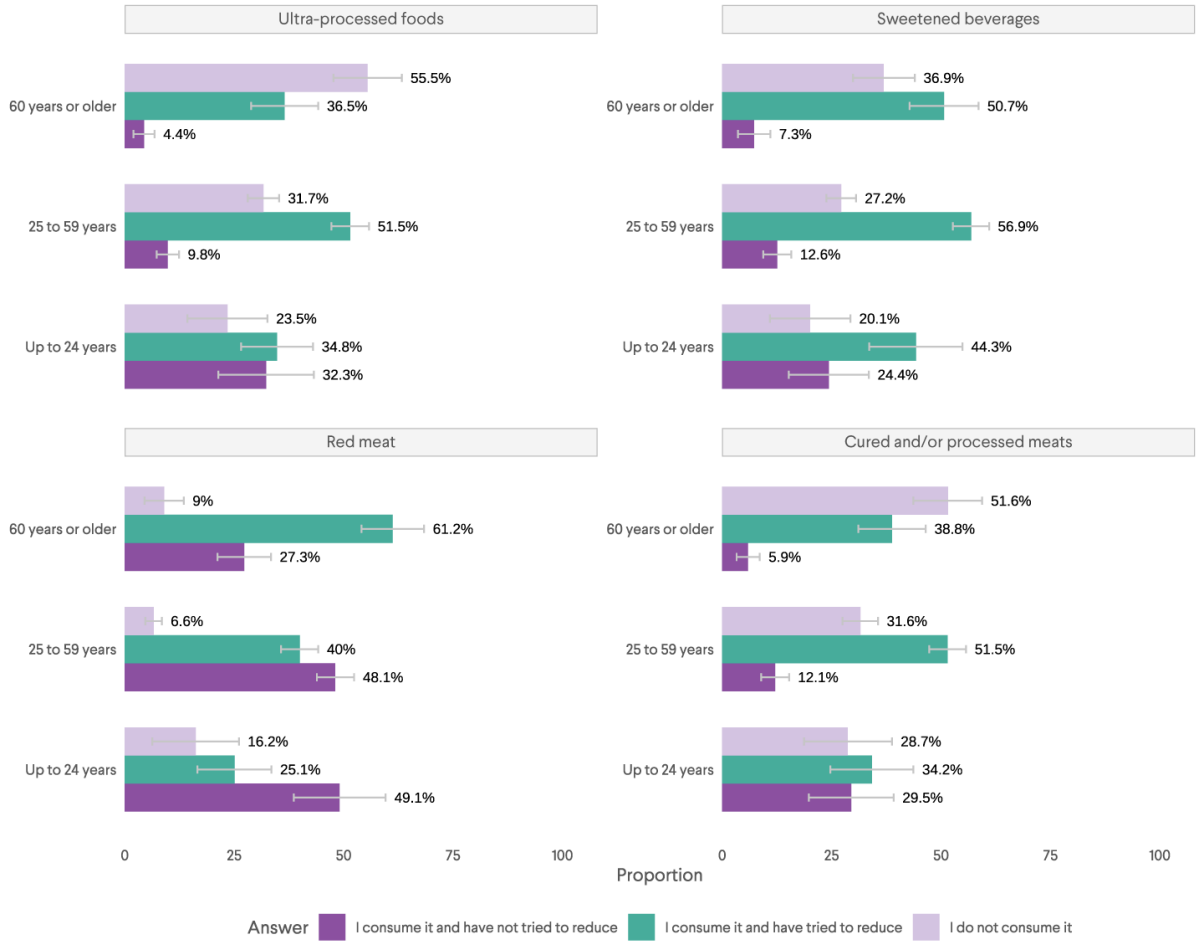

Figure 7. Percentage of the population that reported consumption of ultra-processed foods, sweetened beverages, red meat, and cured and/or processed meats, according to age group, in Brazil. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

Regarding the analysis of the population profile on the knowledge of food items that are established risk factors for the development of cancer, the research showed a pattern of ignorance among the youngest regarding the increased risk associated with the consumption of ultra-processed foods, sweetened beverages, red meat and cured meats (processed meats). The lack of knowledge in this group may be related to previous results that showed higher proportions of young people who consume with no attempted reduction.

There is a socioeconomic gradient in knowledge about dietary risk factors for cancer, with lower levels of recognition among lower-income individuals. This pattern is consistent with already documented inequalities in access to health information and exposure to health promotion actions. In addition, lower income groups tend to be more exposed to less healthy food environments, which may reinforce the combination of higher risk and lower perception of this risk (Annex 3).

The exception observed for red meat, in which the middle income group (R$3,000 to R$5,000) presented lower prevalence of knowledge, suggests that this specific factor may not follow the same pattern as the others, possibly reflecting cultural differences, consumption patterns or communication about this specific risk.

Also in relation to red meat, a considerably higher percentage of people say they consume it without intending to reduce it. This pattern is consistent with the lower proportions of recognition of red meat as a risk factor for cancer, which may be related to the lower perception of risk associated with this food. It is worth remembering that excess consumption significantly increases the risks, as reported in Annex 1, which suggests special attention in the Brazilian context, a country that is among the largest livestock producers in the world.

Although excessive red meat and processed meats can increase the risk of cancer, this knowledge is not always widespread or incorporated into people's everyday decisions. Thus, the lack of attempted reduction may, in part, reflect information gaps, lower visibility of the risk, or lower internalization of public health recommendations.

Fruits and vegetables (foods of plant origin)

Fruits and vegetables are essential components of an adequate and healthy diet, as they are important sources of vitamins, minerals, fiber and other bioactive compounds, in addition to having a low energy density. Adequate consumption of these foods has been widely recognized as a protective factor against cardiovascular disease, hypertension, diabetes, excess weight and some types of cancer.

Figure 8 shows the percentage distribution of fruit and vegetable consumption in the studied population. Most individuals (86.3%) reported consuming fruits and vegetables. It should be noted that high consumption does not indicate that the population reaches the recommended level of these foods (at least 400 grams per day). Among those who reported not consuming these foods, 8.3% reported having the intention to start consuming, while 1.6% reported not consuming and not having the intention to consume.

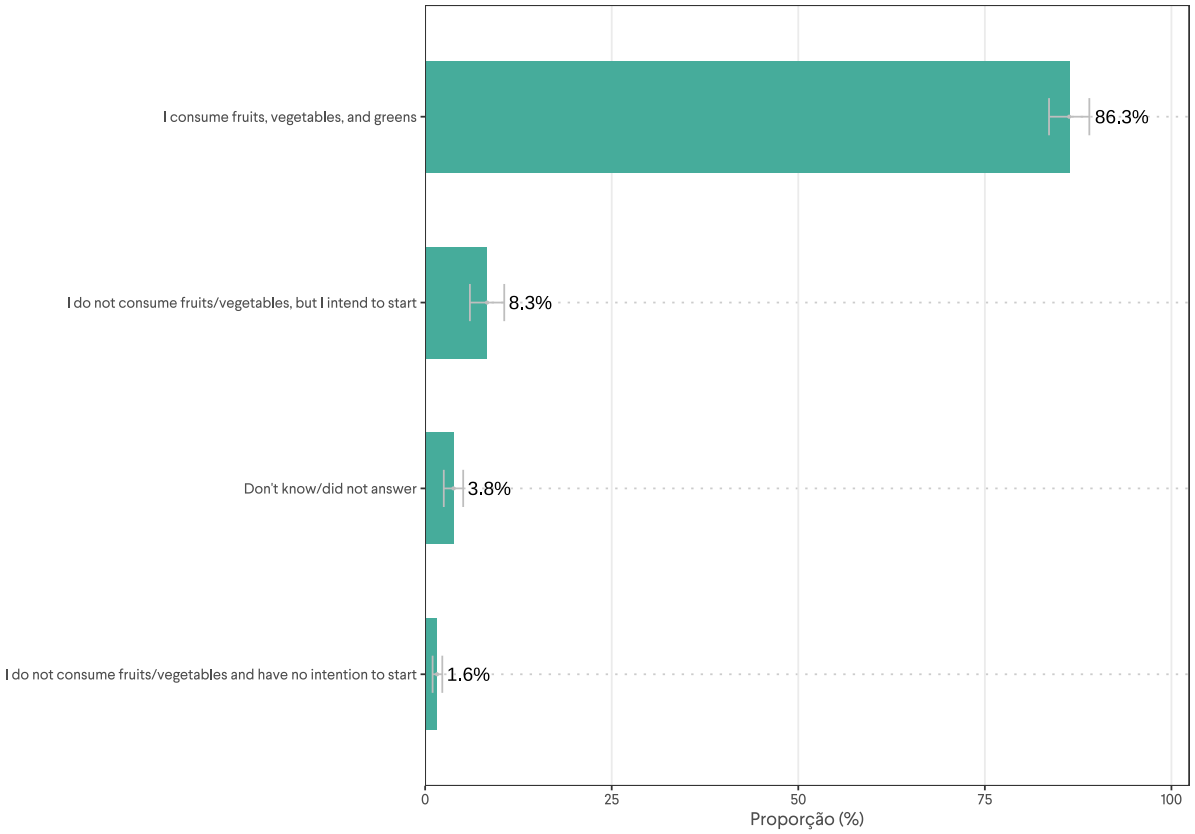

Figure 8. Percentage of adults (≥18 years) who reported consumption of fruits and vegetables in Brazil. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

Figure 9 presents the distribution of individuals who do not consume fruits and vegetables, segmented between those who have no intention of consuming and those who have the intention, according to sociodemographic characteristics. In all the strata analyzed, there was a predominance of people who reported having the intention to consume over those who do not have this intention. The proportion of individuals intending to adopt consumption was notably higher in the younger age group (up to 24 years), reaching 16.5%, and declined in subsequent age groups. Higher values were observed among men (11.5%) compared to women (5.8%). Regionally, the differences by place of residence (capital versus countryside) were not very significant.

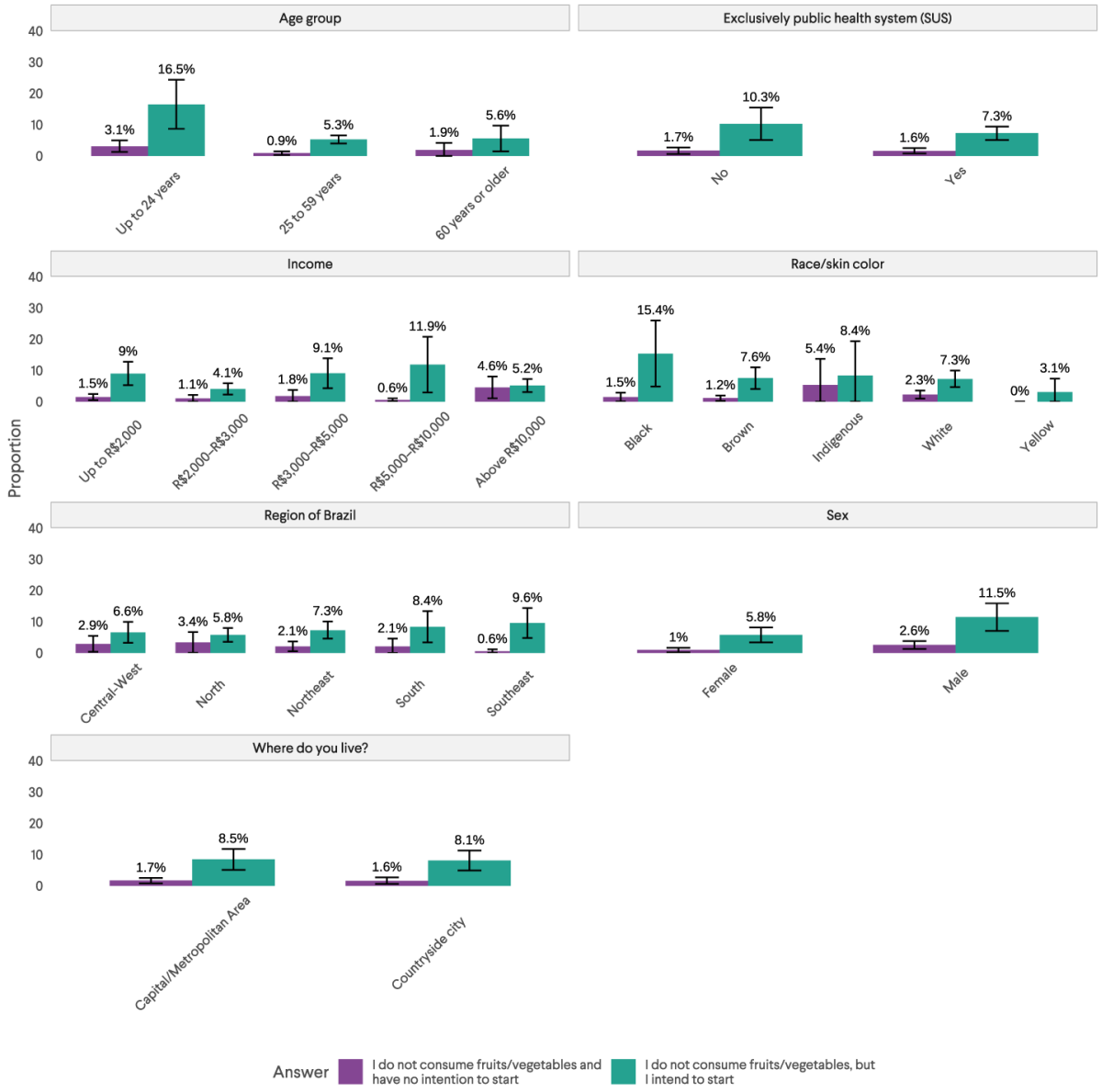

Figure 9. Percentage of adults (≥18 years) who reported intention to consume fruits and vegetables in Brazil, according to sociodemographic characteristics. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

The proportions of knowledge about low consumption of fruits and vegetables as a risk factor for cancer development were between 50% and 60% in most of the socio-demographic strata analyzed. No statistically significant differences were observed between sociodemographic groups, indicating that knowledge about inadequate consumption of fruits and vegetables is distributed similarly among different population groups (Figure 10).

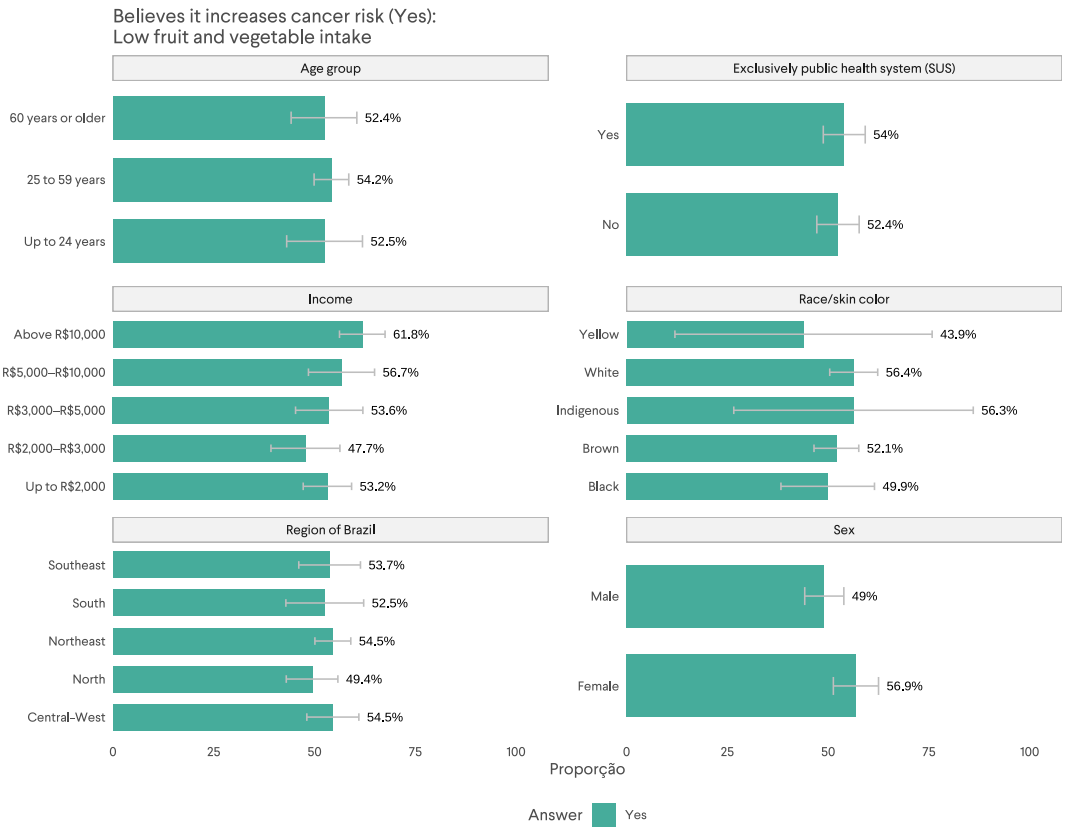

Figure 10. Knowledge about the low consumption of fruits and vegetables as a risk factor for the development of cancer among adults (≥ 18 years) in Brazil, according to sociodemographic variables. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

Overview of diet and cancer

The findings on diet reveal an ambiguous picture: if, on the one hand, the majority of the population reports consuming fruits and vegetables and shows an intention to improve eating habits, on the other hand, the consumption rates of ultra-processed foods, cured meats, red meat and sweetened beverages remain high, and knowledge of the risks associated with these foods is insufficient, especially among the youngest.

In this context, structural policies are indispensable: frontal labeling of ultra-processed foods, already regulated in Brazil, and taxation of sweetened beverages are measures on food environments that condition people's choices, based on the understanding that such choices go beyond individual responsibility. Similarly, reducing taxes on fruits and vegetables can contribute to making healthy eating more accessible to lower-income families. Strengthening food education in schools and health services, with language appropriate to different age groups and sociocultural realities, is a complementary and equally necessary strategy.

Physical activity and screen time

Physical activity is a fundamental component for health promotion and disease prevention, contributing to maintaining adequate body weight and metabolic balance. Physical activity is associated with reduced risk of overweight and obesity, as well as decreased incidence of cardiovascular disease, Type 2 diabetes and some cancers. As a result, physically active individuals have a lower risk of all-cause mortality.

Figure 11 shows the percentage distribution of physical activity. Most respondents (52.2%) reported practicing physical activity. Among those who reported not practicing, 39% reported having the intention to start practicing, while 5.6% reported not practicing and not having the intention to do so. As previously occurred, the question does not contemplate the achievement, by the population, of the recommended level of activity (150 minutes per week at moderate intensity or 75 minutes at vigorous intensity).

The fact that a significant portion of individuals who do not currently practice physical activity express the intention to start suggests the existence of a latent demand that can be stimulated by appropriate public policies. Physical activity depends not only on individual motivation, but also on structural conditions, such as the availability of safe and accessible public spaces, adequate urban infrastructure, lighting, green areas, community equipment, and public programs to encourage sports and leisure. In this sense, policies aimed at healthy urban planning and expanding access to environments favorable to practice, for example the SUS's public programs, among others, can play a central role in transforming intention into effective behavior.

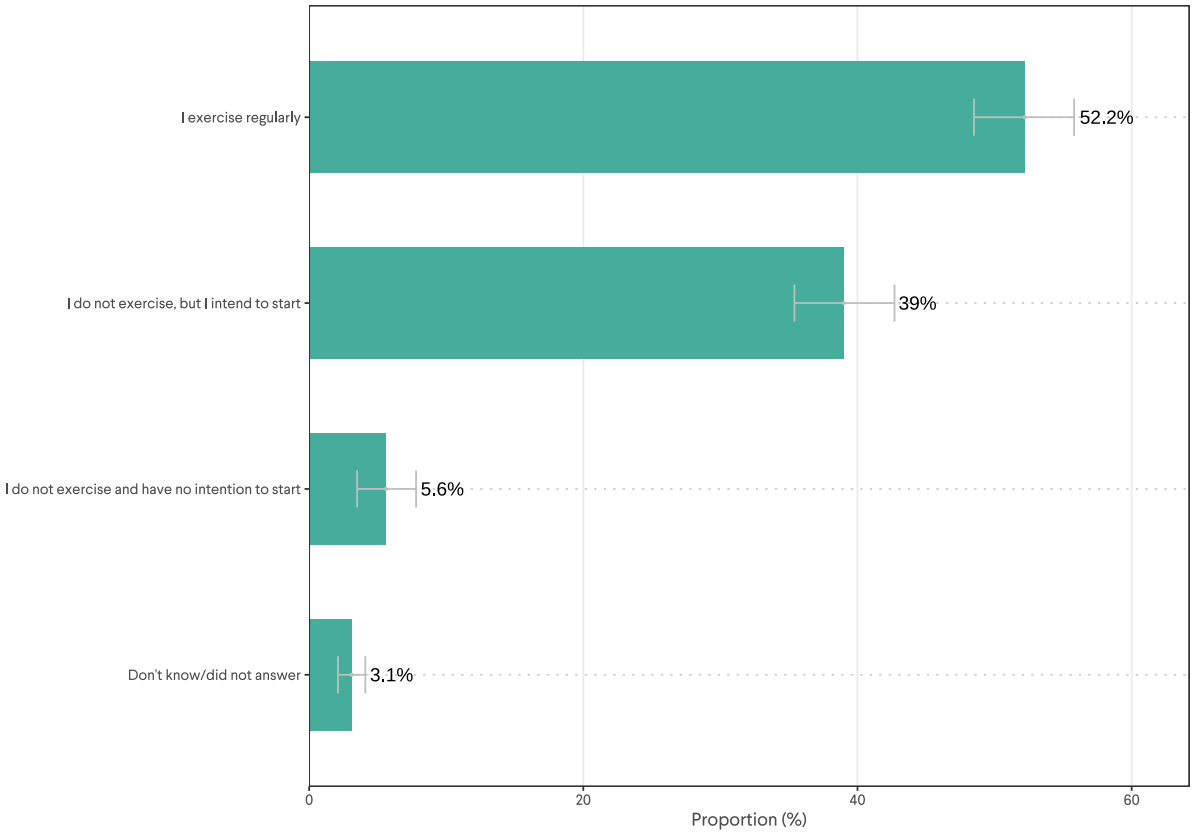

Figure 11. Percentage of adults (≥18 years) who reported practicing physical activity in Brazil. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

Figure 12 shows the distribution of non-performance of physical activity according to intention to practice, according to sociodemographic characteristics. In all the strata analyzed, among those who do not practice, there is a higher proportion of those who intend to do it relative to those who do not have such an intention. It was observed that,

in general, the values are relatively similar between the different age groups, with small variations between young people (40.9%), adults (39.3%) and the elderly (34.8%). In the regional context, the North (5.9%) and Southeast (7.4%) regions show a higher prevalence of individuals who do not intend to practice physical activity.

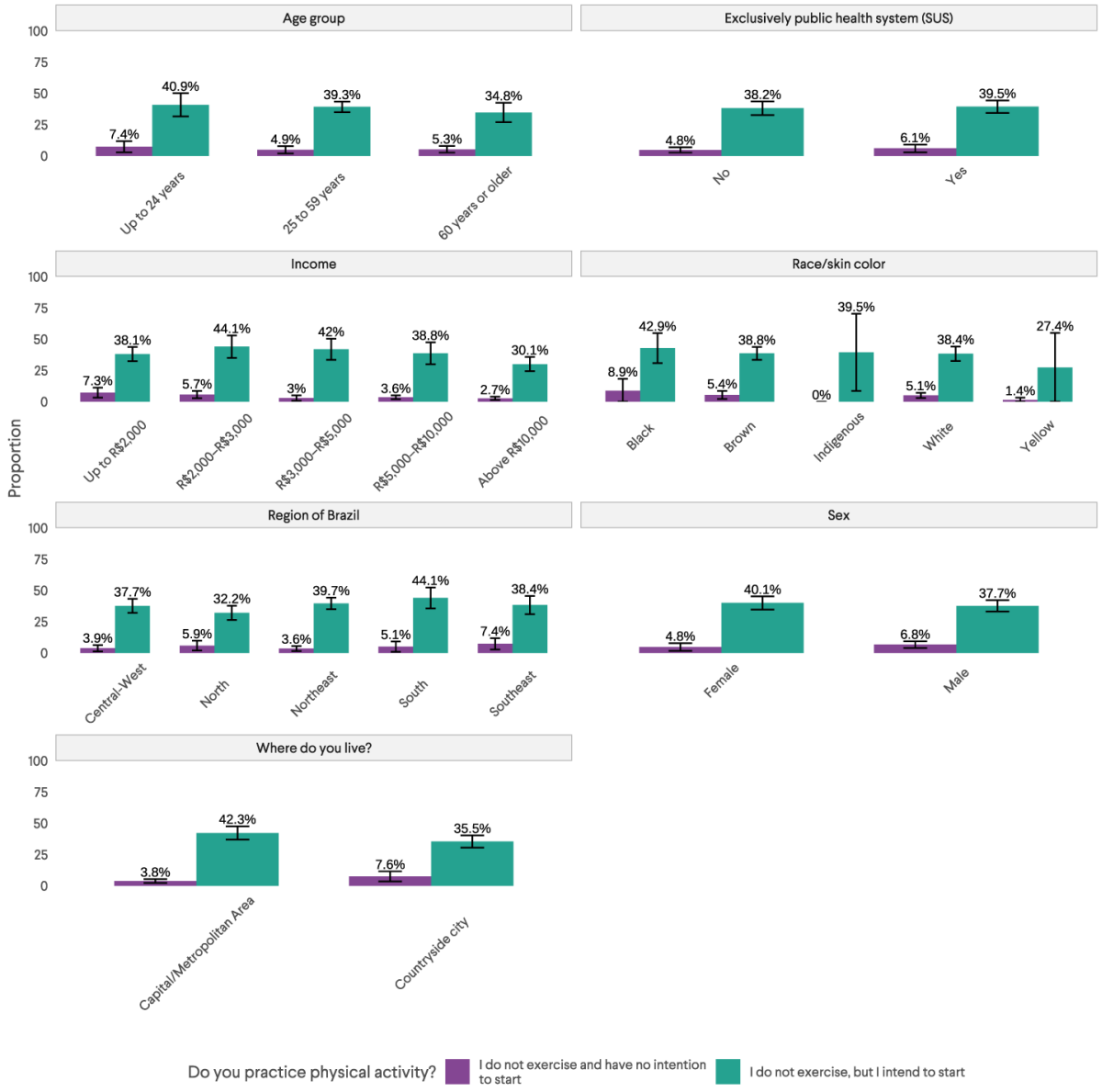

Figure 12. Percentage of adults (≥18 years) who reported practicing physical activity in Brazil, according to sociodemographic characteristics. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

Differences were identified according to income where individuals with monthly income of up to R$2,000 (45.5%) presented a lower proportion of knowledge about sedentary lifestyle (physical inactivity) as a risk factor when compared to those with income equal to or greater than R$10,000 (59.6%) (Figure 13).

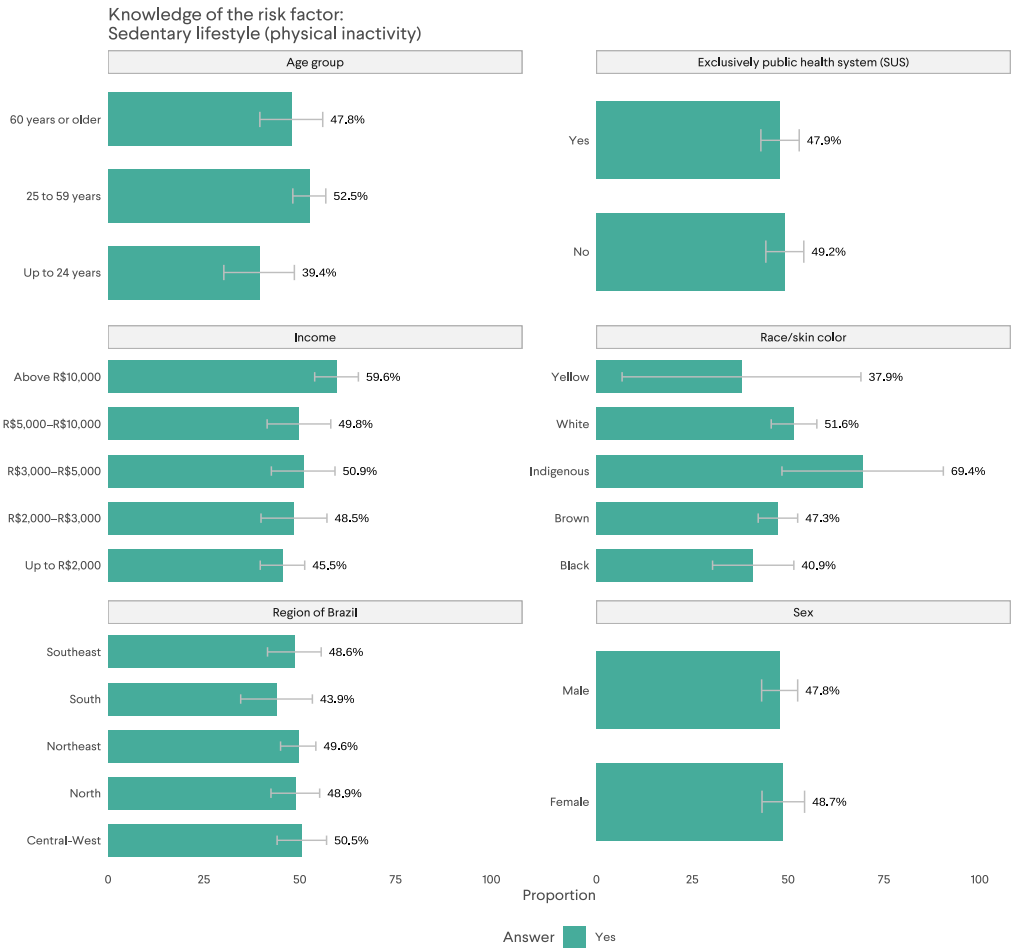

Figure 13. Knowledge about sedentary lifestyle (physical inactivity) as a risk factor for the development of cancer among adults (≥18 years) in Brazil, according to sociodemographic variables. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

The findings indicate that approximately half of the population reported practicing physical activity, while about 40%, although not practicing, expressed the intention to start. Physical activity is related to protection against different types of cancer, such as bladder, breast, colon, endometrium, esophagus (adenocarcinoma), kidney and stomach cancer, as well as other chronic diseases. It should be noted that physical activity is also associated with benefits of different dimensions, going beyond the prevention and treatment of diseases. There are relational, social, economic and climatic benefits, in addition to health, and it is necessary to explore these dimensions as a strategy to dialogue with the needs and motivations of the population in order to reverse the high prevalence of physical inactivity in Brazil.

Thus, considering the relationship between physical activity and quality of life and well-being, expanding access through public policies, programs and actions is essential. As an example, in SUS there is the Academia da Saúde (Gyms for Health) Program and the Financial Incentive for Physical Activity (IAF), which offer this practice in health units.

The data reaffirm that physical inactivity in Brazil is not only an issue of individual choice, but a reflection of structural determinants, unfavorable urban environments, long working

hours, public insecurity and unequal access to leisure spaces. The higher prevalence of intention not to practice physical activity in the South and Southeast regions deserves further investigation, as these are regions with greater access to urban infrastructure, suggesting that other factors, such as intense work routine or perception of risk related to violence, may be at play.

The income gradient in knowledge about sedentary lifestyle (physical inactivity) as a risk factor for cancer reaffirms the need for health communication campaigns to reach the most affected populations, who are also those who have the least access to quality information and environments conducive to the practice of physical activity.

In addition, screen time has been consistently associated with excess weight, which in turn is a major risk factor for several types of cancer. Regional differences were observed in the knowledge about screen time as a risk factor for developing cancer. Residents of the Northern Region (37.6%) had the highest proportion of knowledge, while the Southern Region (21%) had the lowest (Figure 14).

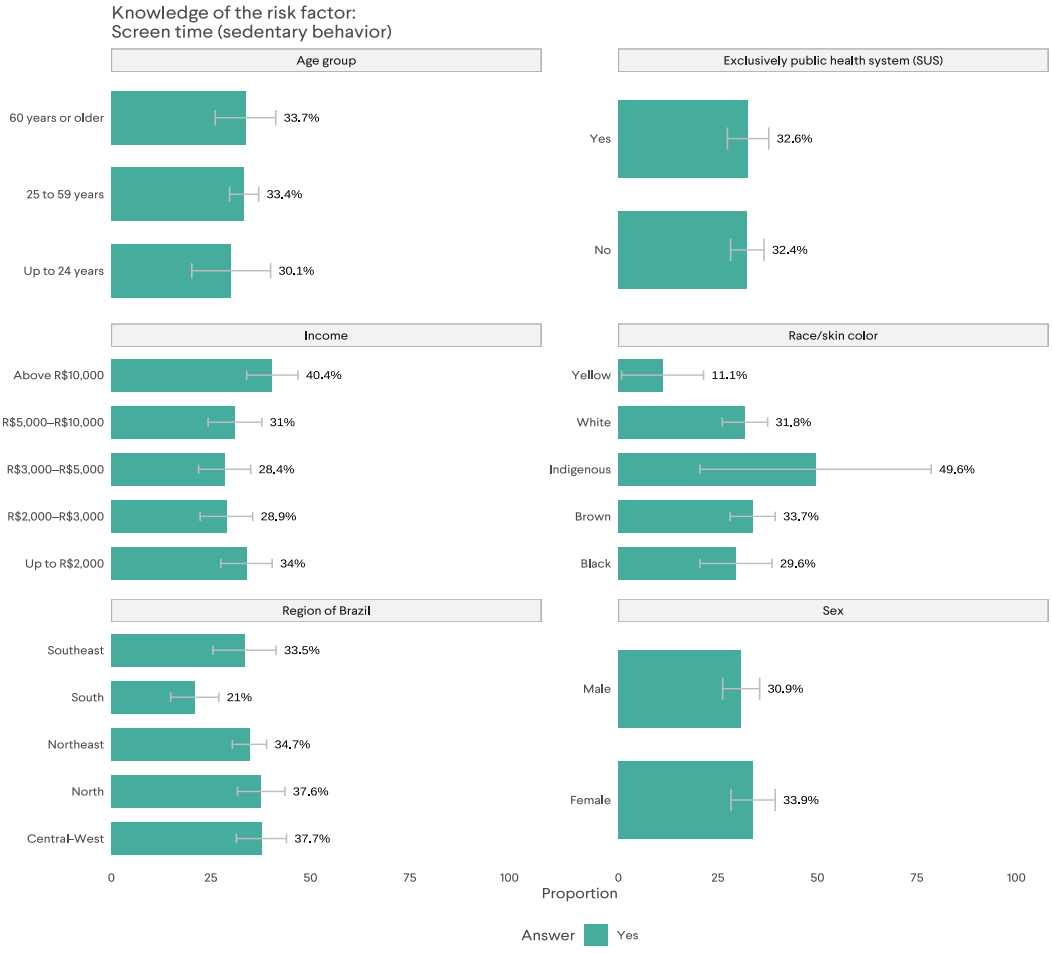

Figure 14. Knowledge about screen time as a risk factor for the development of cancer among adults (≥ 18 years) in Brazil, according to sociodemographic variables. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

Self-perception of body weight

Maintaining a healthy body weight is one of the main ways to prevent cancer and other health conditions. Excess weight (overweight and obesity) is associated with an increased risk of cardiovascular disease, Type 2 diabetes, and several types of cancer.

Figure 15 shows the proportions of self-perception of body weight and the attitudes adopted in relation to it. The predominant response corresponded to individuals who reported being at a healthy weight (48.8%). Among the participants who reported excess weight, there was a higher proportion of those who said they were taking some action to modify this condition (31%), compared to those who reported not taking measures to change it (11.4%).

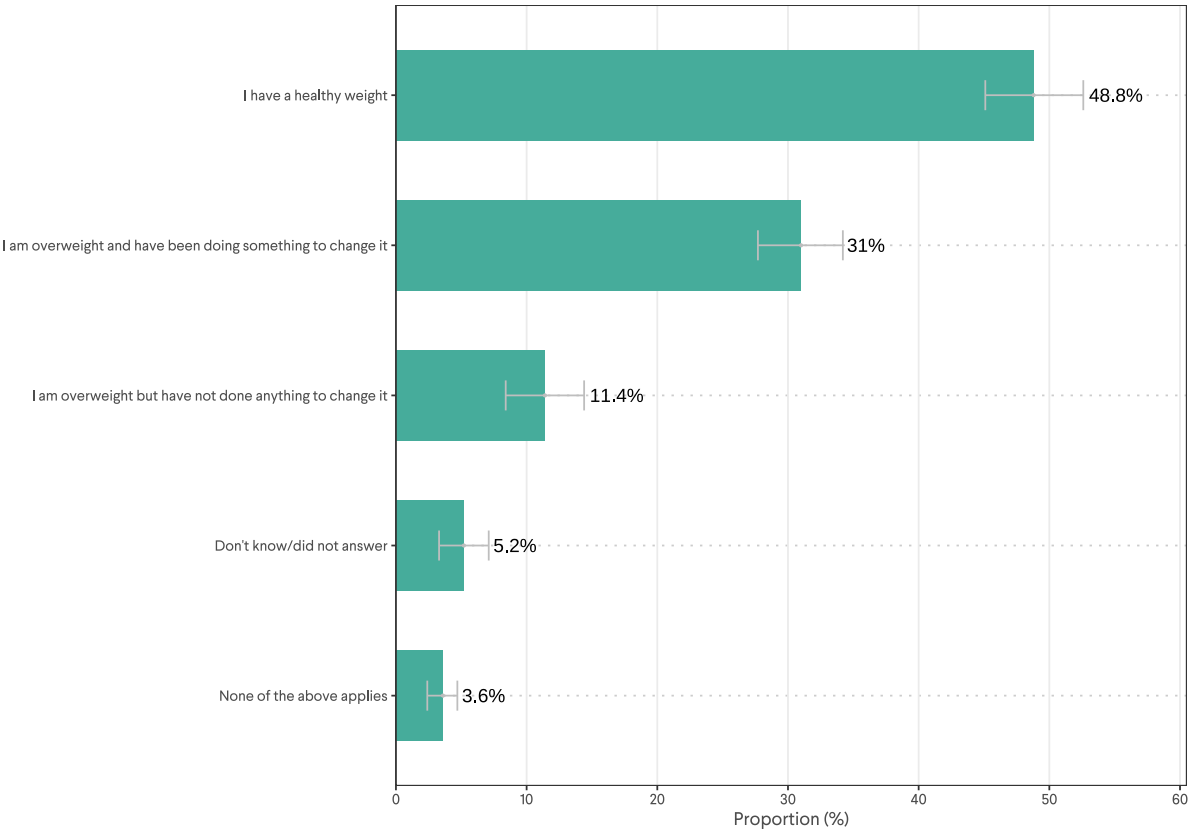

Figure 15. Percentage of adults (≥18 years) who reported perceptions about body weight in Brazil. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

Figure 16 details the distribution of body weight perception and attitudes related to it, according to sociodemographic variables. In general, among individuals who reported excess weight, there was a higher proportion of people who reported doing something to change this condition than those who reported not doing so. There is an important gradient in relation to income: the proportion of individuals with excess weight who take action to change increases as income rises, starting from 22.9% in the lowest range and exceeding 40% in the ranges above R$3,000.

Figure 16. Percentage of adults (≥18 years) with excess weight who reported perceptions about body weight in Brazil, according to sociodemographic characteristics. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

When analyzing knowledge about excess body weight as a risk factor for cancer development, little variation was observed between different sociodemographic strata, without a consistent pattern that indicates marked inequalities (Figure 17). The main exception appears in the race/skin color analysis, in which self-declared yellow people (Asian people, according to the official IBGE classification) had a lower level of knowledge (12%), while Indigenous people had a higher level (71.6%).

However, these results should be interpreted cautiously, since the confidence intervals are wide, suggesting low accuracy of the estimates, associated with reduced sample sizes in these groups in stratified analyses.

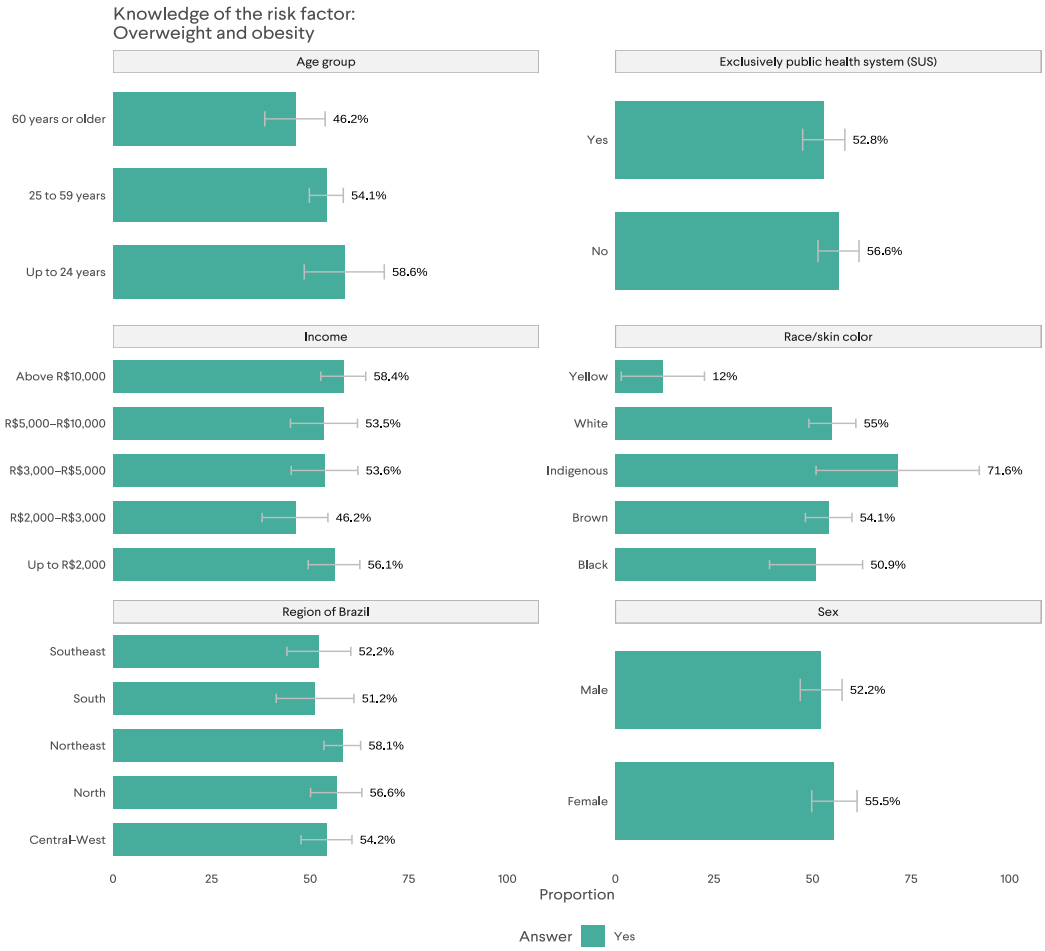

Figure 17. Knowledge about excess weight as a risk factor for cancer development among adults (≥ 18 years) in Brazil, according to sociodemographic variables. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

In Brazil, the Intersectoral Strategy for Obesity Prevention is in force, a measure which recognizes this condition as a social issue that unequally affects certain populations and demands intersectoral and intersectional actions.

Overweight and obesity are associated with cancers of the colon and rectum, female breast (postmenopausal women), kidneys, esophagus (adenocarcinoma), stomach (in the cardia region), pancreas, gallbladder, liver, endometrium, among others, as well as other chronic diseases.

It should be noted that the prevention of and care for cases of overweight and obesity goes beyond individual behaviors and choices related to food and physical activity. It is essential to remember that there are obesogenic environments, which are those that make it difficult or prevent people from having access to healthier options. Therefore, broader public policies, such as taxation of ultra-processed foods, frontal labeling, existence of public leisure spaces, etc., are important for the prevention and control of overweight and obesity.

Therefore, the income gradient observed in attitudes towards overweight, with lower-income people being the ones who take the least measures to modify this condition, should not be interpreted as a lack of individual motivation, but as an expression of structural barriers. Access to healthy food, specialized health services, quality information and environments conducive to healthy choices is deeply unequal in Brazil. Health policies that ignore these structural dimensions tend to widen inequalities, by primarily benefiting those who already have more resources to act on their health.

Consumption of alcoholic beverages

Consumption of alcoholic beverages is an important risk factor for the health and well-being of individuals, families and communities, with economic and social repercussions, being associated with increased risk of several types of cancer, including those of the mouth, pharynx, larynx, esophagus (squamous cell carcinoma), liver, colorectal, stomach and breast. Public policies can contribute to reducing consumption of these beverages, both through an increase in prices resulting from taxation and through environmental interventions, such as restricting advertising of these products, with the aim of reducing the impact of alcohol on health and society.

Figure 18 shows the distribution of responses related to alcohol consumption and attempts to reduce alcohol consumption. Approximately half of the population (50.1%) reported not consuming alcoholic beverages. Among all individuals, 32.5% reported that they consume alcohol and have already tried to reduce their use, while 10.6% reported consuming, but without having tried to reduce their consumption.

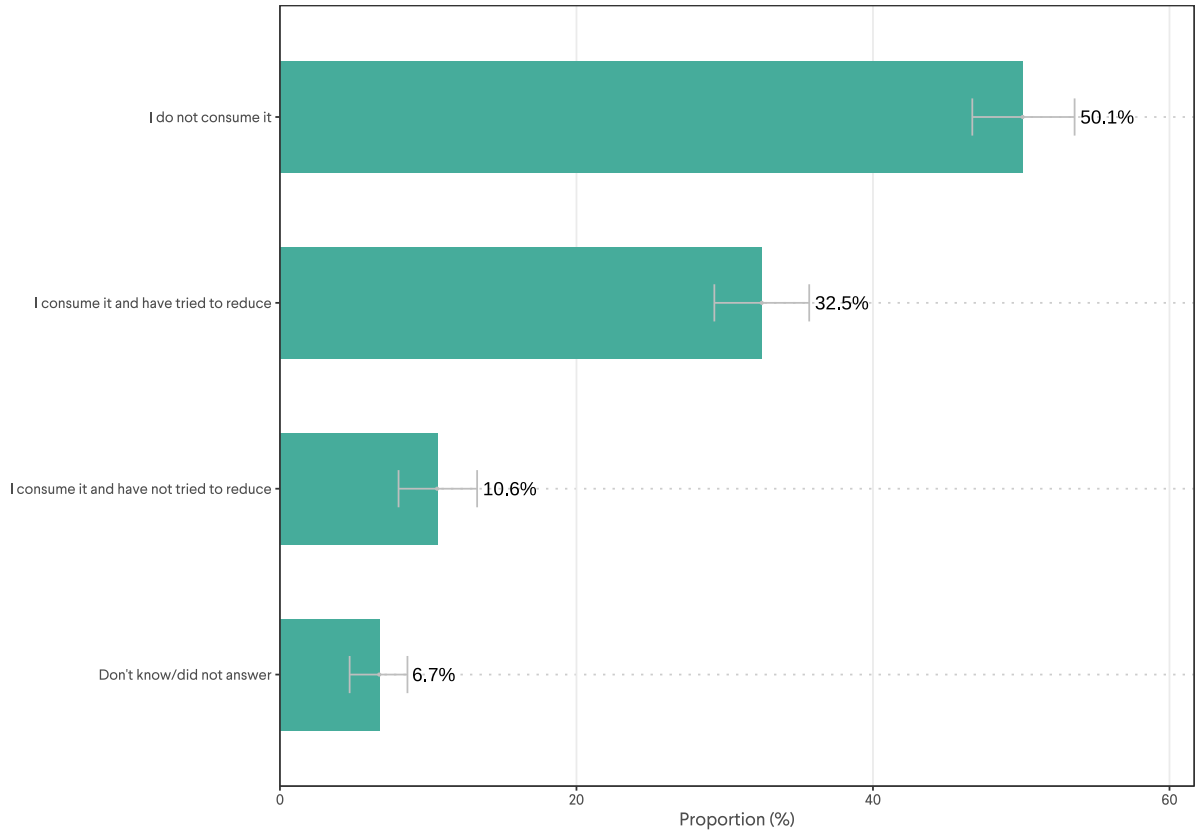

Figure 18. Percentage of adults (≥18 years) who reported behaviors related to consuming alcoholic beverages in Brazil. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

Figure 19 shows the distribution of responses on alcohol consumption according to sociodemographic characteristics. In all groups analyzed, there was a higher proportion of people who, although they consume alcohol, express the intention to reduce this habit, compared to those who consume and do not try to reduce.

It was identified that young people up to 24 years of age are the ones who have the least intention of reducing consumption (16.9%), while the propensity to want to reduce consumption grows as age progresses. In contrast, the highest proportion of individuals who reported trying to reduce consumption was recorded in the age group of 25 to 59 years (36%). Regarding income, it is noted that the group with incomes above R$10,000 presents the highest proportion of consumption without intention of reduction (20.6%). Regionally, the North stands out for the highest proportion of consumers who try to reduce the habit (40.3%), while the Southeast registers the highest rate of those with no attempted reduction (14%).

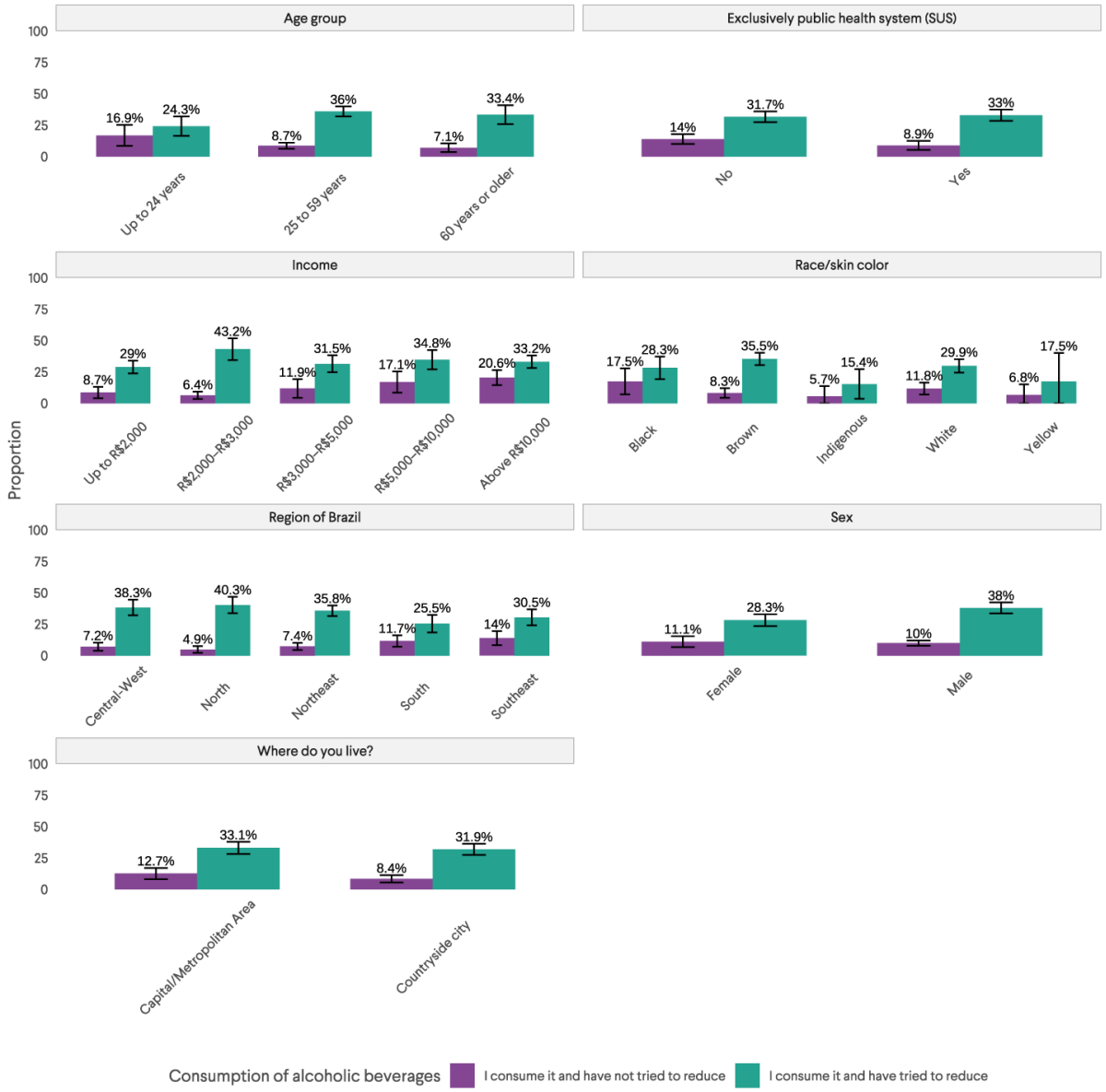

Figure 19. Percentage of adults (≥18 years) who reported behaviors related to consuming alcoholic beverages in Brazil, according to sociodemographic characteristics. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

The prevalence of knowledge of increased risk of cancer development due to alcohol use, presented in Figure 20, showed that the population with the lowest incomes (up to R$2,000 and between R$2,000 and R$3,000) has the lowest proportional figures of knowledge, with 68.2% and 68.9%, respectively. On the other hand, those with incomes above R$10,000 stood out for presenting the greatest knowledge of the risk when consuming alcoholic beverages (82.7%). When analyzing race/skin color, people who self-declared as Black had the lowest level of knowledge of the risk associated with alcohol use (54.7%), compared to white people (72.8%).

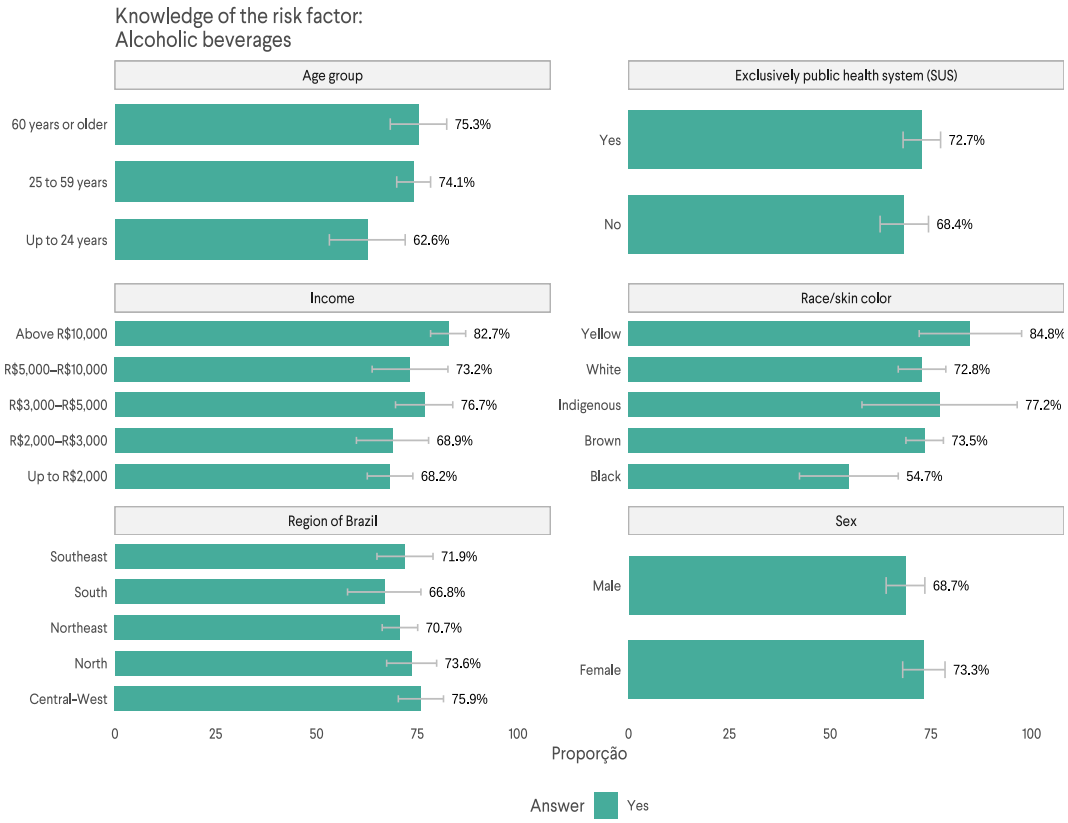

Figure 20. Knowledge about the consumption of alcoholic beverages as a risk factor for the development of cancer among adults (≥ 18 years) in Brazil, according to sociodemographic variables. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

The association between alcohol and cancer, recognized by the World Health Organization (WHO) for at least eight types of tumors, remains unknown by significant portions of the Brazilian population. The declared willingness to reduce consumption, present in most of the groups analyzed, indicates receptivity to effective public policies. The fact that the highest income group has the least intention to reduce consumption reaffirms the idea that problematic consumption is not exclusive to the most affected populations, although they are the ones who suffer the most from its consequences, without resources to mitigate them. Addressing alcohol as a risk factor for cancer in Brazil requires an integrated agenda, aligned with the World Health Organization's SAFER package[3]: restriction of availability, measures against drink driving, strict control of advertising, strengthening health care services, warnings on labels and, especially, effective taxation.

Smoking

Smoking is one of the main preventable risk factors for cancer development, being associated with several types of the disease, including cancers such as lung, oral cavity, larynx, esophagus, stomach, pancreas, colorectal, liver, kidney (body and pelvis), ureter, urinary bladder, cervix and ovary (mucinous), as well as myeloid leukemia[4].

Exposure to tobacco products, whether through direct use or passive smoking, contributes significantly to the burden of illness and mortality from cancer, becoming an important public health problem. In this context, understanding the consumption patterns of tobacco products, including the prevalence of smoking, cessation-related behaviors and the use of electronic smoking devices (ESD) is fundamental to subsidize cancer prevention, control and surveillance actions.

Figure 21 shows the results regarding smoking: 11.3% of the population reported currently smoking, 70.3% said they had never smoked and 18.3% said they were former smokers.

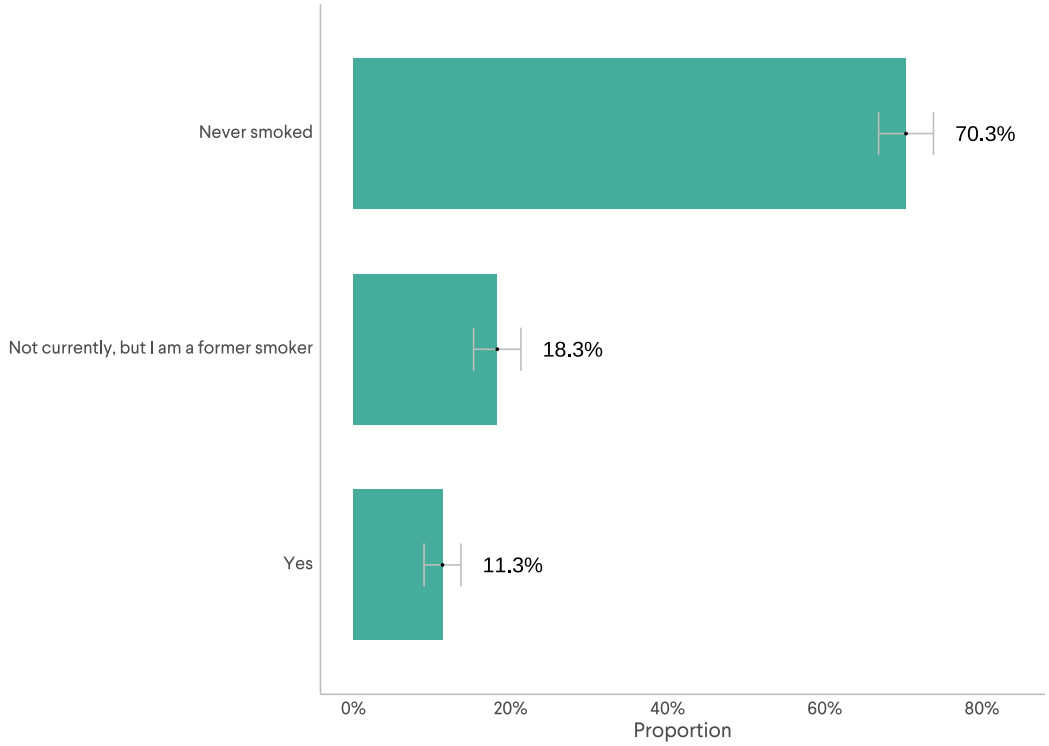

Figure 21. Percentage of current smokers, former smokers and people who have never smoked among adults (≥ 18 years) in Brazil. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

In relation to sociodemographic variables, in general, in almost all strata analyzed, the proportion of individuals who declared themselves former smokers was higher than those who said they currently smoke. There is a significant and progressive increase in the proportion of former smokers as age progresses, starting from 9% in the range up to 24 years and reaching 34.2% among individuals aged 60 years or more. As for sex, men had higher prevalence for both current smoking (14.5%) and former smokers (20.4%) compared to women. Regionally, the highest proportions of former smokers were recorded in the Southeast (21%), South (20.6%) and Central-West (20%). Additionally, individuals with exclusive use of the SUS and residents of capitals or metropolitan regions reported slightly higher frequencies of current and historical smoking (Figure 22).

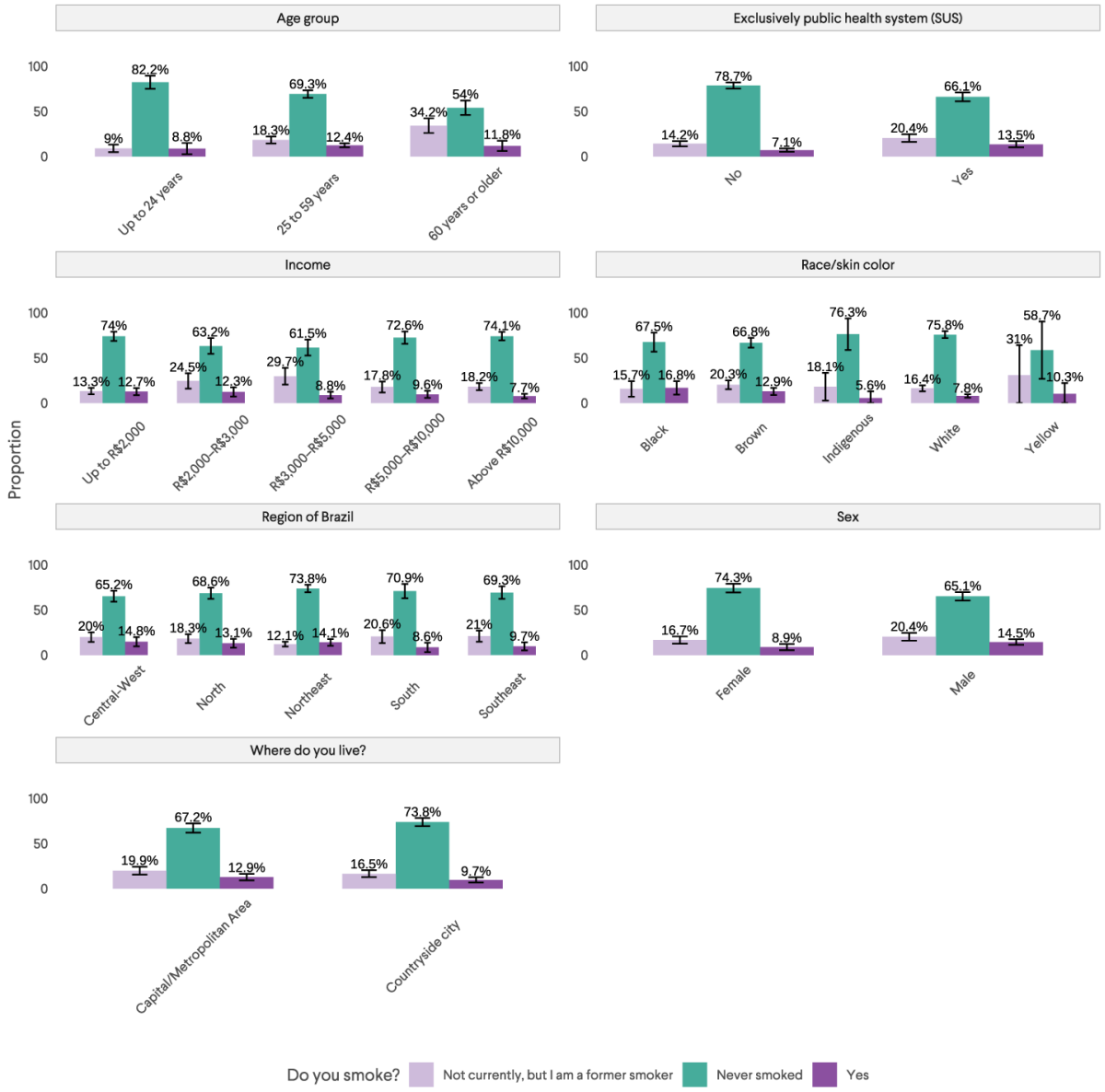

Figure 22. Percentage of current and former smokers among adults (≥18 years) in Brazil, according to sociodemographic variables. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

Among the risk factors surveyed, smoking was the one about which the population was most knowledgeable, with approximately 91% prevalence. Knowledge was higher among women: 93.4%. In addition, greater knowledge was observed in the southern region (93.9%), while the lowest level of knowledge was observed in the northern region (84.3%). Recognition of passive smoking as a risk factor was lower among the youngest (67.4%), reaching 85.1% among those aged 60 years or older (Figure 23).

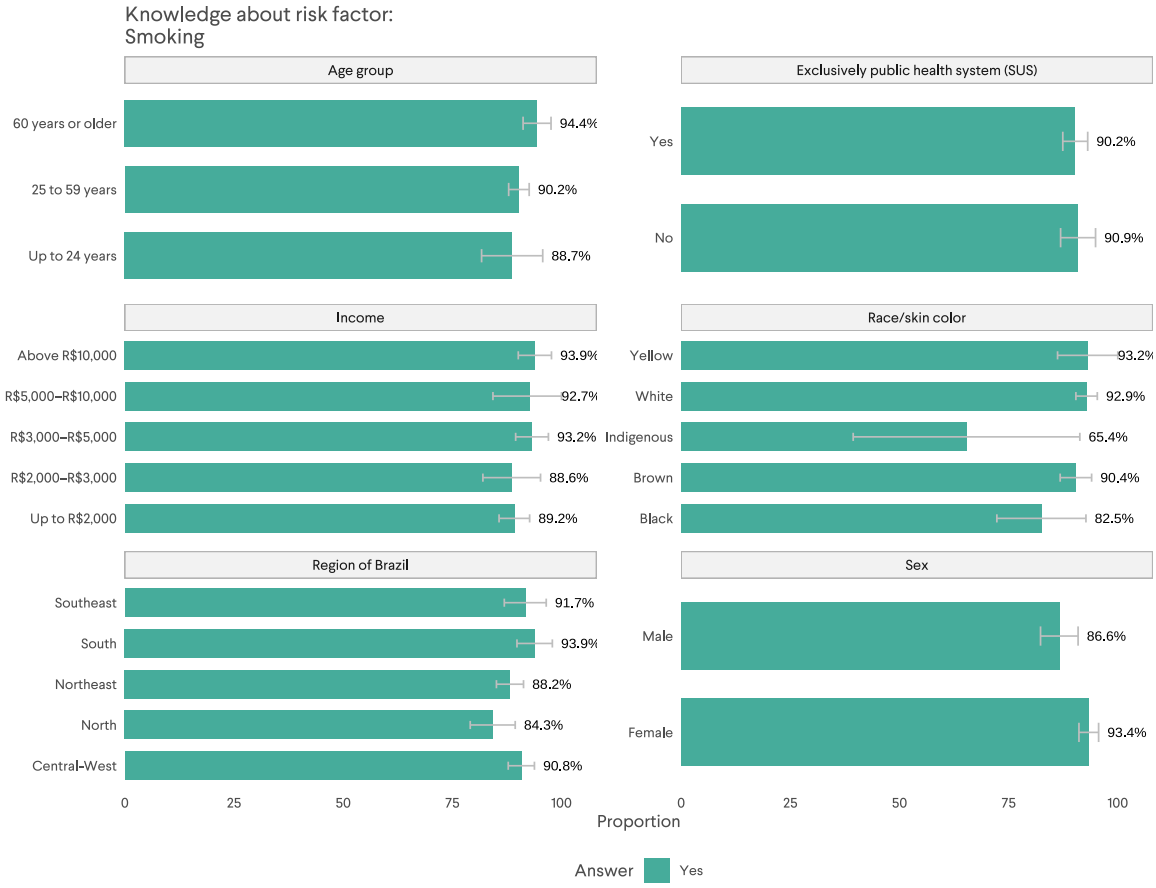

Figure 23. Knowledge about smoking as a risk factor for cancer development among adults (≥ 18 years) in Brazil, according to sociodemographic variables. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

Smoking cessation

This section shows the results of the questions related to the opportunities and attempts to interrupt the consumption of tobacco products, central aspects of the smoking cessation process.

Among individuals who declared themselves current or former smokers, five questions were elaborated with the aim of characterizing different dimensions related to smoking cessation in the 12 months prior to the survey, including approach by health services, counseling, individual attempts and access to treatment: “Were you asked by a doctor or other health care professional whether you smoke?"; "Were you advised to quit smoking?"; "Did you try to quit smoking?” ; "Did you have access to any cessation treatment?"; and "Did you call the number on the cigarette packaging for guidance?”.

It is noted that 69.4% reported having been questioned by a doctor or another health professional about tobacco use, while 55.1% reported having received the advice to stop smoking, showing that the approach to the topic is relatively frequent in health services, although not always accompanied by active cessation guidance. Regarding individual initiatives, 54.1% said they had tried to quit smoking during the period.

On the other hand, more structured cessation support strategies were less frequent: only 13.4% reported access to some cessation treatment, and 11.4% reported having sought guidance through the number provided on cigarette packages (Figure 24).

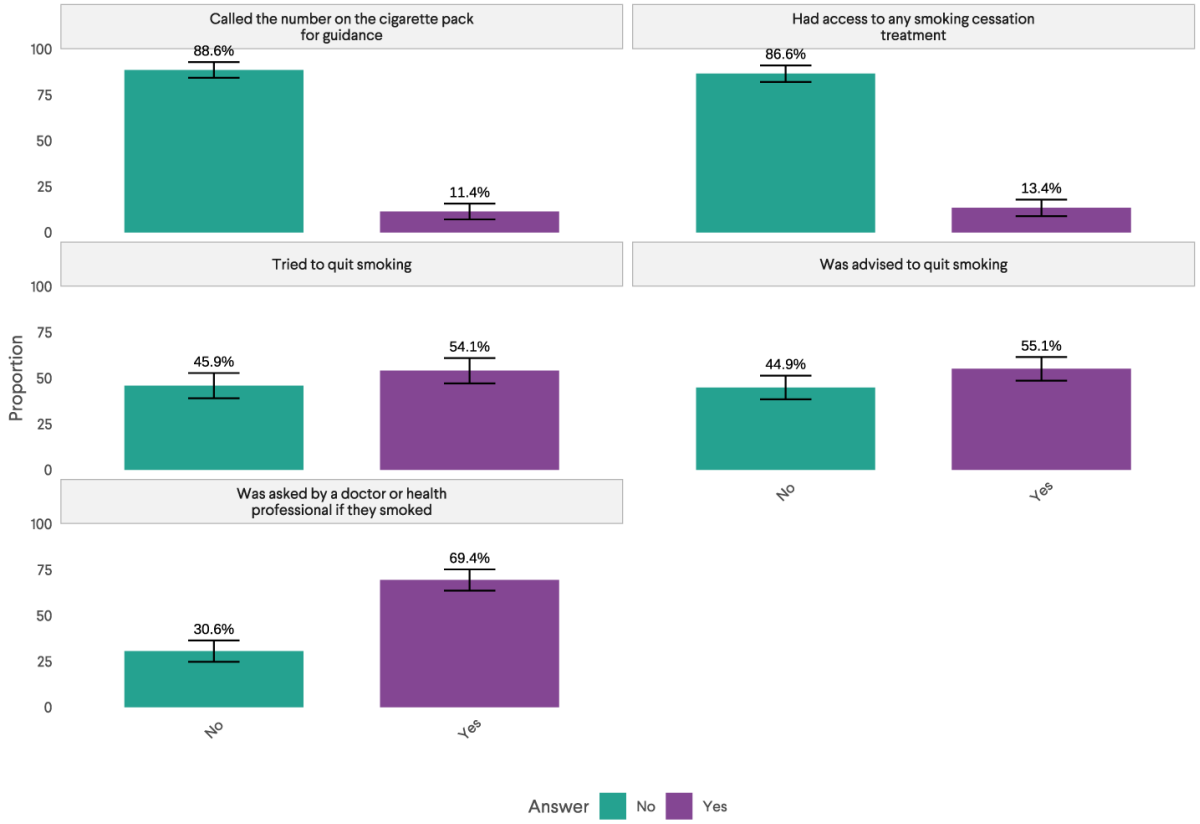

Figure 24. Percentage of adults (≥18 years), current and former smokers, who reported smoking cessation behaviors in Brazil. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

Electronic smoking devices (ESD)

With regard to ESDs (including electronic cigarettes, heated tobacco devices and electronic hookahs), 14.5% of the total population, including smokers, former smokers and non-smokers, stated that they use or had already used these devices. The majority (93.2%) recognized ESDs as a health risk factor, however, 18.4% considered it a harm reduction tool. Among smokers and former smokers, 21.4% reported having already used ESDs with the aim of quitting smoking or, at least, having received this suggestion (Figure 25).

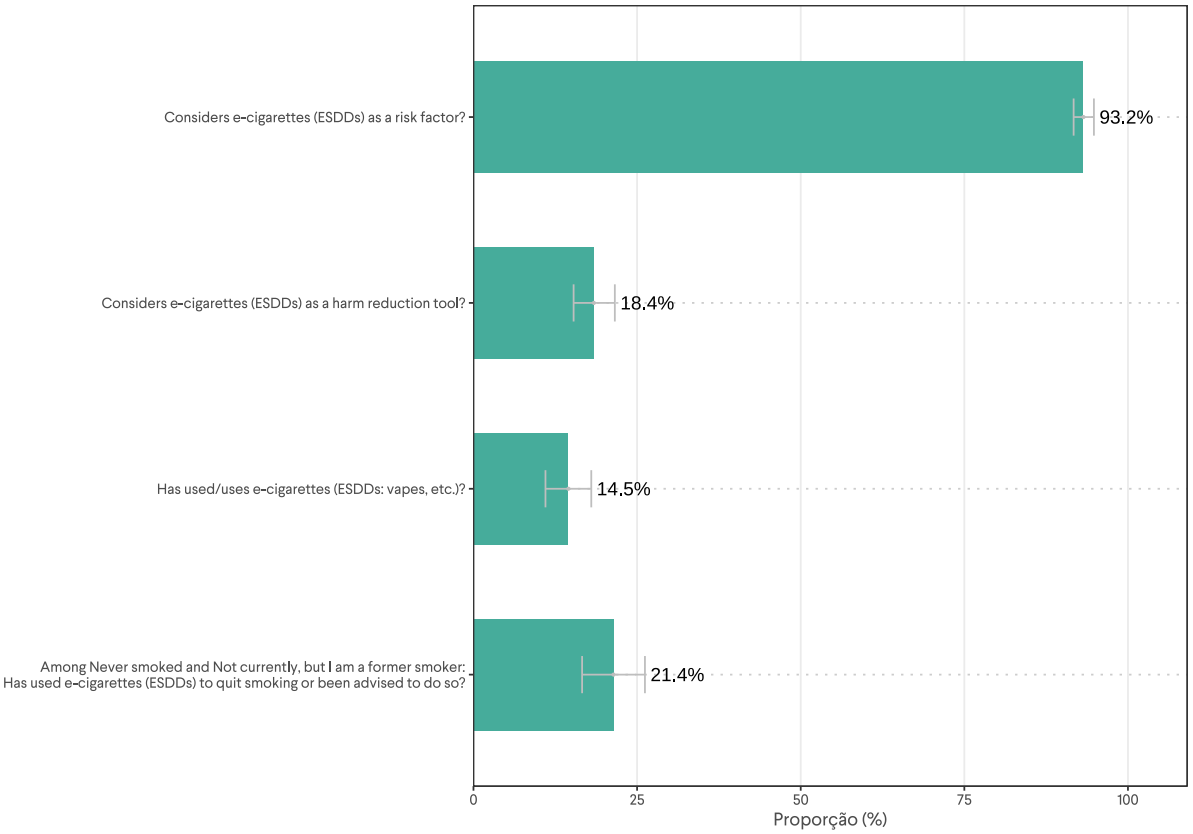

Figure 25. Percentage of adults (≥18 years) who reported behaviors related to using electronic smoking devices (ESD), in Brazil. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

As with knowledge about smoking, the population living in the northern region of the country showed less knowledge about the relationship between increased risk of cancer with the use of ESDs (76.1%). On the other hand, the Central-West region had the highest proportion (90.3%) (Figure 26).

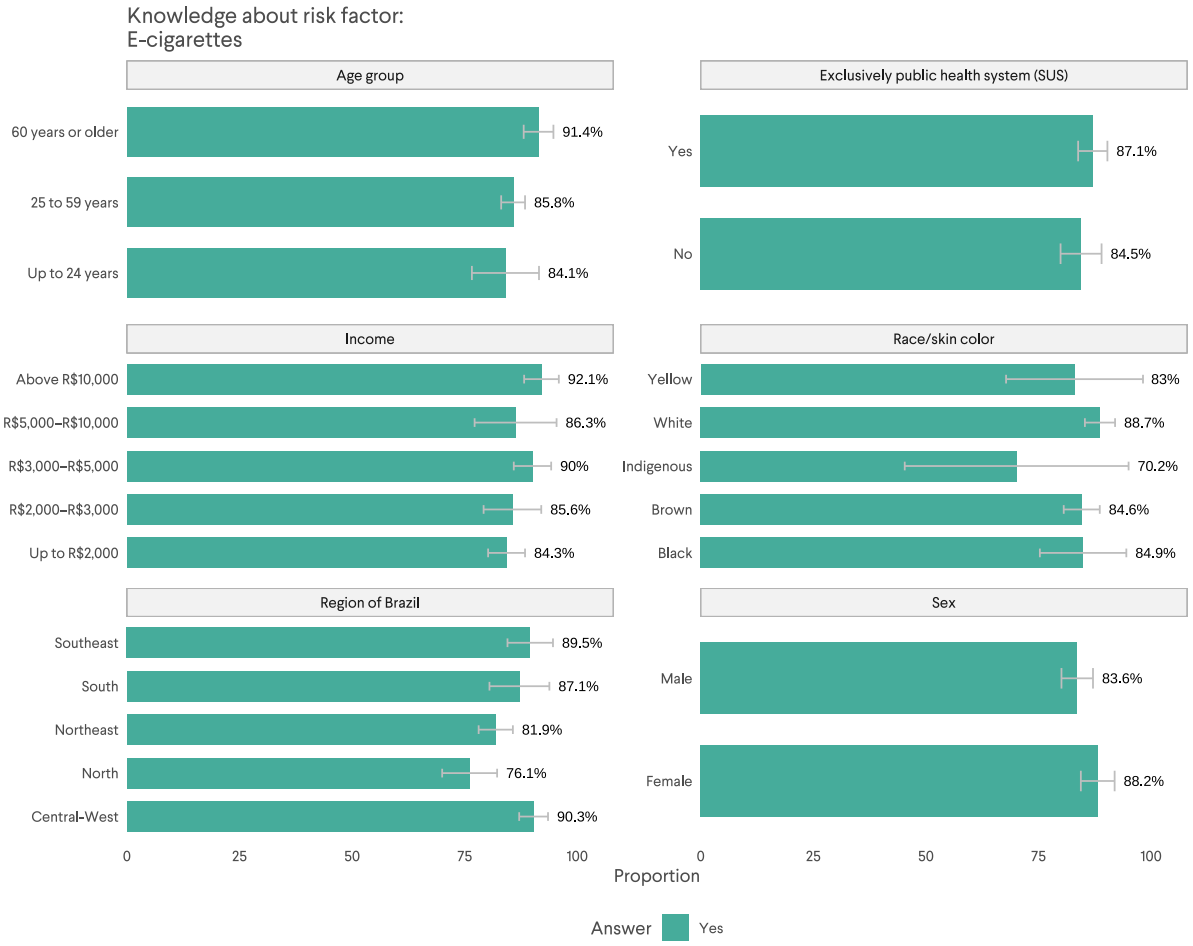

Figure 26. Knowledge about the use of electronic cigarettes as a risk factor for cancer development among adults (≥ 18 years) in Brazil, according to sociodemographic variables. More Data Better Health - Brazilian people's perceptions of risk factors for cancer, 2025.

The data on smoking, the risk factor best known by the Brazilian population, reveal important advances in Brazil's trajectory with tobacco control, internationally recognized for its anti-smoking policies, but also expose persistent vulnerabilities. The fact that only 13.4% of smokers or former smokers reported having access to some smoking cessation treatment is a critical indicator. Although the SUS offers free pharmacological therapies and psychosocial support for cessation, access to these resources remains limited. This gap is aggravated by the low use of guidance services available on cigarette packaging, mentioned by only 11.4% of respondents.

With regard to ESDs, the research reveals a relevant contradiction: although the vast majority recognize these products as a health risk factor, a significant portion still perceive them as a harm reduction tool, a notion that is not supported by the available scientific evidence. The lower level of knowledge about tobacco risks in the northern region reaffirms the need for regionally differentiated communication strategies, as well as the strengthening of tobacco control policies in this territory.

Final remarks

The *More Data Better Health - Brazilian people's perceptions of risk factors for cancer* survey offers, on a national scale, a comprehensive and representative panorama of what Brazilians recognize, think and do in relation to cancer and its prevention. The findings reveal a challenging scenario and, at the same time, an opportunity for the formulation of public policies.

The results show relevant gaps in the identification of risk factors. There is a clear pattern of selective recognition: factors historically associated with cancer in public campaigns, such as smoking and sun exposure, are widely identified. Factors directly associated with contemporary lifestyle, such as sedentary lifestyle (physical inactivity), excess weight, alcohol consumption and dietary factors are less well known.

At the same time, there is a latent demand for change. A significant portion of the population declares intention to adopt healthier habits, such as reducing the consumption of alcohol, ultra-processed products and processed meats, as well as the intention to start practicing physical activity or modify body weight. This window of opportunity cannot be missed.

To become real change, this intention needs to be strengthened by an integrated prevention agenda, which articulates: **(i)** health education, with campaigns that update and expand the population's knowledge about risk and protective factors for cancer, with accessible language and equitable reach; **(ii)** structural policies, such as higher taxation of alcoholic beverages, tobacco and ultra-processed food products, regulation of advertising of products harmful to health, expansion of environments conducive to physical activity and facilitation of access to *in natura* and minimally processed foods of plant origin; and **(iii)** strengthening health services, with expansion of access to early diagnosis, preventive vaccines and smoking cessation programs, with special attention to the most affected populations and the regions with the least infrastructure.

More Data Better Health - Brazilian people's perceptions of risk factors for cancer thus contributes to filling an important gap in the production of evidence on public health in Brazil. With 781,000 new cases of cancer estimated for each year of the 2026-2028 period, the country cannot do without data that shed light not only on the figures associated with the disease, but on people's understanding of it. Knowing is the first step, and this report is a contribution to translating that knowledge into policies, care and, above all, saved lives.

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Annex

ANNEX 1 - INFORMATION ON EVIDENCE, RECOMMENDATIONS AND MAIN REFERENCES ACCORDING TO RISK FACTORS.

Question: Do you think the following factors can increase a person's chance (risk) of developing cancer?

Risk factor	Evidence of the relationship between exposure and cancer	National recommendations on exposure for cancer prevention	References
Smoking (except e-cigarettes/ vapes)	"Smoking causes cancer of the oral cavity, pharynx, larynx, esophagus, trachea, bronchi and lung, liver, kidneys and ureter, stomach, pancreas, bladder, colon and rectum (intestine), cervix and acute myeloid leukemia (INCA, 2022; IARC, 2012). "	"Not smoking. When smoking cigarettes, more than 7,000 compounds and chemicals are released into the environment, which are inhaled by both smokers and non-smokers. Quitting smoking and avoiding environmental pollution caused by tobacco smoke are essential for cancer prevention. In addition, it is important to encourage smokers to seek treatment for smoking cessation through the services of the Unified Health System (SUS), available in basic health units (INCA, 2022). "	"1) https://www.gov.br/inca/pt-br/assuntos/causas-e-prevencao-do-cancer/tabagismo/ https://www.gov.br/inca/pt-br/assuntos/causas-e-prevencao-do-cancer/como-prevenir-o-cancer 2) https://publications.iarc.who.int/download/100E-BOOK.pdf"
Exposure to someone else's smoke (second-hand smoking)	Passive smoking causes lung cancer (IARC, 2012).	"Since there is no safe level of exposure to tobacco smoke, the best form of prevention is to maintain 100% smoke-free environments by preventing people from smoking indoors, such as homes, workplaces, and vehicles. This measure especially protects children, pregnant women and the elderly, who are more vulnerable to the effects of tobacco smoke (INCA, 2017). Law No. 12,546/2011, regulated by Decree No. 8,262/2014 since December 3, 2014, establishes that it is prohibited to smoke cigarettes, cigars, pipes, hookahs and other tobacco products in closed places for collective use, public or private, throughout the country (INCA, 2024). "	"1) https://publications.iarc.who.int/download/100E-BOOK.pdf 2) https://www.inca.gov.br/sites/ufu.sti.inca.local/files/media/document/nota-tecnica-tabagismo-passivo-importancia-ambientes-100-livres-fumaca-tabaco.pdf 3) https://ninho.inca.gov.br/jspui/bitstream/123456789/16707/1/Dispositivos%20eletronicos%20para%20fumar.pdf"
Excessive sun exposure (long periods in the sun without protection)	Exposure to solar radiation increases the risk of skin cancer, including malignant cutaneous melanoma, basal cell carcinoma, and squamous cell carcinoma (IARC, 2025).	Avoid sun exposure between 10am and 4pm. Look for shady places. Wear appropriate protection, such as clothing, caps or long-brimmed hats, sunglasses with UV protection, umbrellas and tents. Apply sunscreen with a protection factor of at least 15 to the skin before exposure to sunlight and reapply in case of intense sweating or when bathing in the sea or in swimming pools. Use sunscreen that is appropriate for lips (INCA, 2022).	"1) https://cdn.who.int/media/docs/default-source/radiation/mono100d.pdf?sfvrsn=e2f88f22_3&download=true 2) https://antigo.inca.gov.br/publicacoes/material-para-web/cards-para-midias-sociais-carrossel-cancer-de-pele"
Air pollution	Exposure to air pollutants, both outdoors (such as parks, streets and squares) and indoors (such as homes, hotels, offices, industries, clinics, hospitals and schools), increases the risk of cancer, especially of the lung and bladder (IARC, 2025). There is also evidence of an association with leukemias, lymphomas, mesothelioma and cancers of the nasopharynx, larynx and ovary, due to the presence of chemical compounds released into the air, such as benzene, formaldehyde, asbestos and tobacco smoke, among others (INCA, 2021).	Reduce air pollution levels in open and closed environments. Avoid the accumulation of smoke in the home, from cooking with coal or firewood. Avoid exposure to cigarette smoke and other indoor and outdoor pollutants. Limit the time in which the individual remains outdoors, in cases where the external environment has a high index of atmospheric pollution. Implement public policies that reduce pollution in areas such as transportation, urban planning, clean energy generation, and new technologies that reduce air pollution. Remove carcinogens from work environments and replace them with safer ones. Control the emission of carcinogens into the atmosphere and monitor worker exposure through individual and collective health protection programs, as well as improving air quality in the workplace (INCA, 2021).	1) https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//cartilha_poluicao_do_ar_web.pdf
Agrochemicals/ pesticides	Several active ingredients of pesticides widely consumed in Brazil, such as glyphosate, 2,4-D, malathion, atrazine and diazinone increase the risk of cancer, including non-Hodgkin's lymphoma, leukemia, lung cancer and prostate cancer. The production of insecticides, herbicides, cotton desiccants, fungicides and defoliants, as well as arsenic-based soil sterilizers, is associated with the occurrence of skin, prostate and liver cancer (INCA, 2023).	"Gradually reduce the use of pesticides until their complete elimination and encourage agroecological agriculture, for health promotion and cancer prevention in the rural and urban population (INCA, 2023). "	"https://docs.bvsalud.org/biblioref/2023/12/1523758/nota-tecnica-agrotoxicos_18_12_2023_pl-do-veneno_atualizado-1.pdf https://www.gov.br/ibama/pt-br/assuntos/quimicos-e-biologicos/agrotoxicos/arquivos/qualidadeambiental/relatorios/2025/2025-12-18_os_10_ingredientes_ativos_mais_vendidos_agrotoxicos_quimicos_2024.xlsx"

Risk factor	Evidence of the relationship between exposure and cancer	National recommendations on exposure for cancer prevention	References
HPV (Human Papillomavirus) infection	HPV type 16 causes cancer of the cervix, vulva, vagina, penis, anus, oral cavity, oropharynx, and tonsils, while types 18, 31, 33, 35, 39, 45, 51, 52, 56, 58 and 59 also cause cervical cancer (IARC, 2009). In all regions of the world, two types of HPV, 16 and 18, are responsible for about 70% of cases of cervical cancer (IARC, 2020), the third most incident type of cancer among women in Brazil, disregarding non-melanoma skin cancer (INCA, 2026). HPV infection is responsible for almost all squamous cell carcinomas of the cervix. Only about 5-10% of cervical adenocarcinomas are not associated with HPV infection (IARC, 2020).	"HPV vaccination, offered free of charge by the Unified Health System (SUS), is the most effective strategy to prevent cervical cancer and other neoplasms associated with this virus, such as cancers of the vagina, vulva, penis and anus (IARC, 2023). The groups with vaccination recommendation are: - Children and adolescents aged 9 to 14 years - SINGLE DOSE; - Immunocompromised persons (living with HIV/Aids, transplanted and oncological patients) - 3 DOSES (0, 2, 6 months); - Victims of sexual abuse aged 9 to 14 years - 2 DOSES (0, 6 months); - Victims of sexual abuse aged 15 to 45 years - 3 DOSES (0, 2, 6 months); - People with acute respiratory papillomatosis/RRP from 02 years of age - 3 DOSES (0, 2, 6 months); - HIV Pre-Exposure Prophylaxis (PrEP) users aged 15 to 45 years - 3 DOSES (0, 2, 6 months) (Ministry of Health, 2025a). The use of condoms (internal or external) is also an important measure to reduce the risk of contagion, although it does not completely eliminate the possibility of HPV transmission. This is because lesions may be present in areas not covered by condoms, such as the vulva, pubic and perineal regions, and the scrotal sac. The internal condom, by better covering the vulva, provides more effective protection, especially when used from the beginning of sexual intercourse (Ministry of Health, N.D.). In addition, cervical cancer screening is recommended, especially in unvaccinated women, through molecular tests for the detection of oncogenic HPV DNA, which allow early identification of high-risk infections and guide appropriate follow-up (Ministry of Health, 2025b)."	"1) https://publications.iarc.who.int/download/mono100B.pdf 2)https://ninho.inca.gov.br/jspui/bitstream/123456789/17914/1/Estima2026_completo%20%281%29.pdf 3) https://publications.iarc.who.int/download/Handbook19-book-final.pdf 4) https://ninho.inca.gov.br/jspui/bitstream/123456789/17914/1/Estima2026_completo%20%281%29.pdf 5) https://www.gov.br/saude/pt-br/assuntos/saude-de-a-a-z/h/hpv 6) https://infoms.saude.gov.br/content/Default/SEI_0045605478_Nota_Tecnica_16.pdf 7) https://www.gov.br/saude/pt-br/assuntos/pcdt/r/rastreamento-cancer-do-colo-do-utero/@@download/file"
Alcoholic beverages	The consumption of alcoholic beverages increases the risk of cancers of the mouth, pharynx, larynx, esophagus (squamous cell carcinoma), liver, colorectal, stomach and breast (pre- and postmenopausal) (WCRF, 2018).	Avoid the consumption of alcoholic beverages. There are no safe quantities. If you drink, try to consume as little as possible (INCA, 2020).	"1) https://www.wcrf.org/wp-content/uploads/2024/11/Summary-of-Third-Expert-Report-2018.pdf 2) https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//dieta_nutricao_atividae_fisica_e_cancer_resumo_do_terceiro_relatorio_de_especialistas_com_uma_perspectiva_brasileira.pdf"
Very hot drinks (e.g. Chimarrão)	Consumption of very hot drinks at temperatures ≥65°C increases the risk of esophageal cancer (squamous cell carcinoma) (WCRF, 2018).	Avoid consuming chimarrão at temperatures above 65°C. In the case of yerba mate, it is not the compound itself that represents the risk, but the way it is traditionally consumed, as in chimarrão, in which the use of the cuia and pump facilitates the ingestion of liquids at very high temperatures (INCA, 2020).	"1) https://www.wcrf.org/wp-content/uploads/2024/11/Summary-of-Third-Expert-Report-2018.pdf 2) https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//dieta_nutricao_atividae_fisica_e_cancer_resumo_do_terceiro_relatorio_de_especialistas_com_uma_perspectiva_brasileira.pdf"
Consuming little or no fruits, vegetables, legumes, grains and whole grains on a daily basis	Consumption of whole grains and foods rich in dietary fiber reduces the risk of colorectal cancer, and the combined consumption of non-starchy vegetables and fruits reduces the risk of cancers of the aerodigestive tract (mouth, pharynx, nasopharynx, larynx, esophagus, lung, stomach and colorectal). In addition, its consumption helps prevent excess body weight that causes various types of cancer (WCRF, 2018).	Make plant-based foods the foundation of your diet. Try to regularly include fruits, vegetables, grains and whole grains in your meals. Include at least five servings (400 g) of fruits and vegetables per day (INCA, 2020).	"1) https://www.wcrf.org/wp-content/uploads/2024/11/Summary-of-Third-Expert-Report-2018.pdf 2) https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//dieta_nutricao_atividae_fisica_e_cancer_resumo_do_terceiro_relatorio_de_especialistas_com_uma_perspectiva_brasileira.pdf"
Cured and/or processed meats (e.g. ham, sausage, bacon, salami, mortadella and smoked turkey breast)	Consumption of processed meats increases the risk of colorectal cancer (WCRF, 2018).	Avoid the consumption of processed meats. There are no safe quantities. If you consume, try to eat as little as possible (INCA, 2020).	"1) https://www.wcrf.org/wp-content/uploads/2024/11/Summary-of-Third-Expert-Report-2018.pdf 2) https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//dieta_nutricao_atividae_fisica_e_cancer_resumo_do_terceiro_relatorio_de_especialistas_com_uma_perspectiva_brasileira.pdf"
Red meat (e.g. beef, pork, veal, sheep, lamb, mutton, horse and goat)	Excessive consumption of red meat (above 500 grams of cooked meat per week) increases the risk of colorectal cancer (WCRF, 2018).	Limit the consumption of red meat, such as beef, pork and lamb, to up to 500 grams of cooked meat (equivalent to 750g of raw meat) per week (INCA, 2020).	"1) https://www.wcrf.org/wp-content/uploads/2024/11/Summary-of-Third-Expert-Report-2018.pdf 2) https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//dieta_nutricao_atividae_fisica_e_cancer_resumo_do_terceiro_relatorio_de_especialistas_com_uma_perspectiva_brasileira.pdf"

Risk factor	Evidence of the relationship between exposure and cancer	National recommendations on exposure for cancer prevention	References
Excess body weight (overweight and obesity)	Excess body weight increases the risk of cancers of the esophagus (adenocarcinoma), pancreas, liver, colorectal, breast (postmenopausal), endometrium, kidney, mouth, pharynx, larynx, gallbladder, stomach (cardia), ovary, and prostate (advanced) (WCRF/AICR, 2018). In addition, excess body fat is a cause of thyroid cancer, multiple myeloma, and meningioma (IARC, 2018).	Throughout life, aim to keep body weight within the recommended BMI limits. Prevent body fat gain in adulthood by maintaining proper weight and waist circumference (INCA, 2020).	"1) https://www.wcrf.org/wp-content/uploads/2024/11/Summary-of-Third-Expert-Report-2018.pdf 2) https://publications.iarc.who.int/download/HB16-BOOK-0606.pdf 3) https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//dieta_nutricao_atividade_fisica_e_cancer_resumo_do_terceiro_relatorio_de_especialistas_com_uma_perspectiva_brasileira.pdf"
Sedentary lifestyle (physical inactivity)	Physical activity reduces the risk of cancers of the bladder, breast, colon, endometrium, esophagus (adenocarcinoma), kidney, and stomach (USDHHS, 2018; WCRF, 2018).	Be physically active as part of the daily routine. The ideal is to perform, weekly, 150 minutes of moderate intensity physical activity or 75 minutes of vigorous physical activity (INCA, 2020).	"1) https://odphp.health.gov/sites/default/files/2019-09/PAG_Advisory_Committee_Report.pdf 2) https://www.wcrf.org/wp-content/uploads/2024/11/Summary-of-Third-Expert-Report-2018.pdf 3) https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//dieta_nutricao_atividade_fisica_e_cancer_resumo_do_terceiro_relatorio_de_especialistas_com_uma_perspectiva_brasileira.pdf "
Screen time (sedentary behavior)	Screen time contributes to weight gain, overweight and obesity, factors associated with the development of several types of cancer (WCRF, 2018).	Limit sedentary habits, such as spending a lot of time watching TV and using a mobile phone or computer (INCA, 2020). For every hour of sedentary behavior, the ideal is to move for at least 5 minutes, if possible (Ministry of Health, 2021).	"1) https://www.wcrf.org/wp-content/uploads/2024/11/Summary-of-Third-Expert-Report-2018.pdf 2) https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//dieta_nutricao_atividade_fisica_e_cancer_resumo_do_terceiro_relatorio_de_especialistas_com_uma_perspectiva_brasileira.pdf 3) https://bvsms.saude.gov.br/bvs/publicacoes/guia_atividade_fisica_populacao_brasileira.pdf"
Sweetened beverages (e.g. soft drinks, packaged or powdered juice, chocolate milk or flavored yogurt)	Consumption of sugary drinks promotes excess body weight, a factor associated with the development of several types of cancer (WCRF, 2018). Consumption of drinks artificially sweetened with aspartame possibly increases the risk of liver cancer (IARC, 2023).	Avoid the consumption of sugary drinks (INCA, 2020). Due to the evidence of potential harm, avoid the consumption of drinks with artificial sweeteners (INCA, 2023).	"1) https://www.wcrf.org/wp-content/uploads/2024/11/Summary-of-Third-Expert-Report-2018.pdf 2) https://publications.iarc.who.int/download/Vol134-book.pdf 3) https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//dieta_nutricao_atividade_fisica_e_cancer_resumo_do_terceiro_relatorio_de_especialistas_com_uma_perspectiva_brasileira.pdf 4) https://www.inca.gov.br/sites/ufu.sti.inca.local/files/media/document/nota-tecnica-aspartame-2023.pdf"
Ultra-processed foods (e.g., instant noodles, ready meals, packaged snacks, ice cream, chocolate, etc.)	Consumption of ultra-processed foods promotes excess body weight, a factor associated with the development of several types of cancer (WCRF, 2025). These foods can also raise the glycemic load of the diet, which increases the risk of endometrial cancer (WCRF, 2018)	Avoid the consumption of ultra-processed foods (INCA, 2020).	"1) https://www.wcrf.org/wp-content/uploads/2025/02/PPA-Factsheet-Processed-Foods-WEB-2.pdf 2) https://www.wcrf.org/wp-content/uploads/2024/11/Summary-of-Third-Expert-Report-2018.pdf 3) https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//dieta_nutricao_atividade_fisica_e_cancer_resumo_do_terceiro_relatorio_de_especialistas_com_uma_perspectiva_brasileira.pdf"
Milk and dairy products	Consumption of milk and dairy products decreases the risk of colorectal cancer (WCRF, 2018).	Because of the evidence of potential harm, no recommendations were made for milks and dairy products. There is limited evidence of an increased risk of prostate cancer (WCRF, 2018; INCA, 2020).	"1) https://www.wcrf.org/wp-content/uploads/2024/11/Summary-of-Third-Expert-Report-2018.pdf 2) https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//dieta_nutricao_atividade_fisica_e_cancer_resumo_do_terceiro_relatorio_de_especialistas_com_uma_perspectiva_brasileira.pdf"

Risk factor	Evidence of the relationship between exposure and cancer	National recommendations on exposure for cancer prevention	References
Genetic inheritance (having a close relative such as a father, mother, brother, child with cancer or who has already had cancer)	The genetic factor (presence of a mutation) can increase the risk of cancer in individuals in the same family. However, it is already recognized that environmental and behavioral factors generally have a greater contribution to the development of the disease. It is estimated that about 5 to 10% of cancer cases are hereditary (INCA, 2022).	There are no specific recommendations for cancer prevention related to the topic.	https://www.gov.br/inca/pt-br/assuntos/causas-e-prevencao-do-cancer/hereditariedade/
Electronic cigarettes/vapes (electronic smoking devices - ESDs)	Some research suggests a possible relationship between ESDs and cancer, but evidence is still limited (INCA, 2022; INCA, 2024). There is conclusive evidence that e-cigarette use results in increased airborne particles indoors and that it leads to increased concentrations of particulate matter of varying sizes in indoor air compared to baseline levels (BANKS et al, 2022). The aerosols of electronic cigarettes may contain metals (Fe, Ni, Cu, Cr, Zn, Pb), generated by the atomizer (OLMEDO et al., 2018), which may increase aerosol toxicity.	There are no specific recommendations for cancer prevention related to the topic. However, it is advised not to use electronic smoking devices, as studies indicate that their toxicity is as harmful as that of conventional cigarettes, since they combine toxic substances with others that can mask their harmful effects. Based on current evidence, the use of electronic cigarettes increases the risk of various health damages, such as poisoning, seizures, addiction, trauma and burns (caused by explosions), severe lung injury (EVALI), cardiovascular diseases, stroke, metabolic dysfunction, asthma, chronic obstructive pulmonary disease (emphysema) and oral diseases, among others, in addition to stimulating the use of tobacco products, especially among young people. E-cigarettes are harmful to the health of smokers and non-smokers and may be associated with the emergence of new diseases over time. There is no scientific evidence that they are effective for quitting smoking. In addition, its importation, advertising and commercialization (including through the internet) are prohibited by the National Health Surveillance Agency (ANVISA), as well as its use in closed collective environments (INCA, 2022; INCA, 2024).	"1) BANKS, E. et al. Electronic cigarettes and health outcomes: systematic review of global evidence. Report for the Australian Department of Health Electronic cigarettes and health outcomes: systematic review of global evidence. Report for the Australian Department of Health. National Centre for Epidemiology and Population Health, Canberra: April 2022. 2) Olmedo P, Goessler W, Tanda S, Grau-Perez M, Jarmul S, Aherrera A, Chen R, Hilpert M, Cohen JE, Navas-Acien A, Rule AM. Metal Concentrations in e-Cigarette Liquid and Aerosol Samples: The Contribution of Metallic Coils. Environ Health Perspect. 2018 Feb 21;126(2):027010. doi: 10.1289/EHP2175. PMID: 29467105; PMCID: PMC6066345. 3) https://ninho.inca.gov.br/jspui/bitstream/123456789/16707/1/Dispositivos%20eletronicos%20para%20fumar.pdf 4) https://www.gov.br/inca/pt-br/assuntos/causas-e-prevencao-do-cancer/tabagismo/dispositivos-eletronicos-para-fumar"
Stress	Some research suggests a possible relationship between psychological stress and cancer, but evidence is still limited (WCRF, ca. 2024).	There are no specific recommendations for cancer prevention related to the topic. However, strategies for managing stress can contribute to the promotion of health and general well-being and, indirectly, to reducing the risk of cancer. These strategies include healthy eating, physical activity, adequate sleep, strengthening social support networks, and the use of self-care and relaxation techniques such as meditation, mindfulness, deep breathing, and leisure activities (WCRF, ca. 2024).	1) https://www.wcrf.org/preventing-cancer/topics/stress-and-cancer/
Grilled, fried or barbecued meats	Some research suggests a possible relationship between grilled, fried, or barbecued meats and cancer, but evidence is still limited (WCRF, 2018).	There are no specific recommendations for cancer prevention related to the topic. However, it is advised to prioritize preparation methods such as roasting, boiling and stewing meats. When choosing grilled, fried or barbecued meats, it is advisable to use fresh meats (short storage time), opt for smaller pieces in preparation, marinate or pre-cook in a conventional oven or microwave (INCA, 2020).	"1) https://www.wcrf.org/wp-content/uploads/2024/11/Summary-of-Third-Expert-Report-2018.pdf 2) https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//dieta_nutricao_atividade_fisica_e_cancer_resumo_do_terceiro_relatorio_de_especialistas_com_uma_perspectiva_brasileira.pdf"
High-fat diet	"Some research suggests a possible relationship between a high-fat diet and cancer, but evidence is still limited (AICR, 2017; WCRF, 2018). "	There are no specific recommendations for cancer prevention related to the topic. However, it is recommended to limit the consumption of red meat, avoid the consumption of processed meats and ultra-processed foods, and control total caloric intake, since high-fat foods are more calorie-dense and can contribute to weight gain (INCA, 2020).	"1) https://www.aicr.org/resources/blog/healthtalk-do-high-fat-diets-lead-to-cancer/ 2) https://www.wcrf.org/wp-content/uploads/2024/11/Summary-of-Third-Expert-Report-2018.pdf 3) https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//dieta_nutricao_atividade_fisica_e_cancer_resumo_do_terceiro_relatorio_de_especialistas_com_uma_perspectiva_brasileira.pdf"

Risk factor	Evidence of the relationship between exposure and cancer	National recommendations on exposure for cancer prevention	References
Sugar	Frequent consumption of foods and beverages rich in sugars can contribute to weight gain and increase the risk of overweight or obesity, conditions associated with several types of cancer (WCRF, ca. 2024). These foods can also raise the glycemic load of the diet, which increases the risk of endometrial cancer (WCRF, 2018)	There are no specific recommendations for cancer prevention related to the topic. However, it is recommended to avoid the consumption of foods and drinks with added sugars, especially sugary drinks, ultra-processed foods and fast food (INCA, 2020)	"1) https://www.wcrf.org/preventing-cancer/topics/sugar-and-cancer/ 2) https://www.wcrf.org/wp-content/uploads/2024/11/Summary-of-Third-Expert-Report-2018.pdf 3) https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//dieta_nutricao_atividade_fisica_e_cancer_resumo_do_terceiro_relatorio_de_especialistas_com_uma_perspectiva_brasileira.pdf"
Artificial sweeteners	Some research suggests a possible relationship between artificial sweeteners, especially aspartame, and cancer, but evidence is still limited (IARC, 2023).	There are no specific recommendations for cancer prevention related to the topic. However, due to the evidence of potential harm, it is recommended to avoid the consumption of any type of artificial sweetener (INCA, 2023). Recently, the World Health Organization has also recommended that sugar-free sweeteners and products containing them should not be used as sugar substitutes, aimed at controlling body weight or reducing noncommunicable diseases. This position was based on the absence of evidence of long-term benefits in body weight control, as well as the potential undesirable effects resulting from prolonged use (WHO, 2023).	"1) https://publications.iarc.who.int/download/Vol134-book.pdf 2) https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//nota-tecnica-aspartame-2023.pdf 3) https://iris.who.int/server/api/core/bitstreams/e567a191-33a4-44ff-8b37-788a4e432764/content "

Question: Do you think the following items can decrease the chance (risk) of a person developing cancer?

Protection factors	Evidence of the relationship between exposure and cancer	National recommendations on exposure for cancer prevention	References
Breastfeeding	Breastfeeding reduces the risk of breast cancer among breastfeeding women and the risk of lifelong overweight and obesity among breastfed children (WCRF, 2018).	If you can, breastfeed your baby. It is advisable to breastfeed up to two years or more, offering only breast milk for the first six months (INCA, 2020).	"1) https://www.wcrf.org/wp-content/uploads/2024/11/Summary-of-Third-Expert-Report-2018.pdf 2) https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//dieta_nutricao_atividade_fisica_e_cancer_resumo_do_terceiro_relatorio_de_especialistas_com_uma_perspectiva_brasileira.pdf "
Vitamin and mineral supplements	High-dose beta-carotene supplements increase the risk of lung cancer in smokers and former smokers. Calcium supplements reduce the risk of colorectal cancer (WCRF, 2018).	For the general population, using dietary supplements is not recommended for cancer prevention. A healthy diet provides the right amount of nutrients. Although the use of calcium supplements helps protect against colorectal cancer, some studies on other types of cancer have revealed unexpected adverse effects. In addition, differences between the beneficial effects of micronutrients present in foods consumed in the long term and the absence of benefits observed in short-term clinical trials generate uncertainties regarding the effect of dietary supplements on cancer risk (INCA, 2020).	"1) https://www.wcrf.org/wp-content/uploads/2024/11/Summary-of-Third-Expert-Report-2018.pdf 2) https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//dieta_nutricao_atividade_fisica_e_cancer_resumo_do_terceiro_relatorio_de_especialistas_com_uma_perspectiva_brasileira.pdf "

ANNEX 2: QUESTIONNAIRE

Questionnaire - Survey on cancer knowledge

National survey (200 cases per state; total: 5,400 respondents)

1. Do you know or have you heard of the disease "cancer"?

- Yes
- No
- Do not know
- I prefer not to answer

2. Do you think cancer can be prevented?

- Yes
- No
- Do not know
- I prefer not to answer

3. Do you think the following items can <u>increase</u> the chance (risk) of a person developing cancer?

	Yes	No	Do not know	I prefer not to answer
Genetic inheritance (having a close relative such as a father, mother, brother, child with cancer or who has already had cancer)				
Smoking (except e-cigarettes/vapes)				
Exposure to someone else's smoke (secondhand smoke)				
Electronic cigarettes/vapes (electronic smoking devices - ESDs)				
Excessive sun exposure (long periods in the sun without protection)				
Air pollution				
Agrochemicals/pesticides				
Stress				
HPV virus (Human Papillomavirus) infection				
Sedentary lifestyle (physical inactivity)				
Screen time (sedentary behavior)				
Alcoholic beverages				
Very hot drinks (e.g. Chimarrão)				
Coffee				
Consuming little or no fruits, vegetables, legumes, grains and whole grains on a daily basis				
Cured and/or processed meats (e.g. ham, sausage, bacon, salami, mortadella and smoked turkey breast)				
Red meat (e.g. beef, pork, veal, sheep, lamb, mutton, horse and goat)				
Grilled, fried or barbecued meats				
High-fat diet				
Milk and dairy products				

Sugar
Artificial sweeteners
Sweetened beverages (e.g. soft drinks, packaged or powdered juice, chocolate milk or flavored yogurt)
Ultra-processed foods (e.g., instant noodles, ready meals, packaged snacks, ice cream, chocolate, etc.)
Excess body weight (overweight and obesity)

4. Do you think the following items can decrease the chance (risk) of a person developing cancer?

	Yes	No	Do not know	I prefer not to answer
Breast-feeding				
Vitamin and mineral supplements				

5. Which of the options below best applies to you regarding the consumption of the following items?

Consider the following observations:

- *Alcoholic beverages: all kinds.*
- *Red meat: beef, pork, veal, sheep, lamb, mutton, horse and goat.*
- *Cured/processed meats: sausage, ham, bacon, salami, mortadella, blanquet and smoked turkey breast, industrialized hamburger, nuggets and similar.*
- *Sweetened beverages: soft drinks, boxed/canned juices, powdered soft drinks, chocolate milk and yogurts sweetened with sugar or artificial sweetener.*
- *Ultra-processed: instant noodles, ready meals, packaged snacks, sweet or savory cookies/ crackers, packaged cakes, ice cream, chocolate, jello, margarine, mayonnaise, ketchup and other industrialized sauces.*

	I consume it and I am trying to reduce consumption	I consume it and I am not trying to reduce consumption	I do not consume it	Do not know/ not sure	I prefer not to answer
Alcoholic beverages					
Red meat					
Cured and/or processed meats					
Sweetened drinks					
Ultra-processed foods					

6. Which of the following best applies to you regarding the consumption of fruits and vegetables?

Note that starchy vegetables such as potatoes, sweet potatoes, cassava, yams, as well as legumes such as beans, peas, lentils and chickpeas do not fall into this group.

- I consume fruits and vegetables
- I do not consume fruits and vegetables, but I intend to consume
- I do not consume fruits and vegetables and do not intend to consume
- I do not know/not sure
- I prefer not to answer

7. Which of the following best applies to you in relation to practicing physical activity?

We are referring both to physical activities carried out in gyms or specialized services, and to body movement in everyday life, such as walking, running, cycling, dancing, among others, carried out at leisure, commuting, work or at home.

- I practice physical activity
- I do not practice physical activity, but I intend to practice
- I do not practice physical activity and do not intend to practice
- I do not know/not sure
- I prefer not to answer

8. Which of the following best applies to you regarding body weight?

Consider both overweight and obesity as excess weight.

- I am at a healthy weight
- I am overweight and have been doing something to change that
- I am overweight, but I have not been doing anything to change that
- Neither situation applies
- I do not know/not sure
- I prefer not to answer

9. Do you smoke?

- Yes
- Not currently, but I am a former smoker
- I never smoked

10. [To those who answered "yes" and "no, but I am a former smoker"] How long have you smoked/For how long did you smoke?

List of years (1-100).

11. [For those who answered "yes" and "no, but I am a former smoker"] How many cigarettes per day do you usually/did you use to consume on average?

List of cigarettes (1-50).

12. Regarding electronic smoking devices (ESD):

	Yes	No
Have you used/Do you use ESDs (electronic cigarettes, vapes etc.)?		
Do you consider ESDs as a risk factor or harm reduction tool?		
Have you used ESDs to quit smoking or received this as a suggestion?		

13. [For those who answered “yes” and "no, but I am a former smoker”] In the last 12 months:

	Yes	No	Not applicable
Were you asked by a doctor or other health care professional whether you smoke?			
Were you advised to quit smoking?			
Did you try to quit smoking?			
Did you have access to any cessation treatment?			
Did you call the number on the cigarette packaging for guidance?			

Demographic questions

14. Which state are you from?
List of states
15. What municipality are you from?
Percentage of municipalities
16. Which region do you live in?
- Capital/Metropolitan Region
- Countryside

17. What is your gender?
- Male
- Female
- Other
- I'd rather not say

18. What is your skin color/race?
- White
- Black
- Brown
- Yellow
- Indigenous

19. What is your age?
List of ages
20. What is your income?
- Up to R$2.000
- R$2.000-R$3.000
- R$3.000-R$5.000
- R$5.000-R$10.000
- Above R$10.000

21. What is your level of education?
- Did not go to school
- Incomplete basic education
- Complete basic education
- Complete high school
- Complete higher education

22. Do you use the Unified Health System (SUS)?

- Yes
- No

23. What type(s) of Health Service(s) do you usually use?

Check all relevant options.

- Public Health Network (Health Post, Basic Healthcare Unit, UPA, public hospital)
- Private Health Network
- Health Insurance/Health Plan

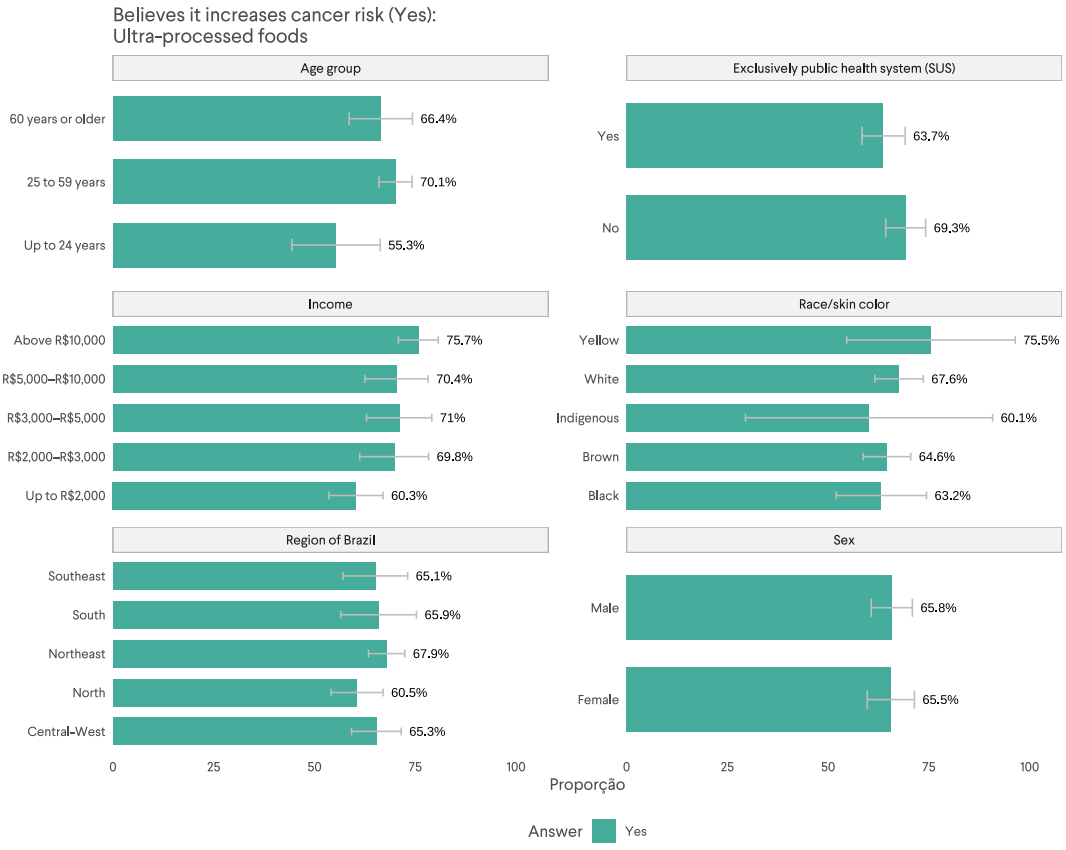
24. Have you ever had cancer?

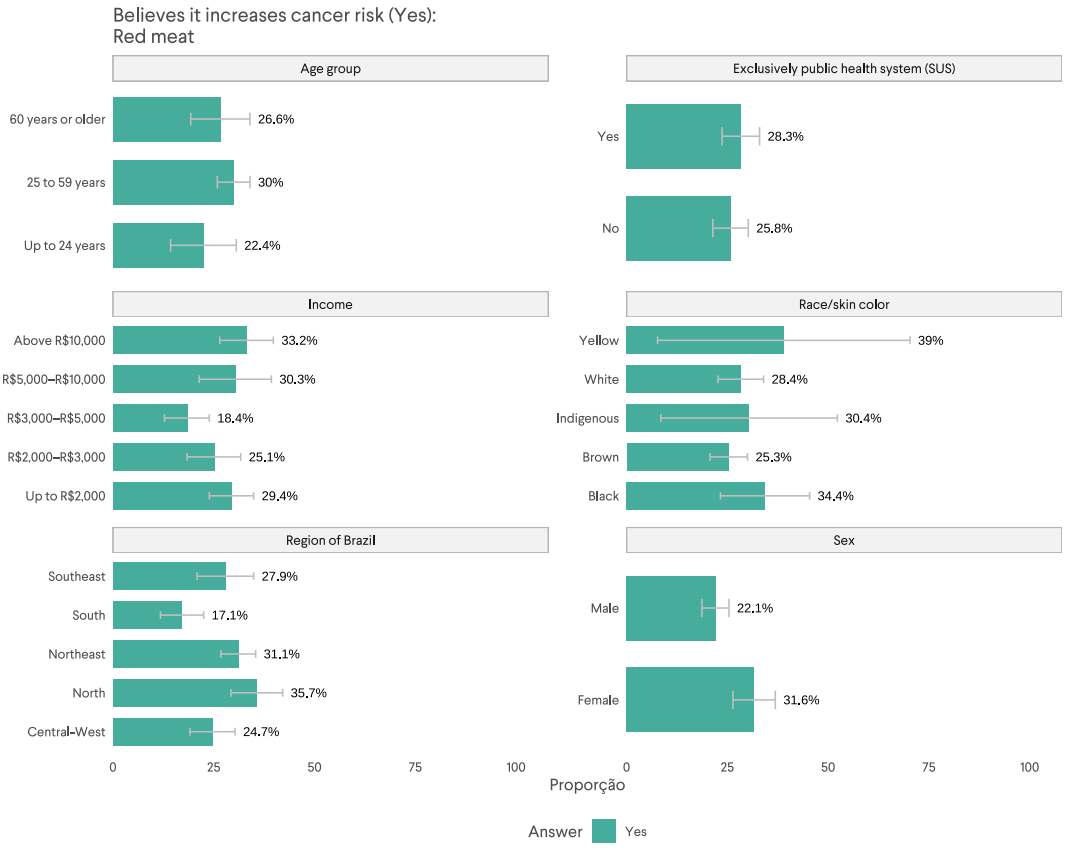
- Yes
- No

25. [Conditional for those who answered "yes"] What type of cancer?

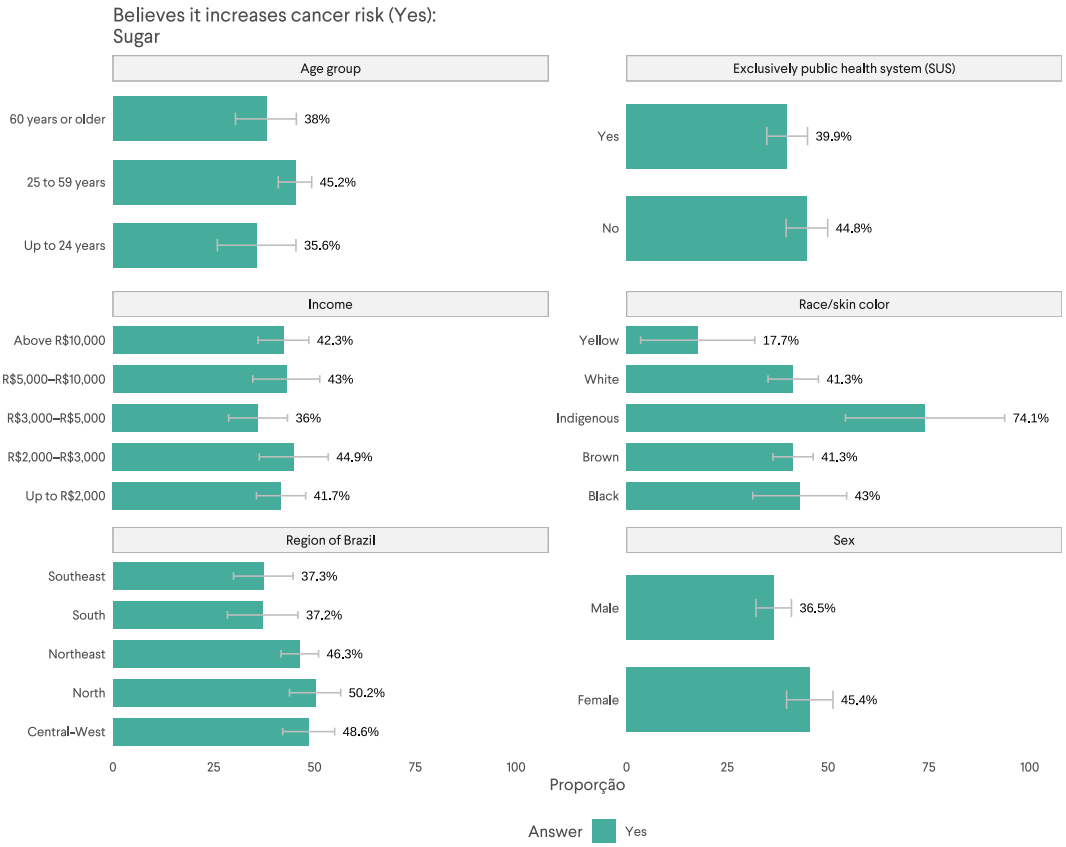
List with all types of cancer.

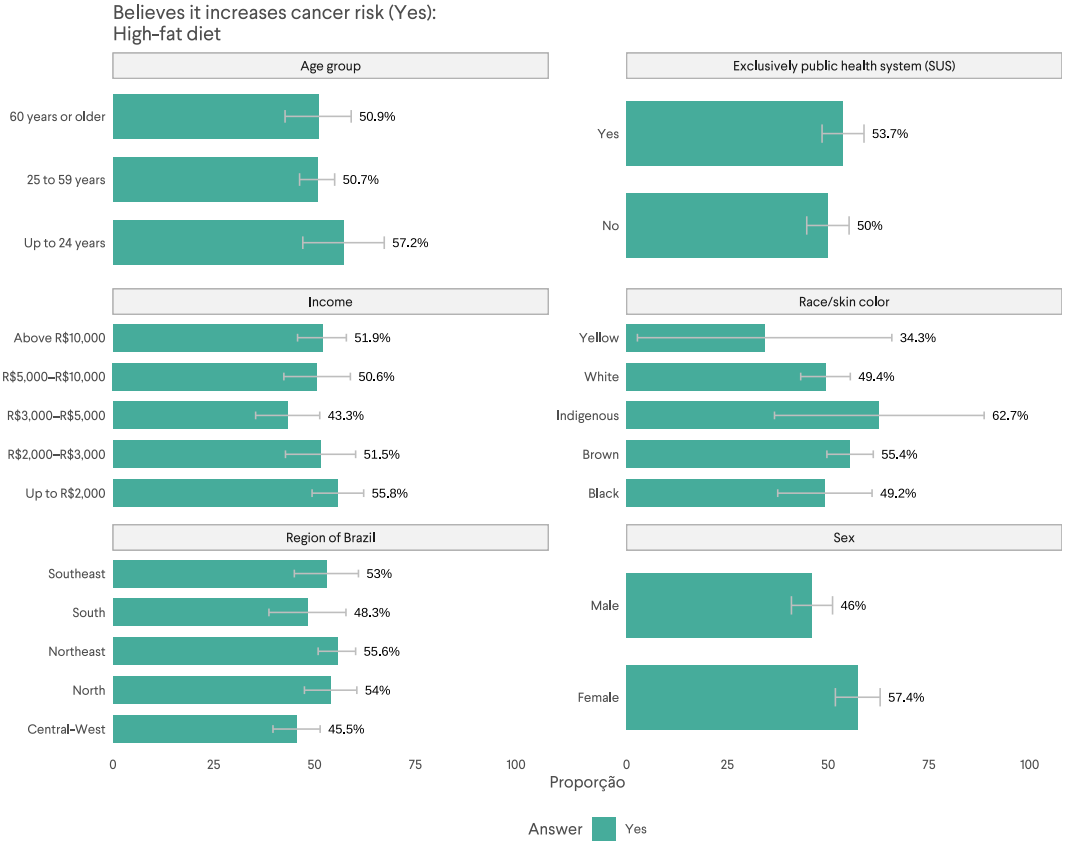
ANNEX 3: FIGURES FROM THE "ULTRA-PROCESSED FOODS, SWEETENED BEVERAGES, RED MEAT, AND CURED AND/ OR PROCESSED MEATS" SECTION ACCORDING TO SOCIODEMOGRAPHICS

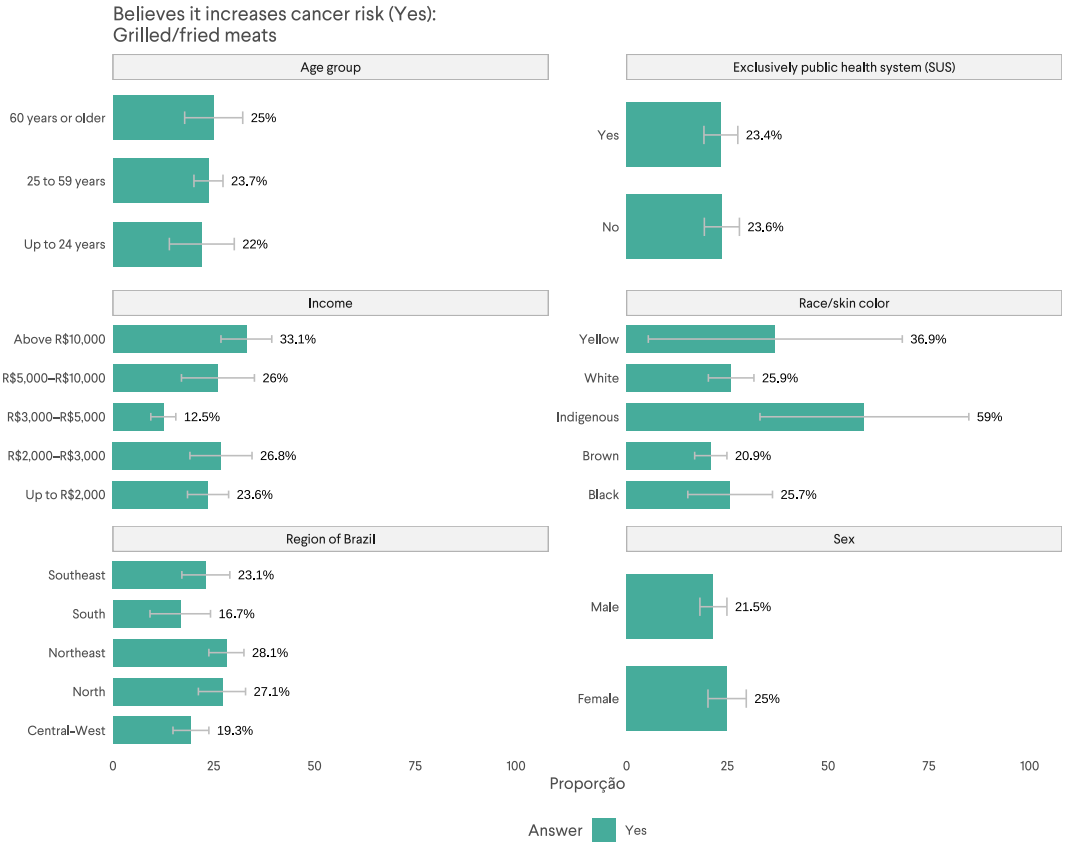


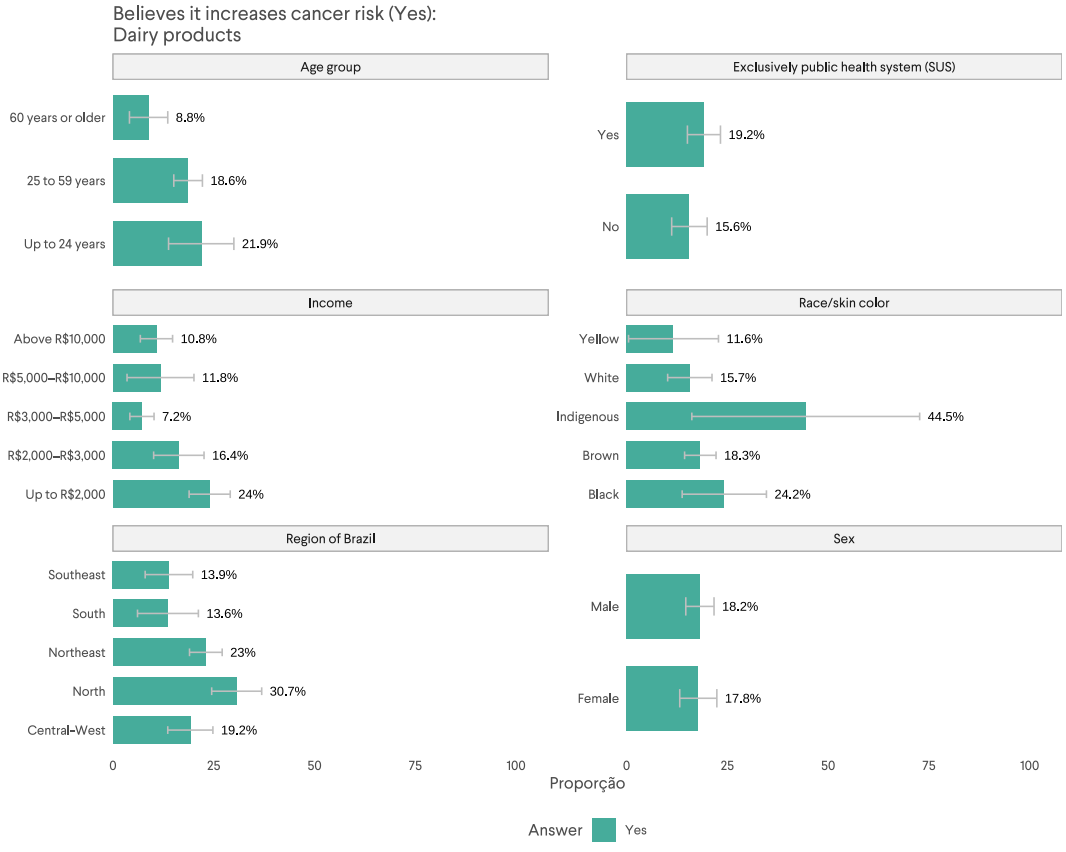


ANNEX 4: FIGURES FROM THE "PEOPLE'S KNOWLEDGE OF OTHER FOOD GROUPS" ACCORDING TO SOCIODEMOGRAPHICS

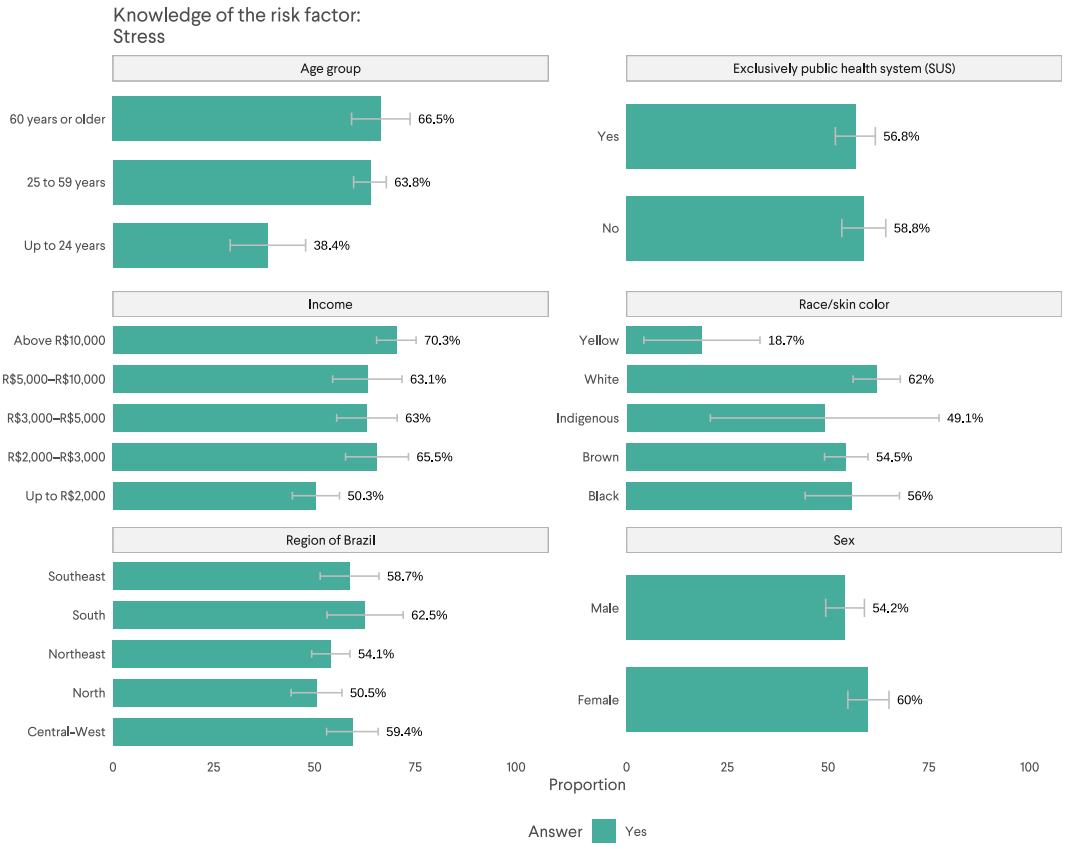


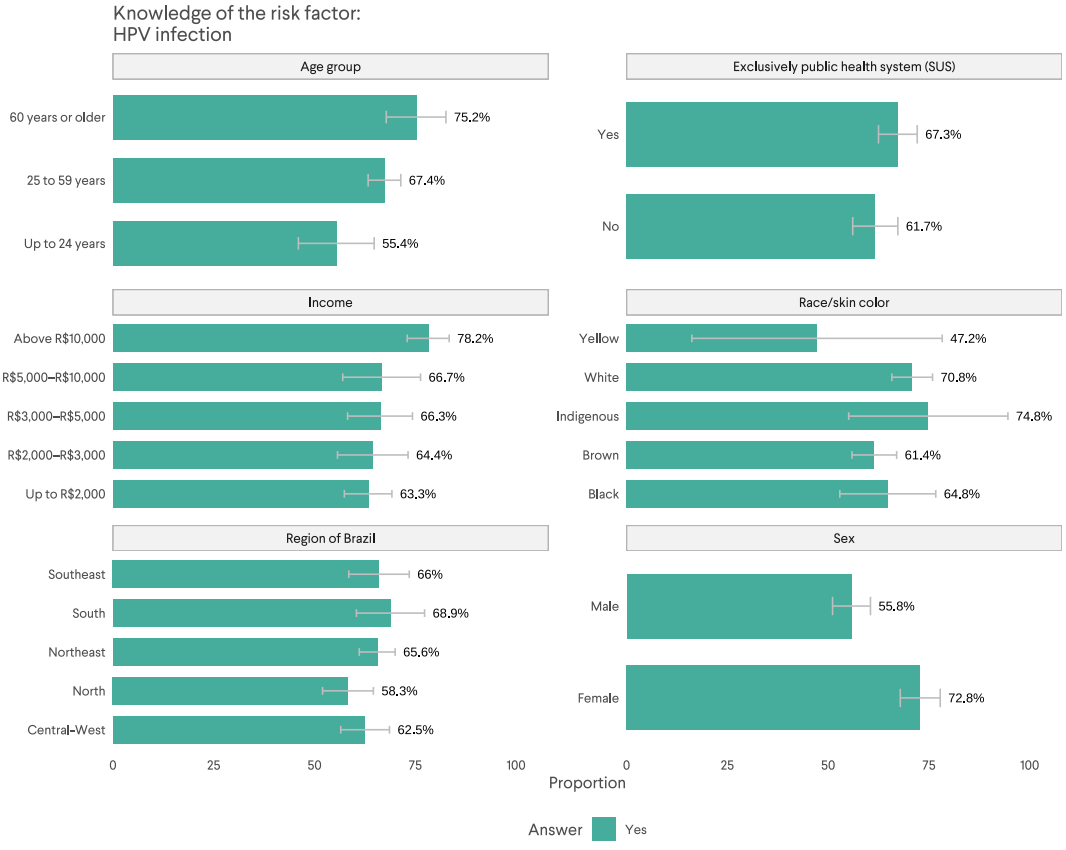


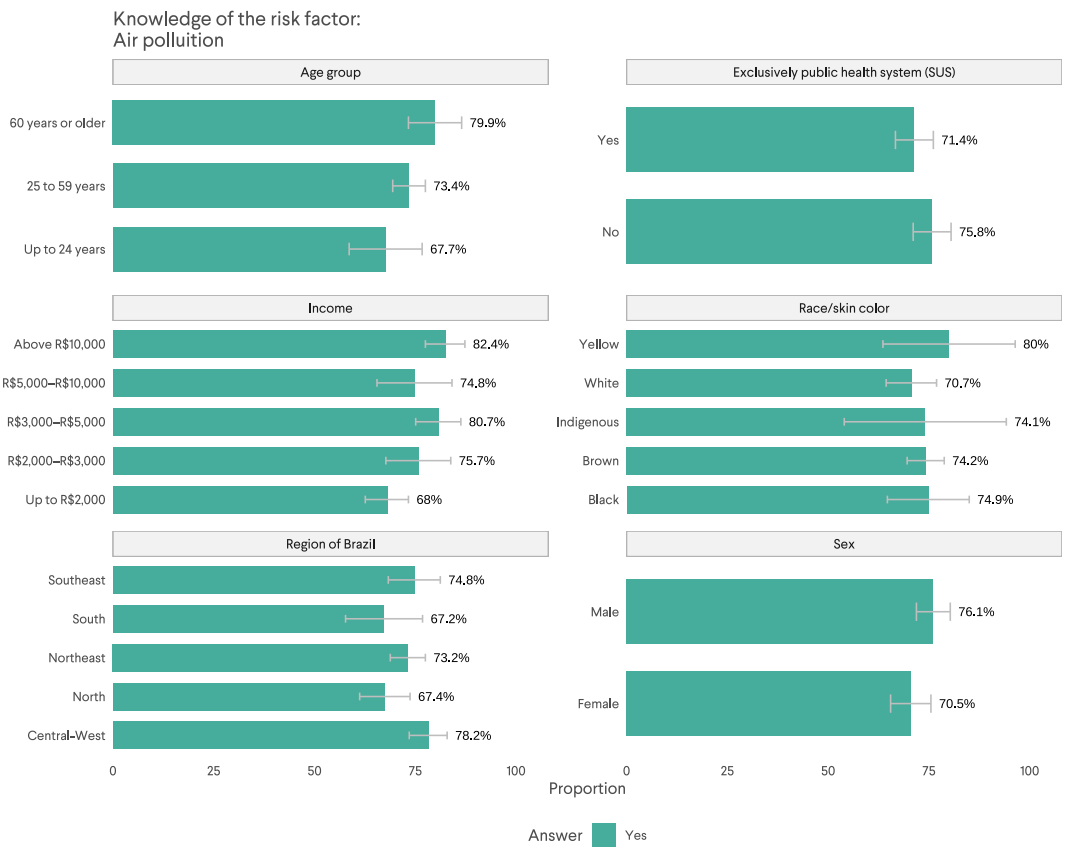

Believes it increases cancer risk (Yes):
Grilled/fried meats
Age group
60 years or older
25%
25 to 59 years
23.7%
Up to 24 years
22%
Exclusively public health system (SUS)
Yes
23.4%
No
23.6%
Income
Above R$10,000
33.1%
R$5,000–R$10,000
26%
R$3,000–R$5,000
12.5%
R$2,000–R$3,000
26.8%
Up to R$2,000
23.6%
Race/skin color
Yellow
36.9%
White
25.9%
Indigenous
59%
Brown
20.9%
Black
25.7%
Region of Brazil
Southeast
23.1%
South
16.7%
Northeast
28.1%
North
27.1%
Central-West
19.3%
Sex
Male
21.5%
Female
25%
0
25
50
75
100
Proporção
Answer
Yes

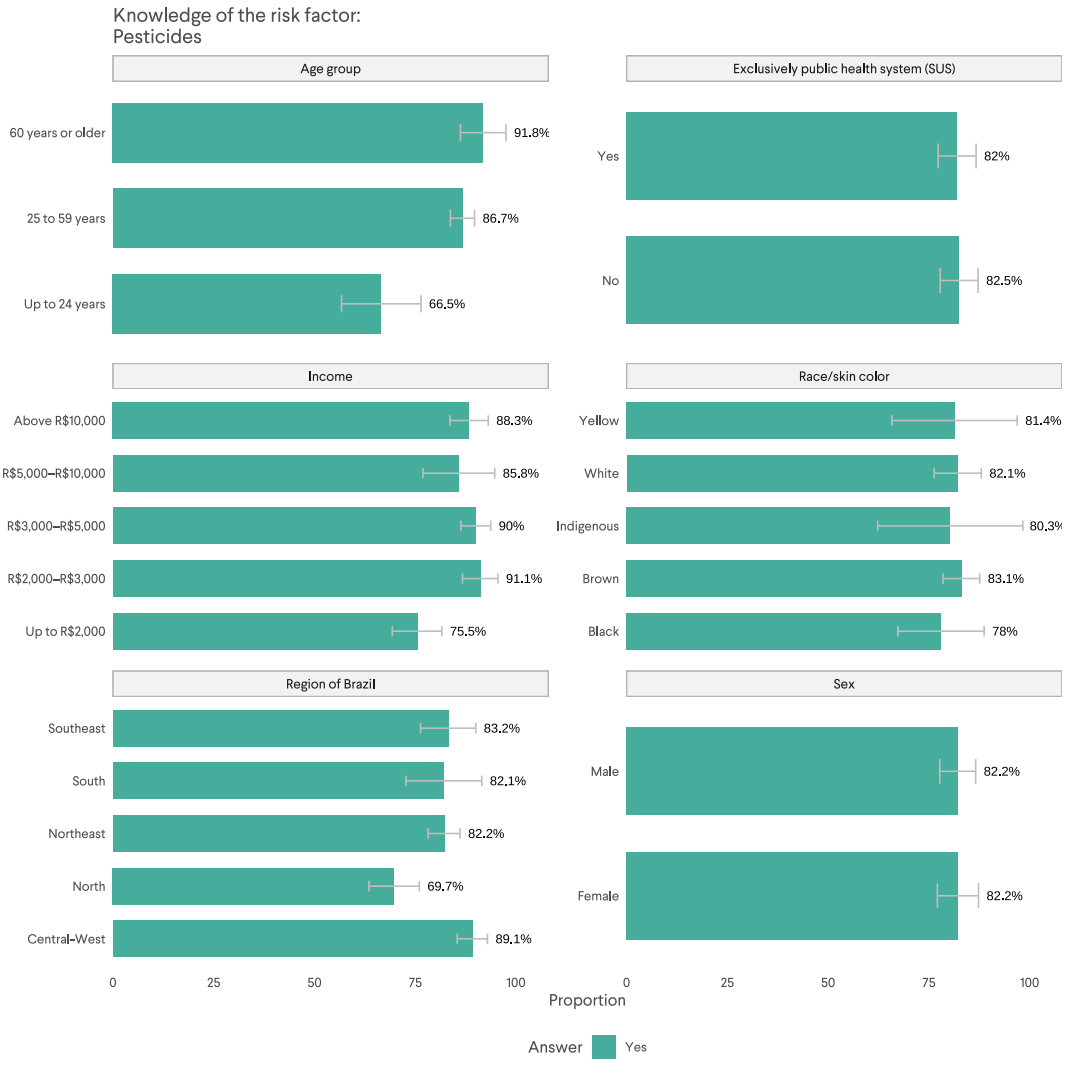

Believes it increases cancer risk (Yes):
Dairy products
Age group
60 years or older
8.8%
25 to 59 years
18.6%
Up to 24 years
21.9%
Exclusively public health system (SUS)
Yes
19.2%
No
15.6%
Income
Above R$10,000
10.8%
R$5,000–R$10,000
11.8%
R$3,000–R$5,000
7.2%
R$2,000–R$3,000
16.4%
Up to R$2,000
24%
Race/skin color
Yellow
11.6%
White
15.7%
Indigenous
44.5%
Brown
18.3%
Black
24.2%
Region of Brazil
Southeast
13.9%
South
13.6%
Northeast
23%
North
30.7%
Central-West
19.2%
Sex
Male
18.2%
Female
17.8%
0
25
50
75
100
Proporção
Answer
Yes

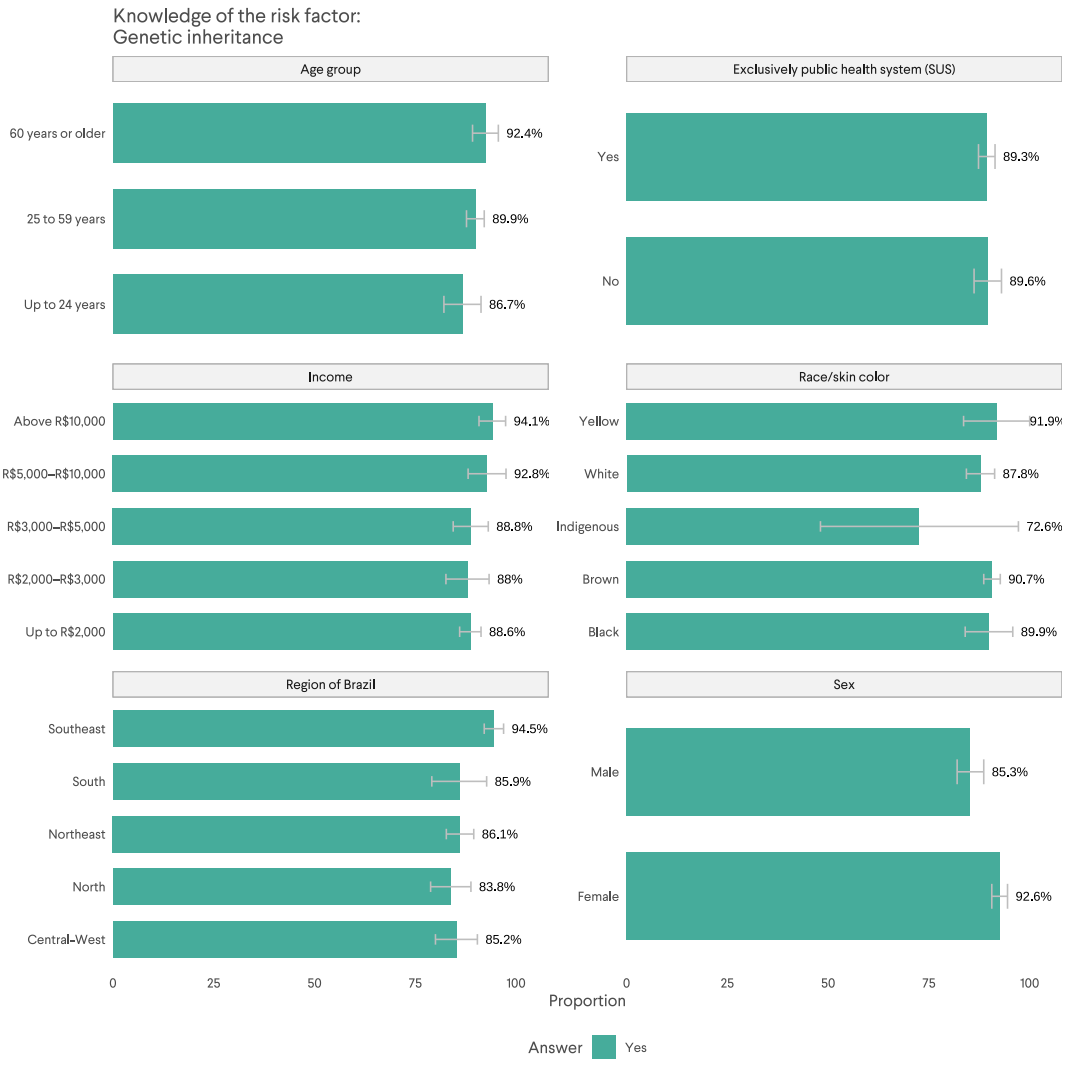
ANNEX 5: FIGURES FROM THE "PEOPLE'S KNOWLEDGE OF OTHER RISK FACTORS" ACCORDING TO SOCIODEMOGRAPHICS

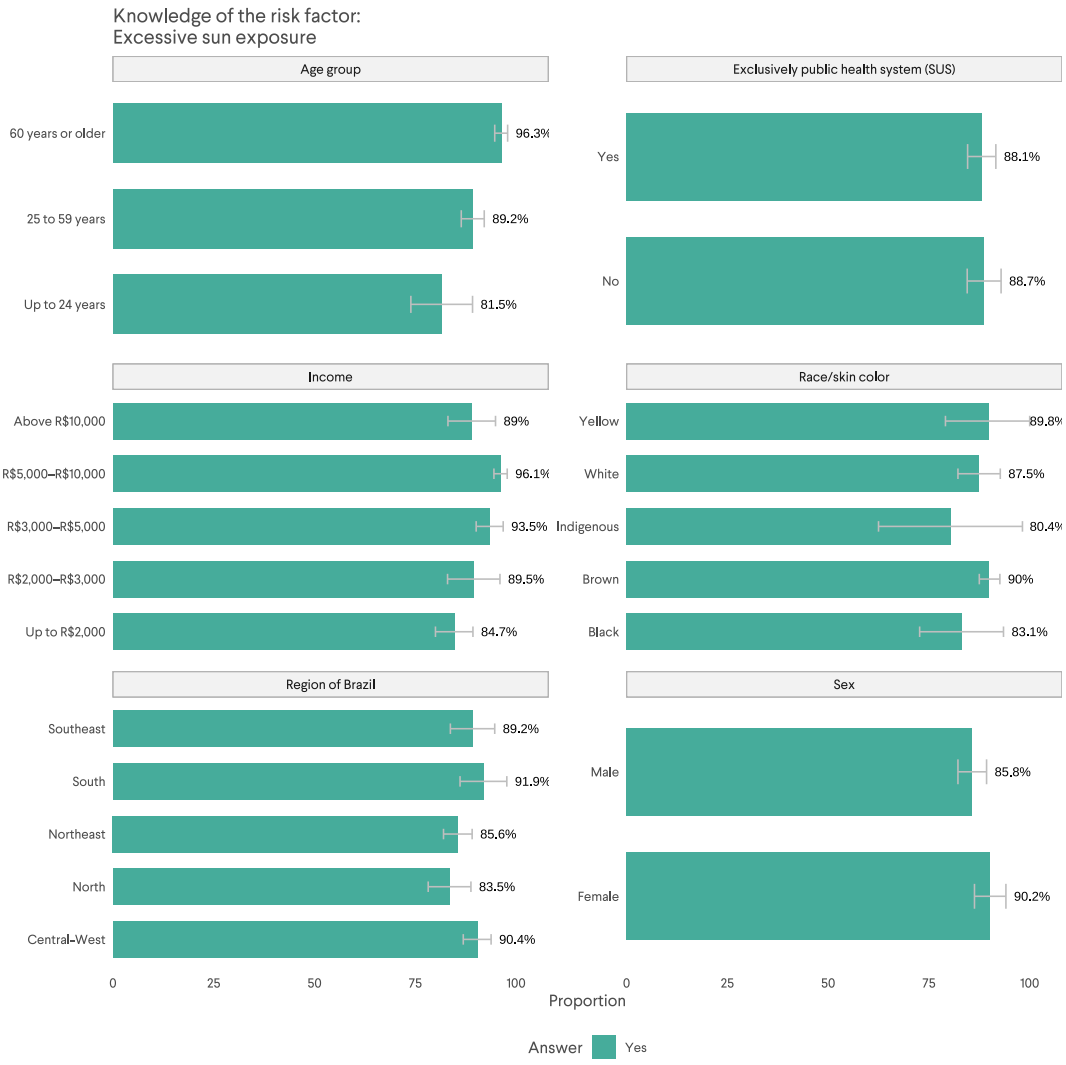





Knowledge of the risk factor:
Air polluition
Age group
60 years or older
79.9%
25 to 59 years
73.4%
Up to 24 years
67.7%
Exclusively public health system (SUS)
Yes
71.4%
No
75.8%
Income
Above R$10,000
82.4%
R$5,000–R$10,000
74.8%
R$3,000–R$5,000
80.7%
R$2,000–R$3,000
75.7%
Up to R$2,000
68%
Race/skin color
Yellow
80%
White
70.7%
Indigenous
74.1%
Brown
74.2%
Black
74.9%
Region of Brazil
Southeast
74.8%
South
67.2%
Northeast
73.2%
North
67.4%
Central-West
78.2%
Sex
Male
76.1%
Female
70.5%
0
25
50
75
100
Proportion
Answer
Yes


Knowledge of the risk factor:
Pesticides
Age group
60 years or older
91.8%
25 to 59 years
86.7%
Up to 24 years
66.5%
Exclusively public health system (SUS)
Yes
82%
No
82.5%
Income
Above R$10,000
88.3%
R$5,000–R$10,000
85.8%
R$3,000–R$5,000
90%
R$2,000–R$3,000
91.1%
Up to R$2,000
75.5%
Race/skin color
Yellow
81.4%
White
82.1%
Indigenous
80.3%
Brown
83.1%
Black
78%
Region of Brazil
Southeast
83.2%
South
82.1%
Northeast
82.2%
North
69.7%
Central-West
89.1%
Sex
Male
82.2%
Female
82.2%
0
25
50
75
100
Proportion
Answer
Yes


Knowledge of the risk factor:
Genetic inheritance
Age group
60 years or older
92.4%
25 to 59 years
89.9%
Up to 24 years
86.7%
Exclusively public health system (SUS)
Yes
89.3%
No
89.6%
Income
Above R$10,000
94.1%
R$5,000–R$10,000
92.8%
R$3,000–R$5,000
88.8%
R$2,000–R$3,000
88%
Up to R$2,000
88.6%
Race/skin color
Yellow
91.9%
White
87.8%
Indigenous
72.6%
Brown
90.7%
Black
89.9%
Region of Brazil
Southeast
94.5%
South
85.9%
Northeast
86.1%
North
83.8%
Central-West
85.2%
Sex
Male
85.3%
Female
92.6%
0
25
50
75
100
Proportion
Answer
Yes


Knowledge of the risk factor:
Excessive sun exposure
Age group
60 years or older
96.3%
25 to 59 years
89.2%
Up to 24 years
81.5%
Exclusively public health system (SUS)
Yes
88.1%
No
88.7%
Income
Above R$10,000
89%
R$5,000–R$10,000
96.1%
R$3,000–R$5,000
93.5%
R$2,000–R$3,000
89.5%
Up to R$2,000
84.7%
Race/skin color
Yellow
89.8%
White
87.5%
Indigenous
80.4%
Brown
90%
Black
83.1%
Region of Brazil
Southeast
89.2%
South
91.9%
Northeast
85.6%
North
83.5%
Central-West
90.4%
Sex
Male
85.8%
Female
90.2%
0
25
50
75
100
Proportion
Answer
Yes

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mais **saúde**

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