Nutrition Misinformation in the Digital Age

2024 – 2025

This report investigates the growing prevalence of nutrition misinformation on Instagram by **identifying the most common dietary themes linked to false or misleading content**. Moreover, it seeks to **understand the spread by profiling the key superspreaders responsible for its dissemination**, along with their methods and strategies.

Rooted RESEARCH COLLECTIVE **x** **Freedom Food Alliance**

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About Rooted Research Collective

Food, sustainability, health, human development...these are knotty, complex topics filled with nuance. At Rooted Research Collective, we specialise in making sense of it all. We dig into the data, uncover the facts, challenge misinformation and ask questions such as: why is this happening and what can we do about it? Then we turn those insights into clear strategies for change, supported by compelling narratives and visuals.

With over four decades of combined experience across science, public health, policy and communication, our team has quickly built a reputation for impactful, trusted work.

About Freedom Food Alliance

At Freedom Food Alliance, we empower consumers with reliable, scientifically-backed nutrition and sustainability information. Our expert-reviewed content cuts through misinformation, delivering clear facts. Supported by a team of multidisciplinary volunteers and over 40 advisors, we combat misinformation through research, campaigns, policy advocacy, and corporate accountability.

Executive summary

Poor nutrition remains a leading preventable risk factor for non-communicable diseases (NCDs), yet the rise of nutrition misinformation on social media complicates public understanding and adherence to evidence-based dietary guidelines. This study aimed to explore the landscape of nutrition misinformation on Instagram by identifying and analysing influential "super-spreaders" who drive misleading dietary narratives. Using social network analysis, 53 key accounts with a combined following exceeding 24 million were categorised into three personas: The Doc, The Rebel and The Hustler. These influencers employ emotional storytelling and exploit claims of authority to promote diets such as keto and carnivore, spread seed oil conspiracies and undermine evidence-based nutrition. Key dissemination strategies identified include fear-mongering, joy-mongering and sprinkling misinformation within broader lifestyle content. 96% of these super-spreaders exhibited clear financial incentives tied to their messaging. The misuse of professional credentials, especially amongst The Doc group, significantly amplifies misinformation's impact. These findings contribute to a growing body of research on health and nutrition misinformation by offering new insight into the narratives and engagement tactics that drive virality.

Ultimately, this work highlights the urgent need for public health responses that combine credibility with emotional resonance to rebuild trust and combat harmful dietary disinformation.

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Research conducted by **Rooted Research Collective**

Glossary

Carnivore diet: A diet consisting exclusively or predominantly of animal products.

Disinformation: The deliberate creation and spread of false information that is shared with the intent to mislead or manipulate.

Exclusion/elimination diet: A short-term method used to identify foods that may be causing adverse reactions. Specific foods are eliminated from the diet and gradually added back in. It is intended as a temporary diagnostic tool, not a permanent solution.

Internist: A medical doctor specialising in internal medicine, focusing on the diagnosis, treatment and prevention of adult diseases affecting internal organs.

Keto diet: A low-carbohydrate, high-fat diet aimed at inducing ketosis.

Medical Doctor (MD): A healthcare professional who holds a medical degree and is licensed to practice medicine to diagnose, treat and/or prevent diseases and injuries.

Misinformation: False or misleading information that is shared without the intent to deceive.

Non-communicable disease (NCD): Non-communicable diseases refer to those that cannot be transferred from one individual to another. Common NCDs include diabetes, cardiovascular disease and cancer.

Super-spreader: Super-spreaders in this dataset refer to online influencers who have a disproportionately high engagement rate (likes/comments).

Credit: Pexels

Introduction

Nutrition is foundational to human health and development, influencing everything from maternal and child well-being to educational attainment and economic prosperity. For the first time in history, overnutrition now surpasses undernutrition as a global health burden, and current dietary trends are contributing to worsening health outcomes. Poor nutrition is the leading preventable risk factor behind the rise of non-communicable diseases (NCDs) worldwide. Yet nutrition is anything but simple. Food choices are shaped by a multitude of factors, including culture, taste preferences, affordability, availability, food security, media and public policy. Moreover, where dietary behaviours were once largely defined by geography and local food systems, they are now influenced by global trade, travel and digital connectivity, creating an increasingly complex nutritional landscape.

Social media has emerged as one of the most prominent forces shaping this space. Food and nutrition content – especially on highly visual platforms like Instagram and TikTok – is emotive and often used as a tool for marketing. Influencers and brands capitalise on this, with Instagram alone projected to generate over $32 billion in U.S. ad reven-

ue by 2025. Recent research confirms the power of this content to influence behaviour. A 2024 study of Millennials and Gen Z TikTok users found that 57% had been influenced by nutrition trends on the platform, with 67% adopting such trends multiple times a week. Alarmingly, only 2.1% of the nutrition content examined aligned with established public health guidelines. This growing gap between credible science and popular content reflects the rise of misinformation and disinformation[1] in the nutrition space. Misinformation refers to false or misleading information that is shared without the intent to deceive, whereas disinformation is deliberately created and spread to mislead or manipulate. Both forms are increasingly prevalent on social media and can undermine public health by promoting inaccurate and sometimes harmful dietary practices. Other surveys reveal a growing distrust of professionals, with one study showing that 1 in 5 Americans trust health influencers more than local medical practitioners.

> "The scale and speed of social media creates a dynamic environment in which misleading information can rapidly outpace fact-based communication"

Unlike traditional media, social media allows content to be edited, reposted or deleted in seconds. The scale and speed of this platform create a dynamic environment in which misleading information can rapidly outpace fact-based communication. Although misinformation is often propagated by a relatively small number of accounts, its influence can be far-reaching, especially when content is shaped by political or cultural narratives. As the World Economic Forum's 2024 Global Risks Report identifies, misinformation is now considered the most pressing short-term threat to humanity. Nutrition misinformation represents a critical subset of this wider crisis; one that jeopardises public health, contributes to confusion, erodes trust in scientific institutions and undermines the implementation of effective policy. Confronting it is essential, not only to protect health and well-being, but also to build more informed, resilient societies.

Addressing potential bias: Whilst our expertise in alternative proteins may naturally incline us towards plant-based nutrition, this report maintains an objective stance, covering the broader spectrum of nutrition. Our aim is not to promote any specific dietary agenda but to equip readers with the tools and knowledge necessary to recognise, critically assess and navigate the landscape of nutrition information.

[1] For the purposes of this report, the term "misinformation" will be used as an umbrella term to refer to both misinformation and disinformation.

Study objectives

This report seeks to investigate the growing prevalence of nutrition misinformation on Instagram by identifying key dietary themes most commonly associated with misleading or false content. These themes are assessed against a widely accepted nutritional baseline – developed in consultation with health professionals and outlined in the Appendix – to evaluate their alignment with established public health guidance.

Using engagement metrics, we aim to gain deeper insights into the types of nutrition narratives that resonate most strongly with audiences, particularly those that garner widespread attention despite lacking scientific credibility. However, in such a fast-paced and continuously evolving media landscape, nutrition misinformation spreads with alarming speed. To keep pace with this challenge, this report attempts to move beyond identifying false claims and begin to understand the ecosystem in which they thrive. Therefore, we have developed anonymised "super-spreader" profiles, which are composite representations of real individuals responsible for high levels of misinformation dissemination. These profiles will be used to explore the common traits, motivations and tactics of key actors in this space.

In examining these patterns, we seek to answer the following research questions:

- Who is doing the spreading?
- What are their motives?
- What methods and narratives are they using?
- How do they build trust with their audiences?
- How do these messages translate into people's dietary concerns and decisions?
- How can this knowledge inform better tools and messaging to prevent harm in the future?
- How can we reshape nutrition communication to be trustworthy, inclusive and responsive to public needs?

Ultimately, our goal is to build on existing research and provide actionable insights that inform public health messaging, media literacy and policy interventions. Whilst this study is rooted in the nutrition space, its implications extend to the broader misinformation ecosystem. By deepening our understanding of how false narratives gain traction, we hope to contribute to rebuilding trust in an increasingly sceptical and fragmented global society.

Methods

Overview and a brief note on ethics

This exploratory study used Instagram posts for online social network analysis. Data was accessed from two sources: Bright Data and Meta's proprietary tools. Bright Data provided a directory of historical Instagram posts, enabling a comprehensive analysis of previously shared content. Meta's tools granted access to posts from verified Instagram users, ensuring a reliable dataset. However, due to the platform's limitations, this tool could not target individual accounts directly.

Throughout this process, we have been committed to maintaining the highest ethical standards. To uphold these, all individual profiles, content and corresponding affiliations have been anonymised to ensure privacy. Additionally, while this report uses a range of data types to make inferences and draw conclusions, datasets were not directly integrated, in strict compliance with Meta's guidelines on data combination.

For further information regarding our methodology, please contact us at info@rootedresearch.co.

Building the nutritional baseline

To assess the accuracy of dietary information, we set out a nutritional baseline (see Appendix) that draws upon evidence-based guidelines from a variety of reputable bodies. We address the growing mistrust in science by sourcing impartial research that backs up global guidelines provided by reputable bodies like the World Health Organisation (WHO) and EAT-Lancet Commission. This approach is further supported by similar dietary positions from respected organisations such as the Academy of Nutrition and Dietetics in the USA, the British Dietetic Association, the Eatwell Guide, Dietitians of Canada and the Harvard Medical School. The nutritional baseline is not a specific diet but a general guideline of foods proven to improve longevity and alleviate preventable disease. It may be inferred that promoting a diet contrary to the nutritional baseline, as established by and agreed upon by multiple reputable bodies, may be assumed to negatively impact health.

Keyword development

To support qualitative analysis and inform future quantitative research, we identified a set of initial keywords that helped streamline the detection of nutrition misinformation on social media platforms. To achieve this, we developed two small sample corpo-

ra: a target corpus (containing content suspected of containing nutrition misinformation) and a reference corpus (neutral or general nutrition-related content). These short, representative samples were designed to surface distinctive linguistic features that are common within misinformation-heavy posts.

Building a target corpus

The target corpus was made up of 30 posts containing misinformation on topics related to nutrition and health. The corpus aims to be as representative as possible of the language and landscape of nutritional misinformation on social media.

Inclusion criteria

- The post is focused on nutrition-related information or advice for human health
  a. Can be about a specific health condition or general health
- The post contains information which goes against public health and dietary guidelines
- To reduce bias during the selection process, the post has already been publicly fact-checked by an expert in the field of nutrition
  a. The expert fact-checker holds a relevant qualification

Exclusion criteria

- The post is giving general health or medical advice, not related to nutrition
- The fact-checker is someone whose credentials cannot be identified
- The fact-checker does not hold relevant qualifications (e.g. conducts research in a different field)

Building a reference corpus

The reference corpus is made up of social media posts sharing accurate information on health and nutrition, in a way that aligns with national guidelines. It should include a variety of topics and, as a whole, should not be biased towards the promotion of a single diet.

Inclusion criteria

- The post is focused on nutrition-related advice for human health
  a. Can be about a specific health condition or general health
- The post is by someone with qualifications that fall into the following categories
  a. Dietetics qualification (BSc, MSc, PhD)
  b. Nutrition qualification (BSc, MSc, PhD)
  c. Medical degree

Exclusion criteria

- The post is giving general health or medical advice, not related to nutrition
- The post is shared by someone whose credentials cannot be identified
- The post is shared by someone without the relevant qualifications (e.g. a nutritionist without a widely-accredited nutrition qualification)
- The post is fact-checking advice from other accounts, not providing nutrition-related information first-hand

Keywords analysis

Using AntConc, a corpus linguistics tool, we ran a keyword search to identify terms which appear significantly more frequently in the target corpus. A manual KWIC (key word in context) analysis was also conducted to identify and analyse relevant keywords, phrases or hashtags.

Testing and hashtag categorisation

To evaluate the effectiveness of our keyword list, we tested it by extracting large datasets of online content. During this process, hashtags proved to be significantly more efficient than plain keywords in surfacing relevant posts. We therefore refined our ap-

proach to focus on hashtag-based analysis and used AntConc to identify the most statistically significant hashtags in our target corpus.

Two key insights emerged from this analysis:

1. Prevalence of diet names

Named diets featured heavily among high-frequency misinformation hashtags. This may be because most nutrition experts, when acting in good faith, avoid prescribing specific, one-size-fits-all diets to the general public, as they cannot account for individual health needs without context or prior knowledge of a person's medical background. Diet names (e.g. #keto, #carnivore) might then be more indicative of misinformation in the specific context of sharing nutritional information targeted at a broad audience. As a result, we expanded our keywords/key hashtags to include a broader list of diet names so as not to be restricted to those reflected by our small target corpus.

2. Topic clustering

Whilst both our target and reference corpora focused on nutrition, the target corpus revealed a more significant prevalence of specific topics, such as sugar impacts, cholesterol, "toxic" foods and heart health. This observation informed further categorisation of keywords and hashtags.

Finally, hashtags were categorised into thematic groups. This helped identify distinct misinformation narratives and enabled cross–theme comparisons in later stages of the analysis. The categories are as follows:

Category	Keywords
General health and nutrition	#health #healthtips #nutrition #nutritiontips #diettips #eatrealfood #guthealth
Carnivore and meat-based diets	#redmeat #yes2meat #yestomeat #eatmeat #meatisgood #omnivore #truehumandiet #carnivore #carnivorediet #carnivoreforhealth #animalbased
Low-carb and ketogenic diets	#keto #ketodiet #ketosis #ketovore #fattydiet #lowcarb #zerocarb #zerocarbs #nocarbs
Oils and fats	#oils #seedoils #healthyfats
Carbs and sugar	#sugar #glucose #glucosespikes #oats #oatmilk
Plant-based and vegan	#soy #soyboys #rawvegan
Toxic or controversial foods	#toxicfoods #antinutrients
Heart health and cholesterol	#cholesterol #heartdisease
Ancestral and biohacking diets	#biohacking #biohacker #ancestraldiet #primaldiet #essentialproteins
Trust and authority	#truth #dr #realdoctor

Additional keywords

The hashtags #holistichealth and #rawmilk frequently appeared alongside our original keywords during the data extraction process. These terms also contradicted the established nutritional baseline and were subsequently added to our dataset.

Research conducted by **Rooted Research Collective**

Data extraction

The initial dataset was extracted using Meta's Content Library based on the 52 predetermined keywords. 1,022,892 posts were extracted from 'all-time', including information on media type, user ID, date, language, post owner type, post owner name, post owner username, comments count, likes count, views and post text. Whilst identifying information was initially pulled, including the post owner's username, this was left out of the data analysis and the final findings and report.
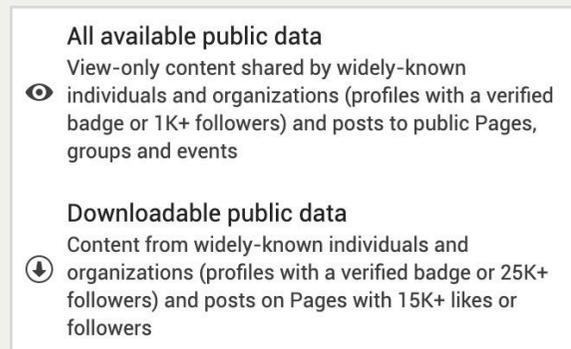

Figure 1. Data limitations from Meta

Limitations

Meta restrictions meant this report could only include data from profiles with verified badges or with 25k+ followers. This limitation stopped us from discovering emerging super-spreaders, but considering that our r-

esearch is interested in identifying the biggest voices, this wasn't cause for concern. Terms of use for the Meta Content Library also restricted us from being able to identify the super-spreaders in our final report, so we pivoted to creating anonymous super-spreader profiles based on similarities found across each, removing any identifying information from the final results in this report. Meta Content Library downloads are limited to 500,000 rows/week. Consequently, for some keywords, we could pull 'all-time' data, while others only had enough row budget to download the last 12 months. Despite this, we were able to pull over 1,000,000 posts across all categories.

Meta Content Library allows for data pulls for both hashtags and post descriptions using keywords. However, tests of keyword pulls from free text post descriptions led to higher false positives. As a result, we limited our extraction to hashtags, which proved more efficient but introduced a new challenge: many unrelated posts were captured simply due to the presence of nutrition-related hashtags. To address this, we implemented two additional steps in our methodology: large-scale data cleaning to eliminate irrelevant or empty posts, followed by manual screening of the top-engaged posts. Moreover, manual searches of high-profile nutrition influencers revealed that some users do not include hashtags at all, presenting a further limitation.

Data analysis

Data cleaning and categorisation

Data was cleaned by removing duplicates while preserving associations between posts and hashtags/phrases, standardising text formatting and addressing missing or incomplete entries to ensure data integrity. This was followed by exploratory data analysis to summarise the dataset, examining the distribution of hashtags and phrases, post frequency and basic trends over time. Visualisations were generated to highlight key patterns.

Posts were then organised into predetermined categories based on keyword development, allowing them to belong to multiple categories if relevant. A systematic approach was implemented to manage overlaps and duplicates, ensuring analytical clarity. Finally, categorisation was validated through manual checks to confirm that all relevant posts had been accurately grouped.

Data segmentation

Posts were segmented into semantically meaningful units using natural language processing-based text segmentation techniques, ensuring self-contained ideas while preserving context and avoiding fragment-ation. The segmented text was then preprocessed for downstream analysis by cleaning and normalising it – removing special characters, excessive whitespace and formatting artefacts, converting text to lowercase, removing stop words and applying lemmatisation to standardise words. Structured metadata, including the original post ID, segment ID and author metadata, was retained for further analysis. Finally, segmentation quality was validated through coherence scoring and manual sampling to assess accuracy.

Identification of top-engaged posts

Super-spreader accounts show increased levels of virality and engagement. To better understand how these accounts are distributed within the subsection of nutrition-focused Instagram posts, we proposed two analyses focusing on sentiment and emotional tone. These analyses aimed to reveal whether general sentiment and emotional content contributed to the elevated engagement levels observed in super-spreader behaviour. The engagement rate for each post was calculated to quantify user interaction relative to content exposure. Specifically, we used the sum of likes and comments normalised by the number of views, scaled to a percentage. The formula used was:

$$engagement\_rate = \left(\frac{like\_count + comment\_count}{view\_count + 10^{-6}} \right) \times 100$$

This metric helped account for variations in visibility and allowed us to fairly compare engagement across accounts of different sizes.

Additional preprocessing

Preprocessing included the calculation of the engagement rate, removal of empty comments and removal of posts that included unrealistic values (i.e. more likes than views). The comment text was also cleaned (casing, line break removal, etc.) to standardise and improve downstream analysis.

Super-spreader profile building

Identifying super-spreaders

To identify super-spreaders, we filtered our original dataset for posts with engagement rates >6% (considered 'extremely high') and sorted by top engagement scores. We then conducted an iterative filtering process, pulling top-performing creators and posts for manual analysis. Creators and their posts were removed if they had already appeared in previous data pulls and had already been categorised, unless the additional posts provided new examples of misinformation not previously identified. For each iteration, we manually analysed all of the top-engaged posts and creators and marked any that contained nut-

rition misinformation based on the following criteria:

- Posts contain topics of nutrition misinformation
- The misinformation is being promoted to their audience (either subliminal, direct persuasion or reinforcement)

This process led us to exclude posts that either used a predetermined hashtag without referencing nutrition misinformation or that mentioned misinformation without actively promoting it as dietary advice. Examples include posts challenging misinformation narratives and recipe posts with no health claims. Following this refined sorting approach, we identified 53 super-spreaders responsible for 26.7% of the top-engaged posts (>6%). These 53 accounts had engagement rates ranging from 9.8% to 82%, reflecting exceptionally high levels of audience interaction. To put this into perspective, the posts with the highest engagements received around 9,000-19,000 likes, along with 200-800 comments.

Deeper investigation - further data gathering

Using Instagram's interface, we investigated each of the profiles to gather publicly available information on their follower count and financial interests, including affiliate links, businesses, coaching services or course-

s, that were directly related to the nutrition misinformation.

Further data was then extracted using Bright Data in order to gather extensive data on the (all-time) posts for each super-spreader. This data was placed into BigQuery and we filtered out posts for each super-spreader and searched for occurrences of 'sponsored post' and 'ad' hashtags and text descriptions, to identify further financial incentives.

We also calculated the total number of posts and ran a query to identify the number of these posts containing the keywords previously created to pull the original dataset. This allowed us to find the percentage of posts each super-spreader created within the nutrition space, further allowing us to categorise the super-spreaders into their profile types.

We also scanned through each profile's content over time to look for any occurrence of trend switching. This was not conducted exhaustively and will be further discussed in the future work section of the report.

Sentiment analysis

Pre-analysis of super-spreader subgroups was conducted using a <u>pre-trained sentiment model</u> and a-

nalysis was conducted using a pretrained and fine-tuned natural language processing model (<u>DistilBERT</u>).

Emotion analysis

The emotional tone in the dataset was also investigated. We used a pre-trained <u>natural language processing pipeline</u> fine-tuned for emotional analysis to analyse the distribution of emotions across all posts. The model outputs probabilities for seven distinct emotions: anger, fear, joy, sadness, disgust, surprise and neutral. The scores of the model were used to project the overall distribution of posts for groups of super-spreaders in 2D. For each category of super-spreaders, the visualisation shows the distribution of their posts and the mean sentiment for each super-spreader in the cluster, as well as the group average.

Categorisation of super-spreaders

Similarities between each profile were identified so we could create 3 anonymous super-spreader profiles. Identifying information, including profile IDs and usernames, were removed at this stage. Each profile was then assigned a pseudonym and a representative bio to preserve anonymity while capturing key characteristics.

Identity criteria

Using factors like qualifications, post themes and topics within posts (all gathered using info given in their Instagram profiles and the crawled posts from Bright Data), we identified three main identities.

- The Rebels: Their beliefs tend to lean extreme, promoting anti-science narratives with a cult-like intensity.
- The Docs: Prominently display and take advantage of their doctor title, either medical or non-medical, on their Instagram profile.
- The Hustlers: Promise "simple" health solutions, mostly weight loss, while marketing a range of products and services to earn income.

Spread method criteria

Using the percentage of nutrition-related posts* as well as the relative emotion of each user, we identified three methods of spreading misinformation.

- Fear-monger: High percentage of nutrition-related posts (>35%) with anger, fear or sadness as relative emotion
- Joy-monger: High percentage of nutrition-related posts (>35%) with joy or neutral as relative emotion

- Sprinkler: Low percentage of nutrition-related posts (<35%)

A Sprinkler isn't defined by intent, they're defined by volume. Based on the distribution, 35% marks a natural dividing line between those who occasionally post nutrition misinformation and those who make it a core part of their content strategy.

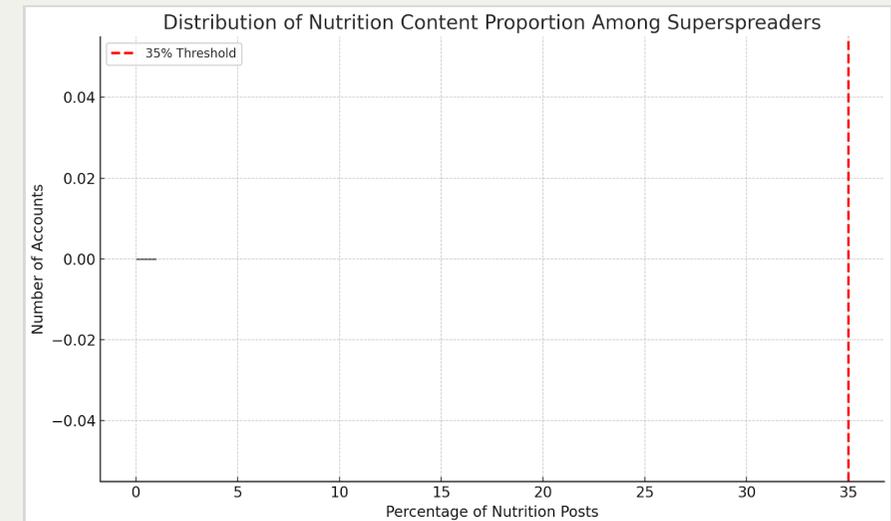*Justification of this 35% mark:

Figure 2. Distribution of nutrition content proportion among super-spreaders

Creation of profile cards

We placed each user into the most relevant identity and spread method categories. Then, for each identity

we calculated average engagement rates, average follower counts and the most prevalent spread method for each.

These insights were then used to create anonymous profile cards that represent each super-spreader type, helping to visualise and better understand their influence and communication style.

Credit: corelens

Research conducted by **Rooted Research Collective**
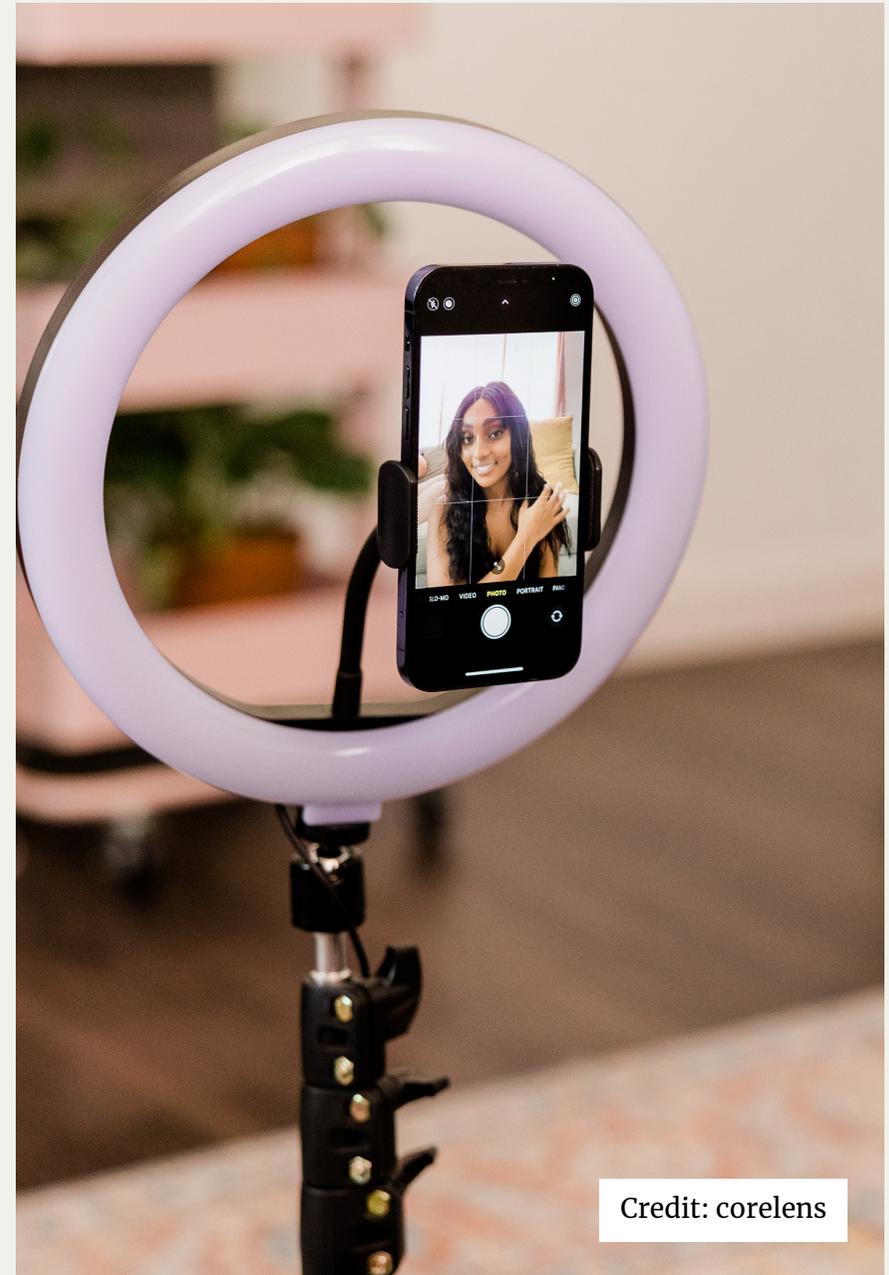
Results

Dominant themes of misinformation

Our analysis of the most highly engaged posts revealed several dominant themes of nutrition misinformation. Leading the pack were posts promoting **carnivore and meat-based diets**, which accounted for 28.8% of all misinformation instances. This was closely followed by **general health and nutrition misinformation** (24.5%) and content centred on **low-carb and ketogenic diets** (23.7%). Together, these three categories made up over three-quarters of the 139 total misinformation instances identified across 53 superspreader accounts.

What became immediately clear is that nutrition misinformation rarely exists in isolation. In fact, over 90% of the superspreaders shared content spanning multiple misinformation themes. Common overlaps included carnivore and keto; anti-seed oil narratives paired with carnivore advocacy; and the promotion of "ancestral" or "traditional" diets as a justification for rejecting modern nutrition science. This thematic cross-pollination amplifies the persuasive power of the messaging, creating seemingly coherent but misleading dietary ideologies that appeal to emotion and traditional culture.

Rather than one-off posts, these themes often appear as part of a broader belief system or lifestyle branding, where diet is not just about health, but also about identity or moral superiority. The prevalence of these entangled narratives suggests that misinformation is evolving beyond simple factual inaccuracies to encompass complex, emotionally resonant worldviews that are harder to challenge and debunk.

Super-spreader profiles

To better understand who is driving nutrition misinformation online, we developed three distinct superspreader profiles based on recurring behavioural patterns and communication strategies observed in the most influential accounts in our dataset. These profiles – the Doc, the Rebel and the Hustler – offer insight into the unique ways misinformation is personalised and sold to the public. Of the 1,022,892 posts pulled from our keyword query, we identified 53 top super-spreaders with a combined follower count of 24,800,200. Whilst some audience overlap is possible, the collective influence of these accounts is undeniable.

Research conducted by **Rooted Research Collective**

The Doc

The Docs are individuals who prominently display the title "Dr" on their Instagram profiles, whether they are medical doctors or not. This group includes MDs, dentists, chiropractors and individuals with minimal formal training, such as having completed a single nutrition course. By leveraging the perceived authority of a medical title, these superspreaders gain high levels of credibility and reach, despite frequently promoting extreme diets like strict carnivore eating or high-fat, seed oil-free and grain-free regimens.

Their status as "experts" makes their claims appear more legitimate, even when those claims directly contradict established public health guidelines. Fear-mongering is their most frequently used communication strategy, which taps into public distrust of institutions and stokes anxiety around modern food practices. Financially, they often monetise their influence through coaching services, online businesses, conferences and professional speaking engagements.

The Doc
Borrowed authority

The Docs prominently display their doctor title on their Instagram profile. This group includes both certified MDs and non-medical figures such as dentists, chiropractors and individuals with minimal nutrition training.

With the highest average follower count of all super-spreader types, they appear to benefit from the perceived authority that comes with a health-related title. Their content typically promotes extreme diets, including strict carnivore regimes and high-fat approaches that exclude seed oils and grains.

Representative examples
(not real posts)

Using authoritative language:
"After years in practice, I've seen the damage that low-fat, plant-heavy diets do to my patients. It's time to cut the junk, ditch the fake foods, and fuel your body the way it was designed to run – on meat, fat, and real, whole foods.."

Everything is poisoning you:
"From your shampoo to your salad dressing, you're being poisoned. Teflon pans, polyester, seed oils - it's all endocrine warfare. Clean living starts with clean steak."

Emotion vector

Legend:
- Joy
- Anger
- Fear
- Disgust
- Surprise
- Sadness
- Neutral
- Global centroid
- ✗ Individual profiles

Category count:
12

Average engagement:
37.7%

Average followers:
744,950

Most prevalent method:
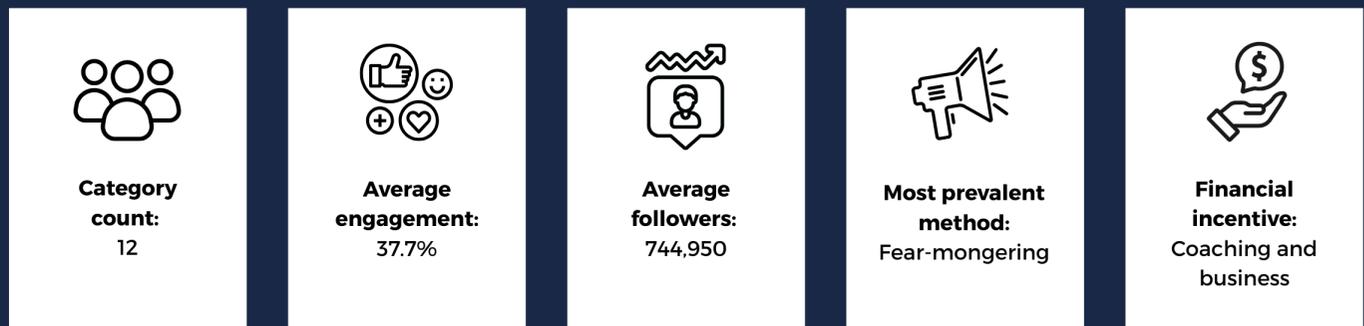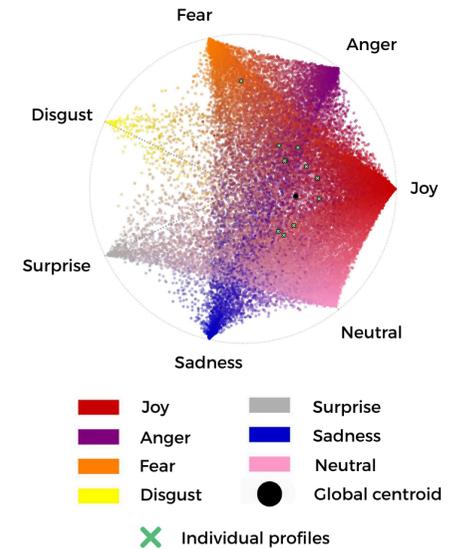Fear-mongering

Financial incentive:
Coaching and business

Figure 3: Overview of Doc profiles and corresponding metrics

The Rebel

The Rebels are self-styled disruptors who reject science and mainstream narratives, especially around health and medicine. They use anti-establishment and conspiratorial language to push dietary misinformation, often positioning themselves as whistleblowers or truth-tellers exposing a corrupt system. Though they have a smaller average following than the Docs and Hustlers, they are numerous and often highly engaging.

Their messaging is emotionally charged and frequently tied to broader social or political ideologies. Whether rallying against seed oils or "Big Pharma", the Rebel persona thrives on outrage and intensity, though not all lean into anger; some also use motivational or lifestyle-based storytelling to spread their ideas. Business ventures represent the most common financial incentive amongst Rebels (8 out of 15 benefit from businesses). Affiliate marketing is also widespread within this group but the emphasis on self-branded products and services distinguishes them from Hustlers, who tend to rely more heavily on sponsorships and influencer-style affiliate partnerships.

The Rebel
Counter-culture cult

The Rebels frequently employ anti-modern medicine and anti-establishment rhetoric to spread nutrition misinformation. Their messaging is often emotionally charged, with several outliers displaying strong expressions of anger, indicating a pattern of hyperbolic and provocative language.

This group includes farmstead and lifestyle influencers who advocate for holistic living, frequently intertwined with anti-science sentiment and restrictive dietary advice such as strict carnivore eating and the promotion of raw milk for its supposed health benefits. Others use themes of religion or gender to reinforce their dietary messaging.
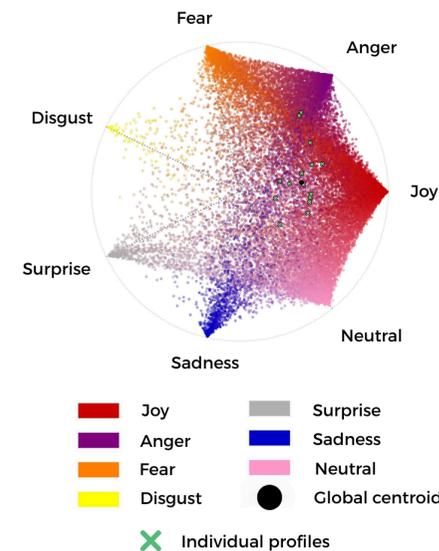
Representative examples
(not real posts)

Demonising institutions:
"Doctors never took a nutrition course. USDA promotes seed oils. Media lies about red meat. If you trust the system, you'll stay sick."

Promoting raw milk:
"Your grandparents thrived on red meat and raw milk – not kale smoothies and processed protein bars. It's time to return to the foods our bodies were designed to eat."

Emotion vector

Legend:
- Joy
- Anger
- Fear
- Disgust
- Surprise
- Sadness
- Neutral
- Global centroid
- ✗ Individual profiles

Category count:
15

Average engagement:
39.9%

Average followers:
362,533

Most prevalent method:
Fear-mongering/ joy-mongering

Financial incentive:
Business and affiliate

Figure 4: Overview of Rebel profiles and corresponding metrics

Research conducted by **Rooted Research Collective**

The Hustler

The Hustlers are highly polished entrepreneurs who blend wellness marketing with personal transformation stories. Their posts are filled with promises of weight loss, glowing skin, endless energy and improved health, frequently tied to sponsorship deals and the sale of affiliate products (e.g. supplements, "healthy" snacks), coaching and meal plans. Unlike the fear-based approach of some of the other super-spreaders, Hustlers typically rely on joy-mongering, using uplifting language and appealing aesthetics to build a sense of aspiration.

They also frequently use "sprinkling", which is where they embed dietary misinformation within broader lifestyle content, such as gym routines and morning smoothies. Their high engagement rate suggests this approach is especially effective. Hustlers may not always appear overtly extreme, but, combined with the commercial interests behind it, the persuasive simplicity of their messaging makes their content particularly influential and difficult to discredit.

The Hustler

Quick fix wellness

The Hustlers are characterised by their promotion of "simple" solutions that claim to enhance health or facilitate weight loss. With the highest average engagement rates across all super-spreader profiles, their content appears particularly compelling to followers.

These accounts often centre on personal transformation stories and wellness narratives, using them as a springboard to sell diet plans, coaching packages and health programmes. The dietary advice shared tends to be restrictive, frequently marketed as a fast track to health and vitality.
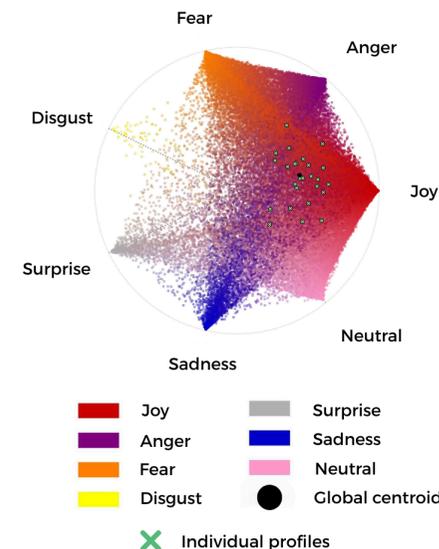
Representative examples

(not real posts)

Cure-all messaging:
I no longer suffer with brain fog, joint pain, constant fatigue. If you're struggling, it's not your fault. You've just been eating the wrong foods. DM me for more information on how I achieved excellent health!

Keto/carnivore-forward messaging:
No carbs. No cravings. Just pure, primal nutrition. I've never felt stronger, leaner, or more energized. Ready to break free from the carb trap?

Emotion vector

- **Joy** (red)
- **Anger** (purple)
- **Fear** (orange)
- **Disgust** (yellow)
- **Surprise** (grey)
- **Sadness** (blue)
- **Neutral** (pink)
- **Global centroid** (black dot)
- ✕ **Individual profiles**

Category count:
26

Average engagement:
43.5%

Average followers:
400,877

Most prevalent method:
Joy-mongering/ sprinkling

Financial incentive:
Affiliate and sponsorship

Figure 5: Overview of Hustler profiles and corresponding metrics

Research conducted by **Rooted Research Collective**

Sentiment analysis

Our sentiment analysis reveals meaningful variation in the emotional tone used by different superspreaders. Despite the fact that social media posts are generally skewed towards positive content, many of the accounts in our dataset rely heavily on emotionally charged language (e.g. hopeful, alarmist) to engage their audiences.

Figure 6 provides a detailed view of sentiment distribution across all 53 superspreader accounts. In the top panel, each vertical bar represents an individual superspreader, broken down by the proportion of posts that fall into five sentiment categories: very negative, negative, neutral, positive and very positive. This offers a comparative snapshot of the emotional tone each account tends to use in its content. Importantly, whilst the average sentiment scores differ between profiles, each individual superspreader exhibits their own distinctive emotional pattern. The figure illustrates this granularity, showing that some accounts consistently rely on more negative tones whilst others stay upbeat throughout.

The bottom panel visualises the overall sentiment tendency of each individual super-spreader, standardised to highlight broader trends across the dataset. For instance, the profiles on the left show a

markedly lower average sentiment, indicating a heavier reliance on negative or alarmist messaging. In contrast, those on the right skew more positive, aligning with more upbeat or inspirational communication strategies. The linear distribution suggests that emotional tone is spread relatively evenly across the 53 superspreader profiles, with some spreaders exhibiting very negative and very positive tones.
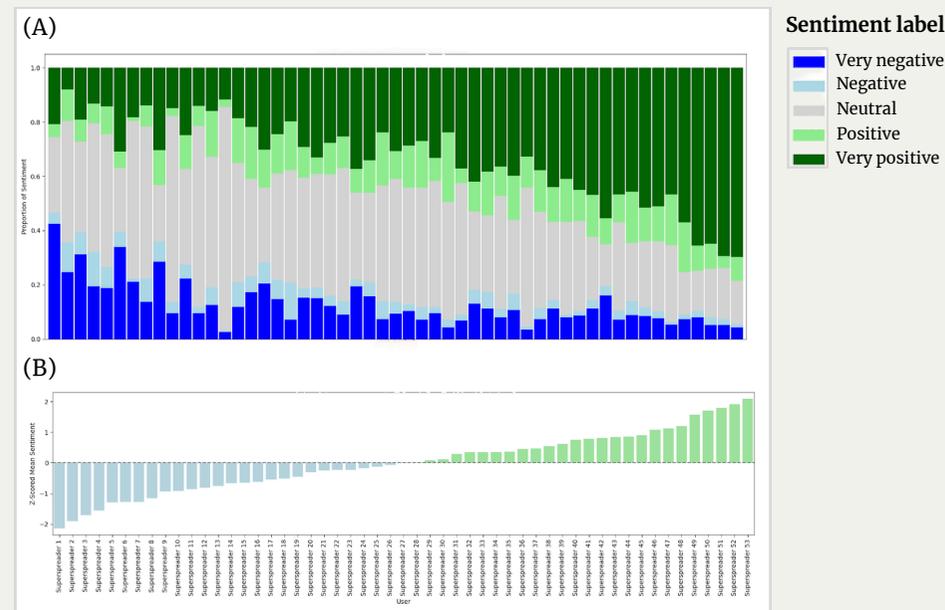

Figure 6: Sentiment distributions: (A) individual patterns (B) and broader trends

To explore how sentiment varies across different types of misinformation spreaders, we segmented the analysis into the three distinct profile groups (Rebels,

Docs and Hustlers; Figure 7). Rebels display a broad range of sentiment but with notable clusters leaning towards negative and very negative tones compared to the other profiles. Analysis of individual posts revealed that these profiles frequently employ fear-driven narratives and institutional distrust to capture attention. Docs exhibit a more balanced sentiment distribution, though many of their posts also fall into neutral or negative categories. In contrast, Hustlers exhibit more positive and very positive sentiment clusters, consistent with their joy-mongering approach.
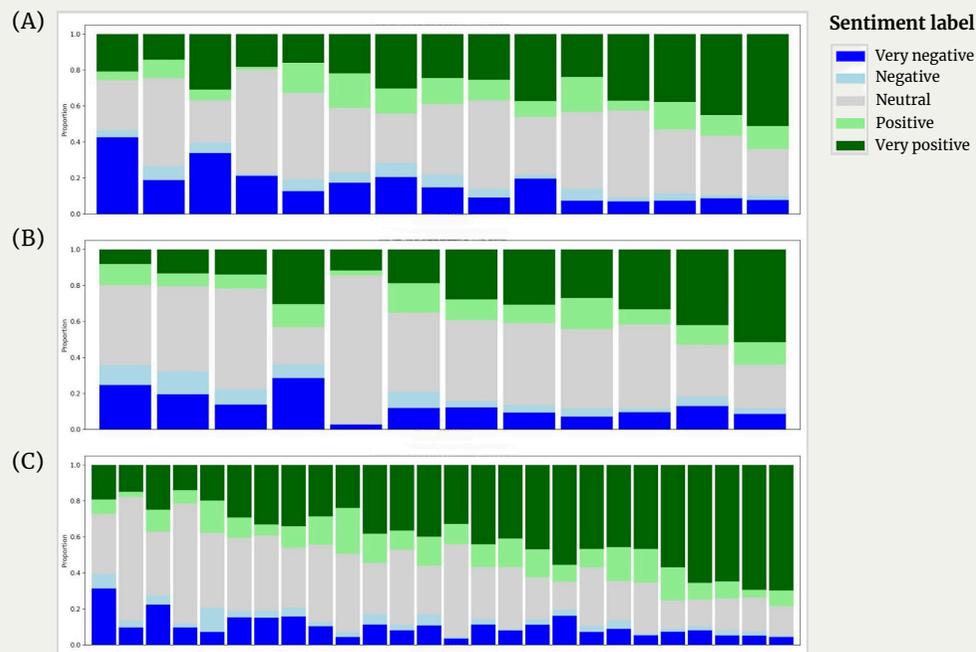

Figure 7: Sentiment distribution by misinformation spreader type: (A) The Rebels; (B) The Docs; (C) The Hustlers

Emotion analysis

The emotional tone of the content shared by each super-spreader is exhibited below. The model outputs the probability for all seven emotions and is visualised in a 2D visualisation (Figure 8), where each green "x" represents the emotional profile of an individual superspreader and the black dot marks the average emotional tone for each group (Docs, Rebels, Hustlers).
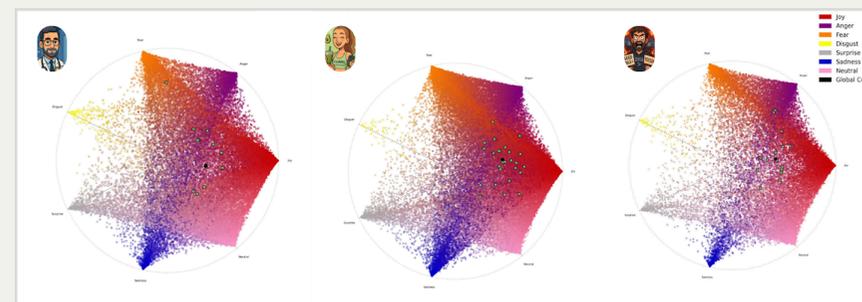
Figure 8. 2D projection of the seven-emotion model

All three profile types exhibited a broad spectrum of emotional expression. Nevertheless, in comparing them to each other, some distinctive features are revealed. The Doc profiles tended to cluster around neutral and angry tones, alongside higher demonstrations of fear and disgust, aligning with their tendency to position themselves as authoritative critics of mainstream health institutions. By contrast, Hustlers showed a strong lean towards joyful emotions

often using upbeat, motivational messaging to market products and promote personal transformation. The Rebels also skewed towards joy, anger and neutrality, with many posts tapping into frustration or defiance to drive engagement.

Spreading methods

In addition to analysing emotional tone across superspreader profiles, we examined the specific communication tactics used to disseminate misinformation. As previously outlined, we identified three dominant messaging strategies:

Messaging strategy	Characteristic
Fear-mongering	Strong presence of fear-mongering and alarmist language in comparison to other groups in the spread of misinformation.
Joy-mongering	Strong positive sentiment and emotion while spreading false information.
Sprinkling	Lower percentage of food-related posts; food is not the primary focus of the account but used as a tool that "sprinkles" in misinformation.

Each of the 53 superspreader accounts in our dataset was categorised into one or more of these groups. Below, we explore each tactic in more detail, accompanied by common narratives and fictional examples derived from our analysis of the 1,000 most liked posts across all accounts. To protect privacy and adhere to Meta's data use guidelines, these examples do not quote or reference real individuals or posts. Therefore, all of the prevalent narratives provided are just representative examples.

Fear-mongering

Used by 16 out of 53 superspreaders, fear-mongering relies on alarmist messaging to build distrust in institutions and scientific consensus. Fear-mongering is the most used spreading method for 'The Docs', with 45.45% of the group using this method. The second most followed super-spreader in our dataset (with over 2 million followers) uses fear-mongering tactics. Their profile features a medical title, yet their formal training does not lie in nutrition or the prevention and management of non-communicable diseases (NCDs). Their content features anti-plant-based foods rhetoric - 'toxic' foods, anti-seed oils and foods that are 'scams' - as well as exaggerated promises of weight loss.

The most 'liked' (3.7 million) post in our full super-

spreader dataset, which had an anti-plant-based, pro-carnivore message, came from a fear-mongering account. All fear-mongers identified were either promoting the carnivore diet or opposing seed oils, most often advocating for animal-based fats as the preferred alternative. This is particularly concerning considering that 64% of UK adults were classified as overweight or obese in 2022 and that adherence to national dietary guidelines remains low; not due to a lack of guidance, but often because institutional advice is dismissed or overshadowed by more compelling messages. Many of the most followed and most liked accounts in our dataset reinforce this trend by promoting narratives that directly contradict or cast doubt on official dietary guidelines. Although some posts may contain partial truths or reference broadly accepted advice, these elements are often interwoven with misinformation, lending an illusion of credibility whilst undermining public trust in evidence-based recommendations.

Most prevalent narratives:

- **"Real food" as a weapon against tyranny**: "They want you weak, sick, and dependent. But every time you eat real food, you resist. Steak is rebellion. Tallow is truth. The food freedom movement is here."

- **Demonising institutions**: "Doctors never took a nutrition course. USDA promotes seed oils. Media lies about red meat. If you trust the system, you'll stay sick."

- **Everything is poisoning you**: "From your shampoo to your salad dressing, you're being poisoned. Teflon pans, polyester, seed oils - it's all endocrine warfare. Clean living starts with clean steak."

- **Masculinity, hormones and testosterone crises**: "You're not lazy, your T levels are just tanked from plastics, porn, and tofu. Want your drive back? Start with steak, sunlight, and turning your phone off."

- **Reject modernity, embrace tradition**: "The real revolution? Buying land, raising animals, and eating steak under the sun. Modern life is a scam. I'm opting out of fake food, fake friends, and fluorescent lights."

- **Authoritative framing**: "After years in practice, I've seen the damage that low-fat, plant-heavy diets do to my patients. It's time to cut the junk, ditch the fake foods, and fuel your body the way it was designed to run – on meat, fat, and real, whole foods."

Joy-mongering

Adopted by 19 out of 53 super-spreaders, joy-mongers rarely rely on fear. Instead, they use positive and emotional language, featured alongside personal success stories, to promote restrictive diets as simple, liberating solutions to complex problems. For example, carnivore and ketogenic diets - the latter of which is the most prevalent within this spreading group.

The most-followed superspreader in our dataset, with over 3 million followers, falls into this category. Their feed is full of keto recipes and personal anecdotes, positioning the diet as sustainable and indulgent, as well as an effective method for weight loss. The keto diet has gained popularity in recent years, prompting medical professionals to issue concerns about health risks associated with a high-fat diet that is also low in plants, including overconsumption of saturated fat and nutritional deficiencies. Whilst short-term benefits have been observed, research suggests that the long-term risks outweigh the benefits of a strict ketogenic diet.

Most prevalent narratives:

- **Red meat as a superfood/plant-based as harmful**: "I was vegan. Then came the fatigue, hair loss, and brain fog. One bite of liver and my body felt alive again. Meat isn't murder, it's medicine."

- **Spiritualised, awakening from the matrix**: "They mocked me for quitting processed food, turning off the news, and eating butter by the stick. Now they ask how I glow. You're not crazy, you're just waking up."

- **Memeable masculinity and recipe sharing**: "Leave a 😛 emoji in the comments if you'd eat bacon-wrapped pickles with tallow ranch. Steak is self-care. Liver is love. Moo like no one's watching."

- **Abundance messaging around restrictive eating**: "Look how much I can eat! No carbs. Just pure, primal nutrition. I've never felt stronger, leaner, or more energized. Ready to break free from the carb trap?"

- **Healing transformation and shared sense of struggle and/or purpose**: "I no longer suffer from brain fog or constant fatigue. If you're struggling, it's not your fault. You've just been eating the wrong foods. DM me for more information on how I achieved excellent health!"

Sprinkling

17 of 53 accounts used the sprinkling tactic, which is where dietary misinformation is incorporated into broader content like fitness or lifestyle. Although these accounts generally have smaller followings on average, their collective reach remains significant due to their greater numbers.

Sprinklers predominantly discuss topics such as fitness and health journeys, occasionally touching on medical subjects like menopause and autism. Their dietary preferences are woven in through photos, hashtags and brief remarks at the end of posts (e.g. "Check out these gains – made possible by the carnivore diet"). Within this group, a few super-spreaders stand out for their anti-establishment views, frequently posting about politics or science. These posts often reinforce common nutrition misinformation themes, including the promotion of high animal-based diets, criticism of plant-based diets and opposition to seed oils.

Seed oils, including sunflower, rapeseed and soybean oil, are often portrayed by these accounts as harmful or toxic, despite widespread scientific consensus supporting their role in a healthy diet. In reality, seed oils are rich in unsaturated fats, particularly polyunsaturated fats like omega-6 fatty acids, which can help reduce LDL (bad) cholesterol when used to replace saturated fats. Leading health authorities, including the World Health Organisation, recommend consuming these oils in moderation as part of a heart-healthy eating pattern.

Though often less overtly alarmist, the subtle repetition of these anti-seed oil messages contributes to a wider narrative that erodes trust in evidence-based dietary recommendations. When paired with fitness content, this messaging can create a misleading impression that extreme diets are the key to achieving optimal health and performance.

Most prevalent narratives:

- **Hyper-functional wellness**: "This year I'm optimizing: no tech before sunrise, grounding daily, nasal breathing, eating liver for breakfast. It's not extra, it's essential."

- **Easy, high-protein "ancestral" recipes**: "Want fries and ice cream without the seed oils? Here's my 3-ingredient tallow fry recipe and raw milk gelato. Eating like your great-grandparents never tasted so good."

- **Masculinity through meat and muscle**: "Muscle is the currency of longevity. I fuel mine with steak, eggs, and zero compromise. Ditch the tofu, lift heavy, and eat like a king."

Conflicts with nutritional baseline

Many of the narratives reflected in the fictional examples above paint a very different picture compared to the established nutritional baseline (see Appendix for references). These narratives frequently reject dietary diversity and moderation in favour of extreme or exclusionary eating practices that elevate animal products, particularly red and organ meats, as both medicinal and morally superior. In particular, the stark juxtaposition of plant-forward vs. meat-based diets reduces the narrative around nutrition to animals vs. plants, when nutritional baselines around the world widely support plant-forward diets with limited red meat and saturated fat intake. For instance, the portrayal of meat as a superfood and plant-based foods as harmful not only dismisses the well-documented health benefits of plant-based diets, including reductions in cardiovascular disease and certain cancers, but also perpetuates the myth that plant-based nutrition is inherently deficient. Similarly, the glorification of saturated fat consumption directly contradicts public health recommendations that call for reduced intake of satu-rated fats in favour of unsaturated alternatives to support heart health and prevent NCDs.

Moreover, these narratives often position processed foods and seed oils as part of a broader conspiracy to harm public health, promoting a mindset that undermines trust in scientific consensus and public health institutions. This is evident in the use of language (poison, toxic) and the demonisation of seed oils - ingredients which, when used appropriately, are recognised by global health authorities as part of a balanced diet. The promotion of hyper-functional wellness routines, ancestral eating trends and high-protein, saturated fat-rich "biohacked" recipes frames personal health as a form of rebellion or awakening, often tied to identity, masculinity or sovereignty. These framings may be compelling in their simplicity and emotional appeal but risk encouraging dietary practices that are not only unbalanced but potentially harmful in the long term. They erode foundational public health messages that prioritise variety, moderation and a plant-forward approach as keys to longevity and disease prevention.

We have seen in these narratives that there is a strong 'Government nutritional guidelines are failing us' rhetoric (particularly amongst the fear-mongers), which is being used to undermine trust and promote extreme diets. However, research shows that adheren-

nce to official guidelines is already very low. For example, only 0.1% of a representative sample of the UK population strictly follows the Eatwell Guide. Additionally, findings from the Avon Longitudinal Study of Parents and Children (ALSPAC) – a large, multi-generational cohort study tracking environmental and genetic influences on health and development – imply that many school-aged children do not meet UK dietary recommendations.

Qualifications of super-spreaders

Amongst the super-spreaders in our dataset, accounts categorised as Docs had significantly more followers on average (744,950) than Hustlers (400,877) and Rebels (362,533). This difference may indicate a greater sense of credibility; audiences possibly trust individuals who present themselves as medical experts more. To better understand the basis of this perceived authority – and to gauge whether it is sometimes exploited or used to mislead – we examined the use of qualifications.

The vast majority (59%) had no formal health or nutrition qualifications. Despite this, many of these accounts still made bold claims about diet and disease prevention. Only a small number (7 out of 53) were verified medical doctors (those with an MD or equivalent and clinical training) and, of these, just one

was identified as an internist, a speciality with direct relevance to NCDs. Other represented fields included psychiatry, orthopaedics, neurosurgery and fertility. Interestingly, none of the verified MDs in our dataset disclosed their medical speciality in their Instagram profiles; we had to verify their credentials through external sources like LinkedIn or personal websites.

Affiliation	Count	Percent
None	31	58.50%
Medical doctors	7	13.20%
Non-medical doctors (e.g. chiropractors, nutritionists)	5	9.40%
Alternative	10	18.90%

Another subset (5 out of 53) held doctoral titles in non-medical fields, such as chiropractic care, dentistry and biomedical engineering, yet still referred to themselves as "Dr" in their Instagram handles or bios. Once again, additional investigation was needed to identify their specific field of expertise. This strategic use of medical-sounding titles, combined with the omission of their actual specialisation, may increase the perceived credibility of the nutrition misinformation they share.

Research conducted by **Rooted Research Collective**

It is worth mentioning that none of the Docs are based in the UK. All members of this group (medical and non-medical), apart from one Australia-based professional, were from the United States. However, misinformation on social media isn't bound by borders; anyone, anywhere, can follow these super-spreaders. Misleading claims from overseas influencers can still shape public understanding and health outcomes in the UK and beyond.

These findings suggest both a challenge and an opportunity. The challenge lies in how easily perceived credibility can be fabricated online; many profiles, for instance, claim to have completed 'functional medicine' courses, which can inflate their legitimacy in the eyes of followers despite lacking rigorous scientific backing. On the other hand, the opportunity is in the insight that audiences clearly respond to health professionals who feel relatable and communicate with clarity and emotional resonance. This presents a valuable opening for trained, UK-based nutrition experts to reclaim this space and counter misinformation with engaging content that is both evidence-based and compatible with the way people consume and connect with health information online.

Financial incentives

Of the 53 super-spreaders analysed, 96% (51 accounts)

had a clear financial incentive directly tied to the misinformation they promoted, with many capitalising on multiple revenue streams. Below is a breakdown of the financial incentive types and the number of accounts profiting from each:

- **Business: 26**
  - These included selling their own brand of supplements, running private healthcare consultancies, offering biohacking therapies or launching branded snack lines.

- **Affiliate: 25**
  - Typically super-spreaders who promote a discount code or affiliate link that gives them commission for promoting supplements, snacks or meat-based equipment.

- **Coaching/courses: 18**
  - Either direct courses or one-to-one coaching on how to switch your diet to carnivore/keto or indirect health-based courses/coaching, which subtly incorporate extreme dietary advice.

- **Sponsored: 13**
  - Sponsored posts featured partnerships with supplement companies, snack brands and meat-focused products, often indistinguishable from the super-spreader's regular content.

- **Events: 2**
  - Some organised or promoted in-person events, including carnivore meet-ups or nutrition-themed conferences with questionable scientific credibility.

- **None: 2**
  - Only two super-spreaders had no apparent direct financial link to their content.

Examples of earnings

- One super-spreader fitting the Doc profile reportedly earns up to $100k per month across multiple social media platforms, on top of the earnings from their profession.

- Health influencers without formal medical qualifications often charge $100-250 per hour for consultations, with some offering high-ticket 'biohacking' programmes costing tens of thousands of dollars.

Emerging trends for future research

Our analysis surfaced several emerging trends and discourses that either fall beyond the scope of this report or remain too preliminary for conclusive analysis. Nonetheless, these themes represent promis-ing directions for future research and are discussed below.

One notable example is the increasing promotion of raw (unpasteurised) milk, with 15% of analysed profiles endorsing it as a health food. The raw milk narrative frequently appears within posts that use hashtags related to 'Carnivore' and other meat-based diets. This growing trend represents a potential public health risk, as unpasteurised milk is known to contain a <u>variety of disease-causing pathogens</u>. We strongly urge investigating this discourse, since it could help counter misinformation and reduce its potential impact on mainstream consumers.

We also observed themes that, while not directly related to nutrition misinformation, are closely interwoven with it. These include discourses around ancestral living, a strong push for divine feminine and masculine, and political commentary about women's rights and traditional roles in the home. Further exploration of the nutrition misinformation themes discussed in this report may benefit from examining the social, cultural and political lenses through which these messages are promoted.

Moreover, we uncovered many accounts talking about toxicity, big brands and ultra-processed food (UPF), normally appearing alongside #holistichealth or relat-

ed hashtags. Whilst whole-food diets represent healthier alternatives to many processed foods, such as sodas, fast food and high sugar, salt and fat diets (HFSS), we suggest future research to better understand the motives behind these posts. Additionally, investigating potential misleading information about micronutrients and bio-fortification could provide more context to these narratives and support those vulnerable to the influence of misinformation.

Lastly, one interesting aspect that might provide further value to the existing findings is emotion and sentiment trend analysis over time. Messaging on social media is fluid; understanding how the messaging of highly influential accounts fluctuates over time would provide more fine-grained insights into the radicalisation paths of spreaders of misinformation on social media platforms. This would also tie into a more in-depth analysis of how political opinion correlates with food-centred misinformation.

Credit: Pexels
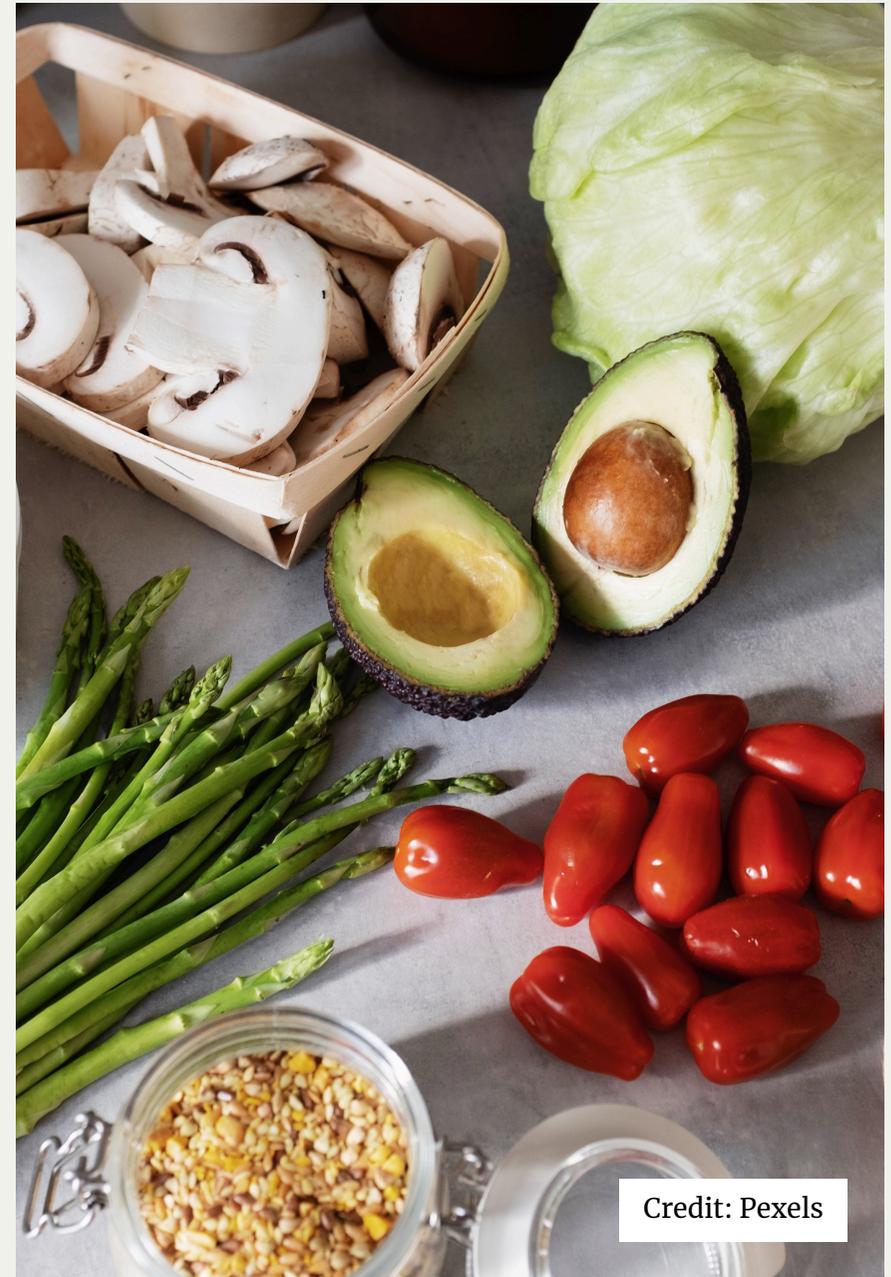
Unpacking the nutrition misinformation ecosystem

Poor nutrition is now the leading preventable risk factor behind the global rise in non-communicable diseases (NCDs). And yet, research shows that the vast majority of Americans do not meet national dietary guidelines and a similar picture is emerging in the UK, where 64% of adults were classified as overweight or obese in 2022. A growing body of research has explored the scale and spread of nutrition misinformation online, focusing primarily on the volume, content type and engagement metrics. Very few studies have interrogated the "who", "where" and "why" behind it. In other words, little attention has been paid to the people driving this misinformation: their motivations, methods and the narratives they employ to gain trust and influence. Understanding these dynamics is important. It can inform the development of more effective tools and communication strategies that reduce harm and build public trust. It can also reshape how nutrition is communicated, making it more inclusive and responsive to people's needs.

Our research identified 53 super-spreaders of nutrition misinformation whose accounts collectively reach over 24 million followers – although there may be overlap among audiences, the scale of their influence is undeniable. We found that these individuals fall broadly into three categories: The Doc, who uses real or fabricated medical titles to project authority; The Rebel, who pushes anti-establishment and conspiratorial views with cult-like conviction; and The Hustler, who wraps false health claims in persuasive marketing to sell products or programmes. Although only a few had formal nutrition or medical credentials, many positioned themselves as doctors. This blurring of credibility lines is particularly troubling given the alignment between these profiles and high-performing misinformation content.

The most prevalent misinformation themes promoted by these accounts included carnivore and meat-based diets, general wellness misinformation and low-carb or ketogenic eating. Over 90% of the super-spreaders promoted multiple overlapping narratives, such as seed oil conspiracies and anti-plant-based rhetoric, creating a concoction of misleading claims. Moreover, 96% of them exhibited clear financial incentives tied to their messaging.

We also identified three core dissemination strategies: fear-mongering, joy-mongering and sprinkling. Fear-mongering accounts stoke alarmism and distrust in i-

nstitutions, particularly around plant-based eating and seed oils, while promoting animal-based diets as a "truth-telling" alternative. Interestingly, the most liked post in our entire dataset (with over 3.7 million likes) was an anti-plant-based, pro-carnivore post from a fear-monger account. In contrast, joy-mongering accounts offer hopeful, emotionally-charged messages tied to personal transformation, such as "before and after" narratives, recipes and wellness advice framed around restrictive diets. Sprinkler accounts embed misinformation in broader lifestyle content, making it harder to detect and easier to digest. These strategies share a common emotional appeal, whether rooted in fear, hope or inspiration.

Super-spreaders build trust by connecting with audiences emotionally, rather than by overwhelming them with data. They position themselves as relatable truth-tellers who challenge corrupt institutions and offer simple, "empowering" solutions. Through personal anecdotes and motivational, accessible language, they create an "us vs. them" narrative in which misinformation becomes a form of liberation. Many frame their dietary advice as part of a broader movement, towards healing, strength, clarity, masculinity/femininity or even revolution. "Natural" or "traditional" diets (e.g. those relying heavily on animal-based foods or that exclude modern-day "processed" foods) are frequently presented as easy s-

olutions to complex health problems. This combination of emotional resonance and charismatic storytelling helps explain why such misinformation is so persuasive.

> "Through personal anecdotes and motivational, accessible language, super-spreaders create an "us vs. them" narrative in which misinformation becomes a form of liberation."

Research conducted by **Rooted Research Collective**

From misinformation to meaningful change

Calls to action

The stark juxtaposition between the narratives pushed by misinformation super-spreaders and established nutritional science, compounded by the misuse of medical titles to falsely legitimise claims, emphasises the need for coordinated national action. To protect public health and lessen the impact of NCDs, we recommend a multi-faceted approach.

First, one promising area for action lies in early interventions. Embedding nutrition education into school curricula, including practical skills such as how to cook healthy meals on a budget, could help young people make more informed dietary choices. Alongside this, building digital literacy and critical thinking skills may offer a valuable safeguard against nutrition misinformation. For example, teaching students how to question sources and recognise common persuasive techniques, as well as explore a self-proclaimed expert's credentials or affiliations, could go a long way in helping them navigate online health claims more confidently. Our findings suggest that, with just a little extra research, it is often possible to identify misinfor-

mation super-spreaders and detect when persuasive marketing is being presented as credible health advice. Encouraging these critical thinking skills early on could help inoculate future generations against the emotional pull of misinformation.

Second, it may also be time to rethink how public health messages are delivered. Social media has become one of the main spaces where people seek and share dietary advice. As our analysis highlights, the most influential figures on these platforms don't succeed by credentials alone; they connect through storytelling, emotion and a shared sense of purpose or struggle. Supporting qualified, UK-based nutrition professionals to engage meaningfully on these platforms could offer a more resonant alternative to traditional top-down messaging. With the right support and training, these professionals could use tools like live Q&As, short videos, comment threads and real-time stories to build trust and respond to evolving conversations. Used well, these tools can make nutrition communication more inclusive.

In an era of growing distrust in institutions, rebuilding confidence in healthcare systems and the professionals within them is increasingly important. This could involve better supporting those who engage online through continued training in misinformation awareness and clearer guidance around ethical condu-

ct. Amplifying the voices of those sharing evidence-based advice, while ensuring they have the necessary resources to do so effectively, may also help to shift the narrative. At the same time, greater scrutiny of misleading or commercial claims presented under the guise of medical authority could play a role in reducing harm and restoring public trust.

Without decisive action, the current trajectory of nutrition misinformation risks further distorting public understanding of healthy eating, deepening the already serious burden of obesity and other chronic, nutrition-related conditions.

Appendix

Medical professional feedback

We presented our findings to a variety of qualified nutritionists. They provided the following feedback on how this could potentially impact public health:

"My worry is that animal based foods that these accounts promote cause or promote chronic diseases, which means that it will take their followers, if they are listening to these accounts, a couple of years before they start having symptoms. These accounts are causing irreversible damage. Another thing to notice is that the influencers usually work out and working out is extremely beneficial in promoting health and potentially mitigating the harms of some of the foods these people recommend. But an average follower is not like them, and the risk of developing chronic diseases may be significantly higher in those people."
-Dr Faraz Harsini, DipACLM

"The results suggest that misinformation encouraging diets high in animal-sourced foods is reaching a large audience. Meat heavy diets such as the carnivore and many low-carb diets are associated with an increased risk of cardiovascular diseases, type 2 diabetes, certain cancers and premature death."
-Shireen Kassam, MD

"Many of these dietary trends are counter to all the evidence we have on nutrition, health and longevity, which confirms that a diet centred mostly or entirely around healthy plant-based foods supports optimal individual and planetary health."
-Kerstin Plehwe, President PAN International

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"The results of this research are deeply concerning, particularly because the misinformation promoting animal-heavy diets is coming not only from influencers and laypeople, but from medical professionals as well. When those in positions of trust spread inaccurate information, it carries even more weight and the consequences are real."

–Matthew Nagra ND

Nutritional baseline: a framework for judging misinformation

To assess the accuracy of dietary information, we have set out a nutritional baseline that draws upon evidence-based guidelines from a variety of reputable bodies. We address the growing mistrust in science by sourcing <u>impartial research</u> that backs up global guidelines provided by reputable bodies like the <u>World Health Organisation (WHO)</u> and <u>EAT-Lancet Commission</u>. This approach is further supported by similar dietary positions from respected organisations such as the <u>Academy of Nutrition and Dietetics in the USA</u>, the <u>British Dietetic Association</u>, the <u>Eatwell Guide</u>, <u>Dietitians of Canada</u> and the <u>Harvard Medical School</u>. The nutritional baseline is not a specific diet but a general guideline of foods proven to improve longevity and alleviate preventable disease. It may be inferred that promoting a diet contrary to the nutritional baseline, as established by and agreed upon by multiple reputable bodies, may be assumed to negatively impact health.

To reduce non-communicable diseases (NCDs), including diabetes, heart disease, stroke and cancer, the WHO recommends consuming <u>more than 400 grams</u> of fruits and vegetables per day. Fats should also be kept to <u>less than 30%</u> of total energy intake, with s-aturated fats, including butter, fatty cuts of meat, sausages, bacon, coconut oil and cheese, making up <u>no more than 10%</u> of your total energy intake. Unsaturated fats, including avocado, nuts, fish, olive and rapeseed oil, are given preference and should make up the large majority of the 30% allowance of fats. Despite widespread misinformation, seed oils rich in unsaturated fats are <u>recognised by authoritative bodies as heart-healthy</u> when consumed in moderation as part of a balanced diet.

Further analysis of food guides from various nations across the world shows the importance of eating a wide range of products from a variety of food groups. It is often recommended that a diet should consist mainly of a diverse range of whole foods, including fruits, vegetables, minimally processed tubers, whole grains, nuts and seeds, with an emphasis on unsaturated fats. Emerging scientific evidence highlights the important role of <u>gut microbiome diversity</u> in overall health, which is supported by a <u>diet rich in dietary fibre</u>. Animal products are <u>generally advised in moderation</u>, whilst food rich in fats and simple sugars should be limited. Recommendations on protein consumption emphasise a balance of plant- and animal-based sources, with a focus on <u>lean and minimally processed options</u>.

From this synthesis, we conclude that a diet that favo-

urs variety, includes whole plant foods consumed in every meal and limits saturated fats and simple sugars, is conducive to a healthy baseline diet.

This nutritional guideline has been reviewed and triangulated by a panel of independent experts to ensure its validity and robustness as a foundation for evaluating nutrition-related claims and misinformation.

Thank you for reading!

On behalf of Rooted Research Collective, thank you for your interest in this report. For press comments, interview requests or questions about our research, please reach out to info@rootedresearch.co

Research conducted by **Rooted Research Collective**