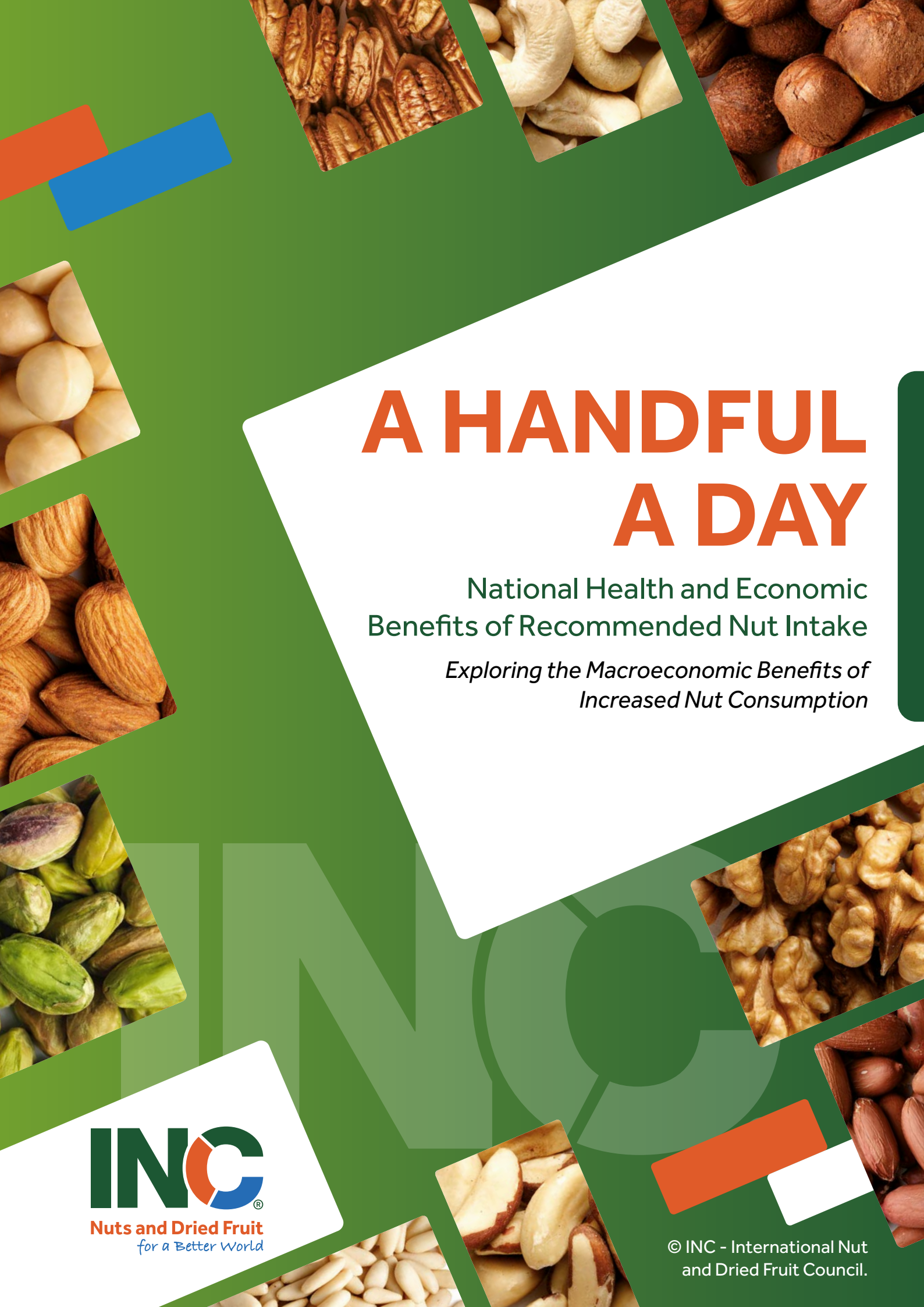

A HANDFUL A DAY

National Health and Economic Benefits of Recommended Nut Intake

Exploring the Macroeconomic Benefits of Increased Nut Consumption

INC®
Nuts and Dried Fruit
for a Better World

Contents

1. Introduction

Regular nut consumption is associated with a lower risk of chronic diseases, which place a significant financial burden on healthcare systems. Despite global dietary guidelines recommending nuts as part of a healthy diet, consumption levels remain below recommended intakes.

Since 1983, the INC has united the global nut and dried fruit industry connecting leaders, building partnerships, and driving collective progress. Our mission is to foster sustainable growth across the entire supply chain by promoting the goodness, health benefits, and global relevance of nuts and dried fruits. And, in turn benefit businesses, our members, involved.

With a long-standing commitment to advancing evidence-based nutrition, the INC is uniquely positioned to commission and disseminate robust research on the societal and economic impact of nut consumption. Accordingly, KPMG was commissioned by the INC to study the economic impact of increased nut consumption in Germany, Spain, and the United States, with a focus on cardiovascular disease and cancer. Using a standard two-phase methodology—reviewing existing research and estimating economic effects—the study evaluates potential healthcare cost savings and broader economic benefits associated with consuming a daily handful of nuts (30 g).

2. Key Insights at a Glance

Increasing nut consumption in Germany, Spain, and the United States from current levels to 30 grams per day could reduce healthcare expenditures by more than €100,500 million annually.

Germany

Current nut consumption is 14.5 g/day, realizing only 48.3% of the potential health benefits. Increasing to 30 g/day could reduce healthcare expenditures by €15,400 million per year.

30 g = reduce healthcare expenditure by

€15,400 M

Spain

Current nut consumption is 8.9 g/day, realizing only 29.6% of the potential health benefits. Increasing to 30 g/day could reduce healthcare expenditures by €4,600 million per year.

30 g = reduce healthcare expenditure by

€4,600 M

United States

Current nut consumption is 17.07 g/day, realizing only 56.9% of the potential health benefits. Increasing to 30 g/day could reduce healthcare expenditures by €80,500 million per year.

30 g = reduce healthcare expenditure by

€80,500 M

€ Eating 30 g of nuts per day could save over €100,500 million on healthcare.

How Were These Figures Calculated?

Savings were estimated by multiplying the healthcare costs associated with cardiovascular disease (CVD) and cancer by the risk reductions associated with higher nut consumption, while also factoring in economic savings from reduced productivity losses due to premature death.

Current vs. Potential Nut Consumption and Healthcare Savings

Country	Current Consumption (g/day)	% of Potential Health Benefits Realized	Target Consumption (g/day)	Healthcare Expenditure (CVD + Cancer) (million €)*	Annual Savings (million €)
Germany	14.5	48.3%	30	137,100	15,400
Spain	8.9	29.6%	30	33,200	4,600
USA	17.07	56.9%	30	831,500	80,500
Total	**-**	**-**	**-**	**1,001,800**	**100,500**

* Healthcare expenditures adjusted using the Consumer Price Index (CPI) for medical goods and services to reflect 2023 figures.

What Are the Benefits of Increasing Nut Consumption?

Rich Nutrient Profile

Nuts are naturally nutrient-dense and calorie-efficient foods, offering a rich mix of healthy unsaturated fats, plant-based proteins, dietary fiber, vitamins, minerals, antioxidants, and bioactive compounds.

Improved Health Outcomes

A daily handful of nuts (30 grams) is associated with a 25% reduction in the risk of coronary heart disease, a 21% reduction in the risk of CVD, and a 15% reduction in the risk of cancer. Regular nut consumption is also associated to lower mortality rates, including a 22% lower risk of death from CVD, an 11% reduction in cancer-related mortality, and a 22% reduction in all-cause mortality.

Significant Healthcare Savings

Increasing nut consumption from current intakes to 30 grams per day could substantially reduce the burden on healthcare systems while promoting a healthier population.

3. Health Benefits of Regular Nut Intake

Tree nuts and peanuts provide a rich combination of heart-healthy fats, proteins, fiber, vitamins, minerals, antioxidants, and phytochemicals. These nutrients play a key role in reducing the risk of chronic diseases and mortality. A substantial body of scientific evidence supports the recommendation to consume a daily handful to maximize their health benefits.

Scientific studies show that daily nut consumption significantly lowers the risk of coronary heart disease (CHD) by 25%,[1] largely due to improvements in cholesterol and other cardiovascular markers from their healthy unsaturated fats, dietary fiber, and antioxidants.

Eating a handful of nuts daily has also been linked to a reduced mortality from CVD by 22%, according to scientific studies, likely through anti-inflammatory effects, improved lipid profiles, and support for vascular health. In addition, regular intake is associated with a 21% reduction in the risk of developing CVD itself.[1]

Nuts may also protect against cancer, especially of the digestive system, colon, pancreas, stomach, lungs, and endometrium. Data indicates that a daily intake of 30 grams is associated with a 15% reduction in cancer risk[2], possibly due to anti-inflammatory compounds in nuts and their role in improving insulin sensitivity, both of which can influence cancer development processes. According to the American Association for Cancer Research, a handful of nuts a day is associated with an 11% lower risk of cancer-related mortality.[2] And, eating nuts regularly is associated with a 22% reduction in the risk of all-cause mortality.[1]

Beyond cardiovascular and cancer-related benefits, nuts have been linked to improvements in weight management, type 2 diabetes, cognitive function, fertility, and many others. Their wide-ranging health effects make them a valuable and accessible component of a balanced, preventive health-oriented diet.

[1] Balakrishna, R., Bjørnerud, T., Bemanian, M., Aune, D., & Fadnes, L. T. (2022). Consumption of nuts and seeds and health outcomes including cardiovascular disease, diabetes and metabolic disease, cancer, and mortality: an umbrella review. *Advances in nutrition, 13*(6), 2136-2148.

[2] Long, J., Ji, Z., Yuan, P., Long, T., Liu, K., Li, J., & Cheng, L. (2020). Nut consumption and risk of cancer: a meta-analysis of prospective studies. *Cancer Epidemiology, Biomarkers & Prevention, 29*(3), 565-573.

Benefits Associated with 30 g Daily Nut Consumption

CANCER

15%
reduced cancer risk

11%
reduced cancer mortality

CARDIOVASCULAR DISEASE

21%
reduced risk of CVD

22%
reduced risk of CVD mortality

25%
reduced risk of CHD

MORTALITY

22%
reduced all-cause mortality

4. Nut Consumption

While consumption has increased over time, all three countries remain well below the 30 g/day target.

Germany

According to the Federal Office of Agriculture and Food (BLE), per capita nut consumption in 2022/23 was estimated at 5.3 kg/year (14.52 g/day), reflecting a 21% increase compared to the 2012/13 season.[3]

Spain

Data from the Spanish Ministry of Agriculture, Fisheries and Food indicate that per capita nut consumption in 2022 was estimated at 3.2 kg/year (8.77 g/day).[4]

United States

According to the U.S. Department of Agriculture (USDA), per capita nut consumption in 2020 was estimated at 6.23 kg/year (17.07 g/day), with peanuts accounting for 3.61 kg and tree nuts contributing 2.62 kg.[5] USDA data also reveal a significant increase in tree nut consumption over the past five decades, from just 0.63 kg/year in 1970.

While these official estimates may vary slightly from INC statistics, KPMG based its analysis on national data sources to ensure objectivity. In the absence of more recent official statistics, the latest estimates available at the time of reporting were used.

[3] Federal Office for Agriculture and Food (BLE): Fruits, vegetables, citrus fruits, nuts, and dried fruits. https://www.bmel-statistik.de/ernaehrung/versorgungsbilanzen/obst-gemuese-zitrusfruechte-schalen-und-trockenobst#:%7E:text=Weniger%20Trocken%2D%20und%20Schalenobst%20verbraucht,Folge%20auf%201%2C4%20Kilogramm.

[4] Ministry of Agriculture, Fisheries and Food. Official Report on Food Consumption in Spain, 2022. https://www.mapa.gob.es/dam/mapa/contenido/alimentacion/temas/consumo-y-tendencias-en-alimentacion/panel-de-consumo-alimentario/ultimos-datos/consumo-2022/informe-consumo-2022-baja-res.pdf

[5] USDA ERS - Food Availability (Per Capita) Data System. https://www.ers.usda.gov/data-products/food-availability-per-capita-data-system

5. Modeling Potential Healthcare Expense Savings from Increased Nut Consumption

KPMG's analysis consisted of the following steps:

1 Estimate current per capita consumption vs. target intake (30 g/day).

2 Estimate percent reductions in risk of CVD and cancer based on intake increase.

3 Calculate savings in direct, indirect, and informal healthcare costs.

Methodology Overview

1
Consumption Gap

Current vs. Target Intake

- Current per capita nut consumption
- Target level: 30 g/day

2
Risk Reduction Estimates

Health Impact of Increased Intake

- Estimated % reduction in CVD risk
- Estimated % reduction in cancer risk
- Based on scientific literature linking nut intake to disease prevention

3
Cost Impact Assessment

Healthcare Costs

- National annual healthcare expenditures for CVD and cancer
- Model estimates potential cost savings from reduced disease incidence

Objective: Quantify the economic benefits of aligning nut intake with evidence-based dietary recommendations.

Assuming a linear relationship between nut consumption and health benefits, reaching the recommended 30 grams per day could significantly reduce CVD and cancer risks. In Germany, consumption is estimated at 14.5 g/day—meaning only 48.3% of the potential benefits are being realized—so increasing to 30 grams per day could provide individuals with 51.7% more of the associated health benefits.

Risk Reduction with 30 g Daily Nut Consumption (vs. Current Intake)

Outcome	Germany	Spain	USA
CVD			
Reduced risk of CVD	10.9%	14.8%	9.0%
Reduced risk of CVD mortality	11.4%	15.5%	9.5%
Reduced risk of CHD	12.9%	17.6%	10.8%
Cancer			
Reduced cancer risk	7.8%	10.6%	6.5%
Reduced cancer mortality	5.7%	7.8%	4.7%
Mortality			
Reduced all-cause mortality	11.4%	15.5%	9.5%

Abbreviations: CVD, cardiovascular disease; CHD, coronary heart disease.

Coronary heart disease is a subset of CVD. However, due to the lack of specific economic data for coronary heart disease alone, the analysis used overall CVD risk reduction as a proxy.

KPMG calculated the annual healthcare savings from increased nut consumption by combining targeted nut intake levels with estimated reductions in CVD and cancer risk. Savings were calculated assuming a 1% decline in disease risk corresponds to a 1% reduction in total care costs for that disease. Healthcare expenditure data for each country and selected disease came from national health institutes and government statistics, with figures adjusted for inflation using the consumer price index (CPI) specific to medical goods and services.

The analysis included three cost categories: direct medical expenses (treatments, medications), indirect medical expenses (productivity loss from premature mortality), and informal care expenses (transportation, lodging, dietary needs, home adjustments, specialized equipment). Indirect costs, though often underestimated, have lasting impacts: patient income loss affects financial stability and the broader economy, caregiving by family reduces workforce participation, and premature deaths cause significant labor and productivity losses, exacerbating the overall economic impact.

Healthcare Expenditure on Cardiovascular Disease and Cancer (Million €, 2023 CPI Adjusted)

Country	Cardiovascular Disease	Cancer	Total (CVD + Cancer)	% of the GDP
Germany	87,070	49,996	137,066	3.3%
Spain	13,000	20,188	33,188	2.2%
USA	516,516	314,943	831,459	3.2%
Total	**616,586**	**385,127**	**1,001,713**	-

Abbreviations: CPI, consumer price index (for medical goods and services); CVD, cardiovascular disease; GDP, gross domestic product.

To assess the potential economic benefits of a 30 g daily nut intake, the analysis considers (1) reductions in CVD and cancer risk and (2) associated healthcare costs, including treatment expenses and productivity losses from premature mortality.

Savings are estimated by applying the reduced risk percentages to total projected costs for each disease, while also accounting for productivity losses. CVD and cancer create economic burdens beyond direct medical expenses, with indirect costs—like lost productivity from illness or premature death—having significant impact. To quantify these savings, KPMG sourced productivity loss estimates in Germany, Spain, and the U.S. from national health institutes and governmental statistical agencies and calculated potential savings based on mortality reductions associated with nut consumption.

Annual Healthcare Savings from 30 g Daily Nut Consumption (Million €)

Parameter	Germany	Spain	USA
CVD			
CVD healthcare expenditures	87,070	13,000	516,516
CVD risk reduction	10.85%	14.80%	9.05%
Estimated healthcare savings	9,447	1,924	46,745
Savings from reduced productivity losses due to premature CVD deaths	1,453	319.6	9,361
Total CVD Savings	**10,900**	**2,244**	**56,106**
Cancer			
Cancer healthcare expenditures	49,996	20,188	314,943
Cancer risk reduction	7.75%	10.56%	6.47%
Estimated healthcare savings	3,875	2,132	20,377
Savings from reduced productivity losses due to premature cancer deaths	625	267	4,048
Total Cancer Savings	**4,500**	**2,399**	**24,425**
Total (CVD + Cancer)	**15,400**	**4,643**	**80,531**

Abbreviation: CVD, cardiovascular disease.

Given that these figures account only for the combined savings from CVD and cancer, the overall healthcare savings could be significantly higher if other diseases were also considered.

In the best-case scenario, where 100% of the population increases nut consumption to 30 grams per day, the estimated annual healthcare expenditure savings amount to €69,213 million for cardiovascular disease and €31,346 million for cancer, over €100,500 million in total. In an optimistic scenario, where 50% of the population achieves this intake, healthcare costs could be reduced by approximately €50,000 million.

Even in a pessimistic scenario, where only 10% of the population increases consumption, annual savings would exceed €10,000 million.

Potential Annual Healthcare-Cost Savings from Daily 30 g Nut Consumption (Million €)

	Scenario		
	Pessimistic (10%)	Optimistic (50%)	Best-Case (100%)
	Potential annual expenditure savings		
CVD			
Germany	1,087	5,432	10,863
Spain	224	1,122	2,244
USA	5,610	28,053	56,106
Estimated savings	**6,921**	**34,607**	**69,213**
Cancer			
Germany	452	2,300	4,522
Spain	240	1,200	2,399
USA	2,442	12,212	24,425
Estimated savings	**3,134**	**15,712**	**31,346**
	Total annual savings for each scenario		
Total savings	**10,055**	**50,319**	**100,559**

Abbreviation: CVD, cardiovascular disease.

6. Conclusion

Eating 30 g nuts per day = €100,500M Potential Annual Healthcare Savings

A daily handful of nuts (30 g) offers a powerful, cost-effective opportunity to improve public health and reduce healthcare spending. Increasing nut consumption to recommended levels in Germany, Spain, and the United States could generate more than €100,500 million in annual healthcare savings.

Current Intake vs. Potential Annual Healthcare Savings

Germany
Current: 14.5 g/day

Increase to 30 g = reduced healthcare expenditure by

€15,400 M / Year

Spain
Current: 8.9 g/day

Increase to 30 g = reduced healthcare expenditure by

€4,600 M / Year

United States
Current: 17.1 g/day

Increase to 30 g = reduced healthcare expenditure by

€80,500 M / Year

The current estimated annual economic burden of cardiovascular disease and cancer is:
Germany: €137,066 million
Spain: €33,188 million
United States: €831,459 million

Evidence-Linked Health Outcomes (30 g Daily Intake)

Cancer Risk
15% reduced risk
11% Reduced mortality

Cardiovascular Disease
21% reduced risk
22% reduced risk mortality
25% reduced risk CHD

Mortality
22% reduced all cause mortality

The message is clear! A small dietary change – adding 30 g of nuts to the daily diet- can deliver major returns for health systems, economies and populations alike.

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