Got Milk?

Comparing Dairy and Alternative Milks Consumption, Nutrition, and Environmental Impact

By Neil Beran, Drew Evans, Lucia Macoretta, & Nicole Papanton [Undergraduate Honors Students] and Anne Reilly, PhD [Faculty Advisor]
Quinlan School of Business, Loyola University Chicago
820 N. Michigan Ave, Chicago, IL 60611
Business, Society, and Government Consortium
MBAA International 2023 Conference
March 2023
Introduction

Purpose:
To explore shifting milk consumption trends & implications for government policy, social impact, & sustainability

Background (2022):
Total Revenue in US:
Cow’s Milk $29 Bn
Plant Milk $3 Bn

Comparative Growth Rates (2014-2027):
Cow’s Milk: 42%
Plant Milk: 186%
US Dairy Market Background

- **Regulation**
  - FDA naming standards
  - FDA production standards
  - State regulations

- **Subsidies**
  - Minimum fluid prices
  - Revenue protection
  - Gov’t controlled insurance
Study Framework:

1. Changing Consumer Preferences

- Rise in plant-based diets in US
- Related shift to alternative milks, especially for consumers under the age of 35
- Many people still drink cows’ milk from habit, flavor preference
- Data from consumer surveys (Mintel), Google Trends, Statista, dairy industry reports
Study Framework:
2. Nutrition

- Food scientists have found:
  - Lactose-intolerant consumers must rely on plant milks
  - While alternative milks have some nutritional value, only cows’ milk offers the fats, proteins, & critical micronutrients required for good health, especially for children
  - Parents need to be aware of the differences
  - Even skim milk is nutritionally preferable to non-dairy alternatives

- Prior Research
  - Collard & McCormick 2021
    - Research into the nutritional value of milks primarily in infants for parents
  - Park 2021
    - General research into the nutritional value of milks
Study Framework:
3. Environmental Impact

● Differing carbon footprints between dairy & alternatives
  ○ Animals versus plants
  ○ Production & processing
  ○ Distribution & supply chain

● Prior Research
  ○ Blanco-Gutierrez et al. 2020
    ■ Swot and Multicriteria analysis of specific spanish alternative and traditional food and milk products
  ○ Poore & Nemecek 2018
    ■ Research into environmental impacts of large scale agriculture including alternative and cow’s milk
Literature Review - Industry

- **Statistics**
  - Statista
  - J.Poore and T.Nemece

- **Economic research**
  - Hayden Steward et al
  - Dharmasena & Capps

- **Conclusion**
  - **Statistics**
    - Confirms trends in milk
    - Gives environmental data
  - **Economic research**
    - Confirms downward trends in milk but not causally
    - Establishes substitute goods
Results: Market Data

Although as of now in 2022 the Milk Market is 8.5 times larger than the Milk Alternative Market, from 2014-2027 (projected) the Milk Market will have only grown by 42%, whereas the Milk Alternative Market will have grown by 186%.
Results: Consumer Search Share

Alternative Milk Interest

- Almond Milk
- Oat Milk
- Soy Milk

[Graph showing trends in Alternative Milk Interest from 2014 to 2022]
Question: Which of the following types of dairy milk or non-dairy milk have you purchased for you or your household in the past 3 months? Base: 2,000 internet users aged 18+

Question: Which of the following types of dairy milk or non-dairy milk have you purchased for you or your household in the past 3 months? Please select all that apply Base: 2,000 internet users aged 18+
Question: Why do you/others in your household use non-dairy milk? Please select all that apply.

Base: 1,059 internet users aged 18+ who have purchased non-dairy milk in the past 3 months
Results: Environmental

**Relative rankings of environmental impacts**

- **Land use of milks (m²)**
- **GHG emissions of milks (kg CO₂eq)**
- **Water use of milks (L)**
- **Eutrophication from milks (g PO₄₃-eq)**

![Chart showing relative rankings of environmental impacts for different milks](image)

*Figure 2*  
Poore & Nemecek
Discussion/Interpretation

**Economic Trends**
- Industry participants broadly view alternative dairy as an existential threat
- Small component of broader dairy industry challenges

**Consumer Preferences**
- Clear shift to plant-based diets, including dairy alternatives
- Non-milk dairy products (ice cream, yogurt) less of a shift
- Other dairy products such as ice cream and yogurt are not seeing as large of a shift in dairy-alternatives as milk
- Reasons for shift vary
  - Health? Sustainability? What is “trendy”? Cultural norms?
Discussion/Interpretation

Nutrition and Health

- Consumer reports indicate that consumers believe milk alternatives are healthier than dairy milk
- There are not nearly as many nutrients in milk alternatives as in traditional dairy milk

Environmental

- Many consumers choose to drink alternative milks since they have less of an environmental impact than dairy milk
- Almond milk is the most popular milk alternative, yet it has the largest environmental impact out of all milk alternatives
Conclusion

● Contradictory results
● Who can use these findings?
  ○ Public health government food regulators can use this information as reason to better explain the nutritional value of milk alternatives to Americans
  ○ Parents making decisions about what milks to give to their children
● How can this research be improved?
  ○ More must be done to understand the consumer psychology behind the purchasing decision of milk alternatives


