

Legume Consumption in University Catering: Assessing Trends, Challenges and Sustainability Potential

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Background & Problem Statement

- Food systems drive environmental pressure; dietary shifts are key for climate action^{1,2,3}
- The Out-of-Home (OOH) sector is the 2nd largest food distribution channel in Germany, with a turnover of €84.5 billion (2023)⁴
→ Key link between food production and consumption
- Studierendenwerke (SW) (Germany's public student services): 57 SW operating 910 dining facilities, they serve approx. 2.87 million students (Winter Semester 24/25) and provide 650,000 meals per day⁵
→ High potential for systemic impact during formative life stages
- Legume consumption in Germany is low: only 2.5 kg per capita/year⁶
→ Legumes support sustainability and food security
→ Still underused and understudied in German OOH catering

Objectives & Methods

- What is the share of legume-based dishes in the total food offerings of university catering facilities?
- How has the use of legumes evolved in university cafeterias over the past decade (2014–2024)?
- Which legume types are most frequently offered and consumed in university catering facilities?



1. Data Collection

Sales and meal plan data were obtained from two Student Services Organizations (SW) for the period 2014–2024, comprising 17,600 individual meal entries.

- **SW 1** (located in Lower Saxony): Responsible for 30,036 students, operates 11 dining facilities, and serves up to 8,000 lunches daily.

- **SW 2** (located in Hesse): Responsible for 21,900 students, operates 15 dining facilities, and serves up to 4,200 lunches daily.

2. Data Preparation

Data were exported from inventory systems and processed in R (version 4.5.1) Steps included:

- Removal of duplicates and incomplete entries
- Standardization of meal descriptions
- Filtering for legume-based dishes and relevant food groups

3. Data Analysis

Descriptive Statistics and Trend Analysis

References:



Results

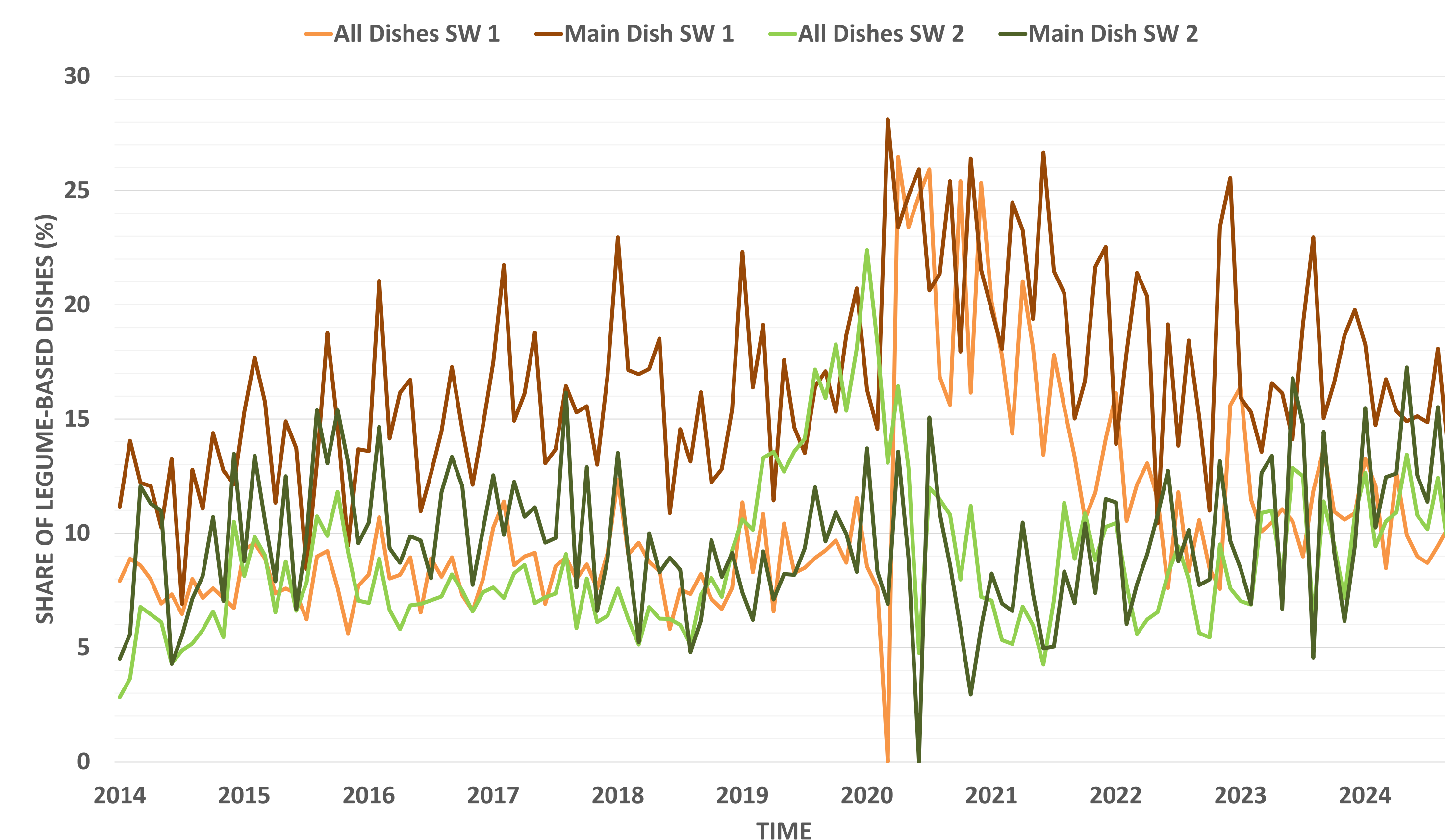
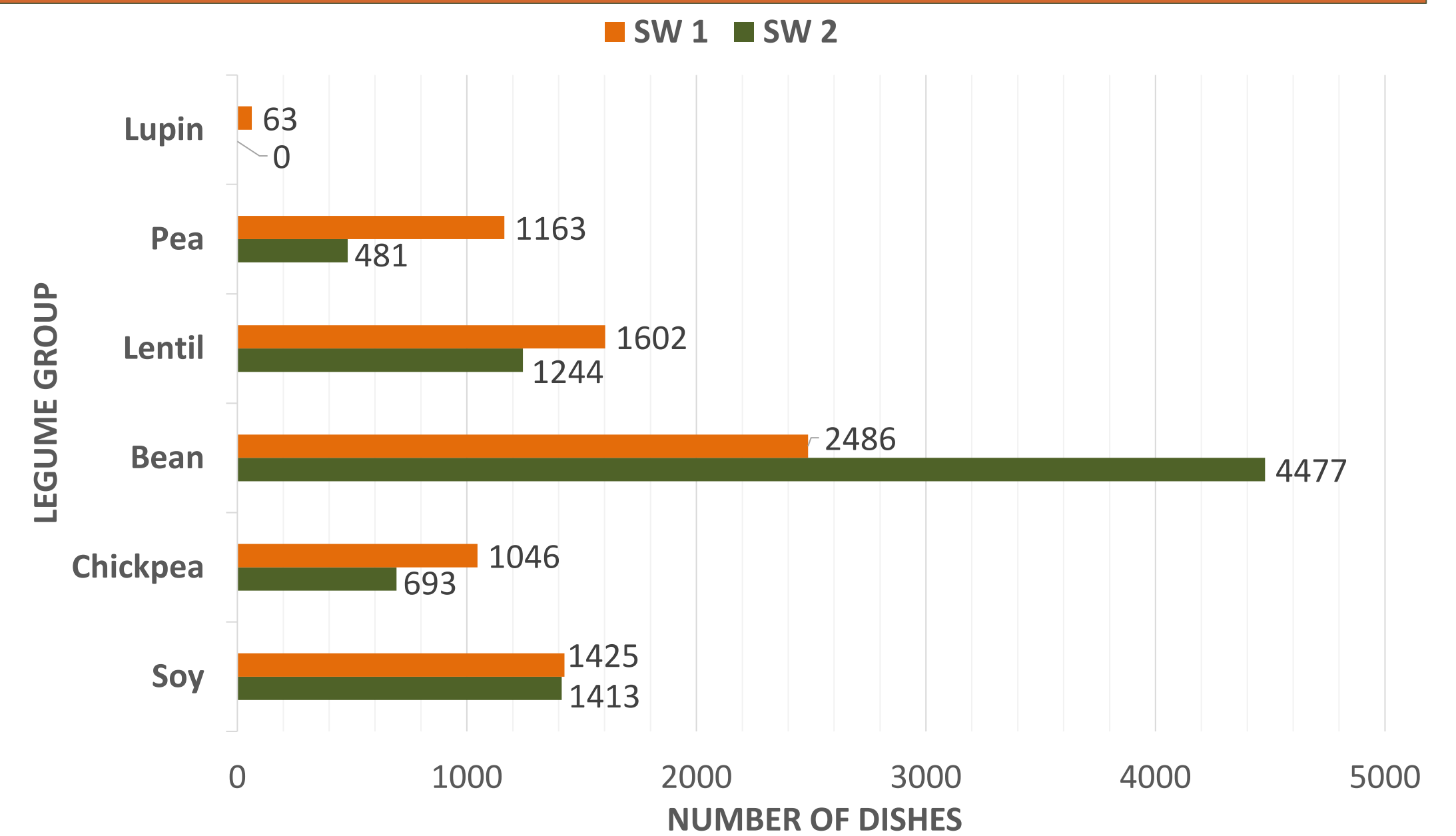


Fig.1: Share of Dishes Containing Legumes in Total and Main Dishes in SW 1 and 2 Over Time (2014–2024)



Group	Ingredient	SW 1	SW 2
Soy	Edamame	164	27
	Miso	78	25
	Other	656	917
	Tofu	527	444
Chickpea	Falafel	280	106
	Chickpea	766	587

Fig.2: Total Number of Dishes Containing Legumes Offered Over Time (2014–2024)

Plant-based		Dishtype					Legume Group				
		Pasta	Fastfood	Rice / Curry	Bowl	Three-component	Pea	Lentil	Bean	Chickpea	Soy
	 										
SW 1	59 %	22 %	19 %	15 %	15 %	22 %	30 %	33 %	30 %	22 %	22 %
SW 2	96 %	12 %	21 %	12 %	10 %	41 %	23 %	26 %	41 %	24 %	26 %

Tab.1: Analysis of the Most Popular Main Dishes Containing Legumes Over the Past Two Years (2023–2024)

Conclusion & Outlook

- Legume-based dishes increased steadily from 2014–2024, especially in main dishes. The COVID-19 pandemic caused disruptions, but usage has since stabilized.
- Offered and most popular legume dishes span a wide range of dish types and are predominantly plant-based in both SWs.
- Next steps include further analysis of the dataset, workshops with catering professionals, development of new legume-based dishes and targeted marketing strategies to raise awareness among students. Sensory tests will support product acceptance and practical implementation in university settings.



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References:

