Assessing The "Heat Or Eat" Dilemma Across The Non-linked Outer Isles Of Orkney, UK

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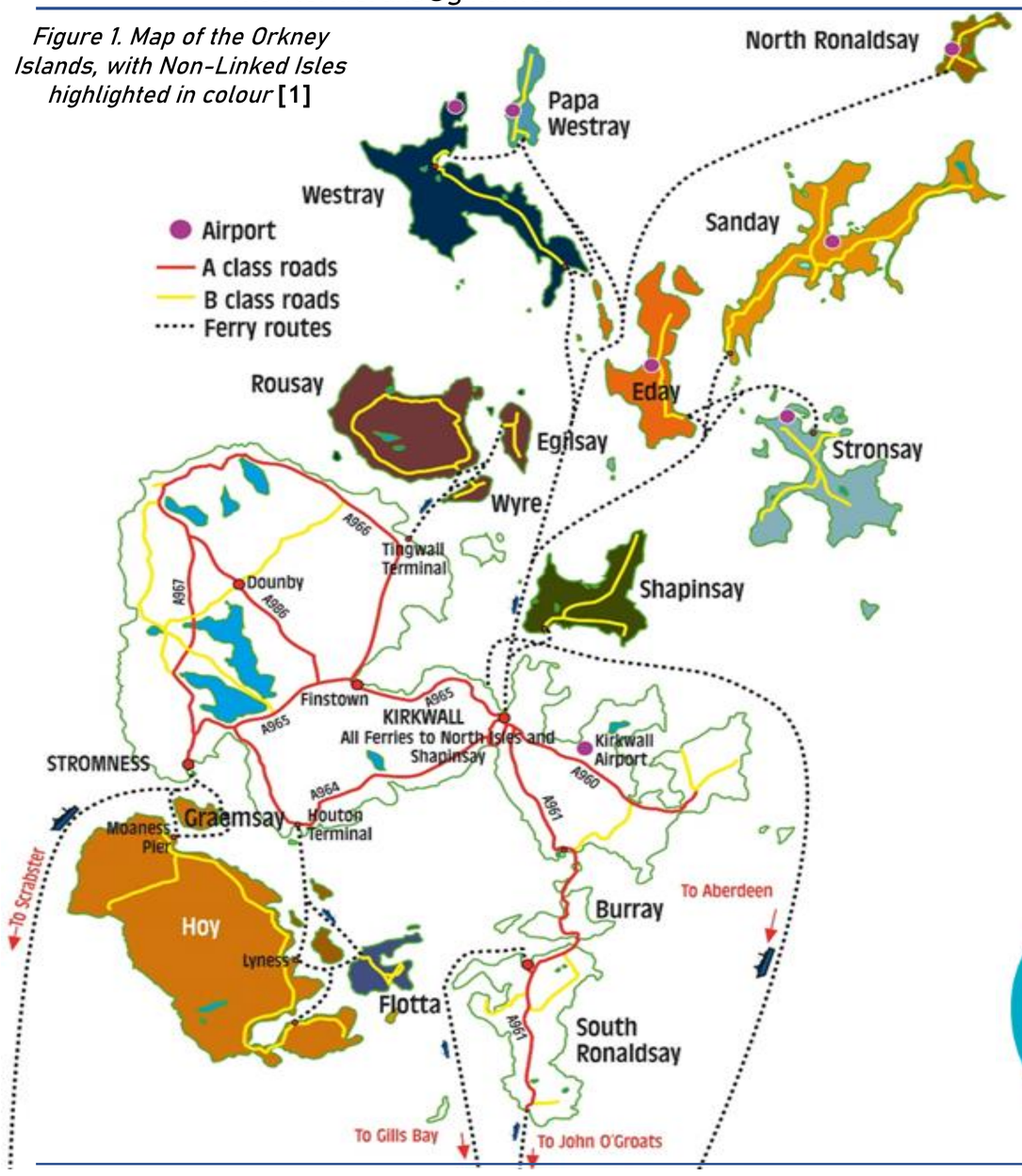

Figure 1. Map of the Orkney Islands, with Non-Linked Isles highlighted in colour [1]

Background

The Orkney archipelago includes 20 inhabited islands and lies 10 miles off the north coast of Scotland. According to the Scottish National Isles Survey Plan, 1 in 10 (9.7%) residents across the non-linked Isles had to choose between heating and eating in 2020 [2]. This was found to be in comparison to 1 in 14 (7.1%) of Orkney Mainland residents facing the same choice. This study focusses on exploring the root causes of this choice via regression analysis of survey data provided by Voluntary Action Orkney (VAO).

The 13 non-linked Isles included in this study are highlighted in colour in figure 1, with Orkney mainland shown in white. Each Outer Isle has no physical access to Orkney Mainland with connection by ferry and airplane routes only. Across the 13 islands surveyed, there is a population of roughly 2,700 [3], representing around 12% of Orkney's total population. The survey was conducted as part of the "Island Wellbeing Project" which ran over four weeks in May 2021, was anonymous and open to any resident of the Outer Isles over the age of 16.

Designed to look at factors including health, economic and social wellbeing, in total, VAO received 816 responses from across the Outer Isles, 33% of the resident population.

ISLAND WELLBEING PROJECT
a partnership project

VAO

Method

This research project is concerned with how specific variables in the survey influence respondents choosing "yes" for either Q1 or Q2:

[***Q1***] - *"During the last 12 months, was there a time when: You were worried you would run out of food because of a lack of money or other resources?"*

[***Q2***] - *"During the last 12 months, was there a time when: You were worried you would run out of fuel because of a lack of money or other resources?"*

To observe how different factors impact independent variables food [***Q1***] and fuel [***Q2***] insecurity, two probit regression models are developed. Following estimation of the probit models, the average marginal effects, and their sign, are computed and presented in table 2.

Insights

- 106 respondents (13%) who completed the survey said they had worried about running out of food.
- 175 respondents (22%) declared they had worried about running out of fuel.

From the 106 respondents at risk of food insecurity, 82% were simultaneously at risk of fuel insecurity. However, from the total respondents worried about their fuel supply (175), half indicated they were not worried about a lack of food at the same time.

Table 1. Chi-square test between respondents at risk of fuel and food insecurity.

		At risk of Fuel insecure? [Q2]		
		Yes	No	Total
At risk of Food insecure? [Q1]	Yes	50% (87)	3% (19)	13% (106)
	No	50% (88)	97% (601)	87% (689)
	Total	100% (175)	100% (620)	100% (795)
p-value = $2.2e^{-16}$				

Results

Table 2. Marginal effects from the estimation of probit models with statistical significance (p-value) denoted by asterisks.

PARAMETERS	PROBIT MODEL 1 Food insecure [Q1]		PROBIT MODEL 2 Fuel insecure [Q2]	
Demographic				
Age 16-40	**0.105**	***	**-0.063**	*
Socioeconomic				
Worried about money? – (Yes = 1)	**0.128**	***	**0.171**	***
Able to afford a bill of £850? (Yes = 1)	**-0.138**	***	**-0.231**	***
Do you know where economic support is? (Yes = 1)	**0.017**		**-0.062**	***
Local transport				
Difficulty affording plane or boat to attend health appointments (Yes = 1)	**0.131**	***	**0.167**	***
General health & COVID-19				
Long-term health conditions? (Yes = 1)	**0.065**	***	**0.062**	**
Lost income due to Covid-19? (Yes = 1)	**0.023**		**0.140**	***
Model fit				
Chi Square value (p-value)	249.96 (<0.001)		361.93 (<0.001)	
Pseudo-R^2 (McFadden)	0.40		0.43	
BIC	551.16		652.47	

(***) , (**), (*) denote statistical significance at (1%), (5%) and (10%) respectively

Conclusions

- Losing income due to Covid-19 in 2021 had a statistical significance with regards to fuel insecurity, but not food insecurity.
- The ability to pay an unexpected £850 bill reduces the risk of fuel insecurity at nearly double the level of food.
- Inability to afford off-island transport increases the risk of Outer Isles residents facing both food and fuel insecurity.
- Knowing where to access formal economic support reduces the likelihood of an individual facing the risk of fuel insecurity.
- Results from modelling suggest socioeconomic factors play a major role and that, when faced with a lack of economic resources, respondents will fall short on fuel before they fall short on food.

Recommendations: extending & improving front-line service capacity & increasing awareness of emergency support available in Outer Isles; ScotGov. should extend subsidy for ferry & air services & extend the two National Entitlement Schemes to include Outer Isles residents.

References

[1] – Orkney Islands Council. (2022, May 14). Orkney Transport Guide. Retrieved from www.orkney.gov.uk

[2] – Ruth Wilson et al. (2021). The National Islands Plan Survey, Final Report. Scottish Government, Edinburgh

[3] – Scottish Government. (2011). Scottish Census 2011 accessed at www.scotlandscensus.gov.uk