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South Atlantic Natural Capital Assessment: Cultural Ecosystem Services in the Falkland Islands.



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Review table

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CULTURAL ECOSYSTEM SERVICES IN THE FALKLAND ISLANDS



NATURAL CAPITAL ASSESSMENT SOUTH ATLANTIC OVERSEAS TERRITORIES

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March 2018

1. ORIENTATION: ENVIRONMENT & CULTURE IN THE FALKLAND ISLANDS

In a reasonable world men [sic.] would have treated islands as precious possessions, as natural museums filled with beautiful and curious works of creation, valuable beyond price because nowhere in the world are they duplicated...

Rachel Carson, *The Sea Around Us* (1951)

We want to move from an imagery of war to wildlife, with penguins and birds and sea lions, which is why we have the slogan 'The Falklands, where nature is still in charge'.

Phyl Rendell OBE, cited by Ware (2014)

Perhaps more so than most other places in the world, the culture of the Falkland Islands (FI) is inextricably tied to the natural environment. As we shall see, this is evident in the many cultural practices that define a Falklands 'way of life', but is also conveyed through a vast array of representational forms. Perhaps in exemplary form this association is portrayed in the FI Coat of Arms, which depicts a sheep standing on a small piece of grassland. The association of FI culture to farming, and sheep farming in particular, is deep and historical, but it is only one prominent example of the many and diverse ways the identity of the Falklands – and indeed what it might mean to be a 'Falkland Islander' – is constructed through symbols from nature.



Figure 1. Falkland Islands' Coat of Arms.

Colloquial discourse has drawn, for instance, on the Islands' abundant resources of brown algae seaweed to convey notions of indigeneity ('*Kelpers*'). The unofficial anthem of the FI - *Song for Falklands* – is, in turn, replete with appeals to the determinant influence of the natural world on people ('*the wild rugged beauty that thrills more than me...Is bred in the bones on the isles of the sea*'). Audiences for local media assemble around the popular weekly newsletter - '*The Penguin News*', while the postcards of visiting tourists from cruise ships are adorned, stamped and posted with images of iconic local wildlife. A recent local art competition inviting interpretations of the '*Essence of our Community*' is replete with appeals to the Islands' sparsely populated, extensive landscape.

In terms of population density, the Falklands are dominated by their capital, Stanley, which holds circa 70% of the islands' population (2460), including the RAF Mount Pleasant population. The Camp, which in the Falkland Islands context means 'anywhere out of town [Stanley]' (Hince 2000), is a vast and exposed landscape, rugged and mountainous in character, and largely treeless. It is dotted with a handful of small settlements, sometimes single houses, connected by tracks and unsurfaced roads. Land use is dominated by sheep farming and punctuated with settlement structures that have created in their hinterlands 'tamed' environments, pastoral in appearance, with fields and pathways bounded by the visually arresting, though non-native, gorse. This gorse, is in fact, a distinctive feature of the cultural landscape of settlement in the FIs. Houses are traditionally made from wood and the vernacular style is to paint these vividly: whites, reds and blues.

Although farming on the Islands dominates land-use, today it represents a very small percentage of the economy, with the fishing industry (predominantly through licence fees) making up 50% to 60% of annual GDP, and the tourism industry recently outflanking agriculture. Until the late 19th century farming was rooted in the settler practice of cattle ranching, but transitioned to sheep, from which a

significant and world-renowned wool-based economy has emerged. The organisation of the Islands' farming way of life was based around a small number of extensive farms within which remote communities worked for largely absent owners/ landlords. Through a post-conflict process of land reform, this system was scaled-down: farms over the last generation were broken up in to smaller units – still comparatively large – within which a new group of working farmers with different social and professional mores emerged.

The wool economy continues to dominate farming, although diversification of markets into meat (c. 20%), has occurred in order to build resilience into the sheep sector. This was assisted in part by the establishment of an abattoir in 1992 – enabling markets to be opened up the UK and Europe. Although the economy of the Falkland Islands has changed significantly over the last generation, the wool industry has been active in promoting farming as a viable career for young people (including a recent initiative in schools).

Farming strongly defines readings of the terrestrial environment among official social histories of the FIs, for instance, those curated and displayed in the Island's Historic Dockyard Museum in Stanley. They thus provide one key reference point for linking natural capital to issues of cultural value and benefit. This association is closely connected to histories of settlement and narrated through a strong, association with an adventurous, if tough and unforgiving, way of life in Camp; a way of life crafted in small isolated island communities and practiced across these open and vast landscapes. Although the farming community is now small, with population growth centred on the capital, Stanley, these cultural connections with Camp exist within living memory. Stone corrals from early days of the settlements are still prominent in the landscape and ship wrecks, including the iconic 'Lady Liz' in Stanley Harbour, reveal the link back to days when ship repair and provisioning were important to the economy.

The landscape and culture of the FI is storied, of course, by another more recent event. The 1982 conflict remains an important marker of identity and self-determination in the Falklands. Its legacy remains a material presence in the natural environment, both hidden, through the continuing presence of land mines, and visible, through intentional acts of memorialisation, including the preservation of relics of the conflict.

Yet, as the sentiment by (the then MLA) Phyl Rendell OBE above suggests, the FIs are in a process of change. For decades associated with sheep farming, then with armed conflict, currently the FI are being repositioned as a different place, centred on the value of wildlife, in tandem with a steadily diversifying economy. The Islands' economy now extends beyond farming and fishing, and includes significant and increasing incomes from a growing tourism sector¹, while oil production is on the horizon. The changing economy brings with it different types of work and work-related practices, and different relationships and transactions with the natural world. Thus, while the historical association with sheep farming is important in the FI, new and/or changing work practices and patterns are creating new relations between environment and culture. Similarly, the changing economy intersects with new demographics (e.g. larger number of temporary workers; or larger number of Falkland Islanders with higher education degrees) to foster new patterns of leisure and recreation, and thus transforming the types of activities Falkland Islanders carry out while being outdoors (e.g. running, marathons, mass swims). While the lives of Falkland Islanders are indeed shaping and are being shaped by the environment, this interaction is an evolving one and is not limited to agriculture or to specific social groups.

¹ The FI Tourism Board is planning on increasing tourism income: "The FITB Vision is to: develop a sustainable and economically significant tourism sector. This will involve creating an industry that provides excellent opportunities for residents in Stanley and Camp, and a destination that offers tourists the best possible experience to realise their travelling ambitions" (FITB 2015, p. 5).

2. CULTURAL ECOSYSTEM SERVICES & NATURAL CAPITAL ASSESSMENT

It is against this backdrop that this report presents findings of an empirical study of the cultural ecosystem services and benefits arising from the interaction between people and the natural environment in the Falkland Islands. The findings contribute evidence to a programme of Natural Capital Assessment being implemented by the UK Joint Nature Conservation Committee and conducted by the South Atlantic Environmental Research Institute (SAERI) in the UK South Atlantic Overseas Territories. Funded by the Foreign and Commonwealth Office managed *Conflict, Stability and Security Fund*, the work sits under its Environmental Resilience programme which includes objectives to integrate natural capital considerations into economic and social development planning.

The Assessment involves characterising, mapping and valuing these assets and developing decision support tools that can link this information to the needs of spatial planning across marine and terrestrial environments.

The University of Kent was commissioned by SAERI to undertake the cultural ecosystem services component of the Falkland Islands Natural Capital Assessment. Working under the direction of the Natural Capital Project Manager, Ness Smith, this study is one of a series of CES assessments being undertaken across the inhabited South Atlantic Overseas Territories, and follows a common methodology within a larger NCA process. This includes CES research in St Helena, Ascension Island and Tristan da Cunha.

The Natural Capital Assessment involves thinking systematically about the complexity of managing interdependent environmental processes in terms of their implications for human wellbeing. Accounting for cultural ecosystem services within the practice of natural capital assessment specifically invites consideration of the natural environment as an object of cultural concern and interest. The focus is on building up understanding of the many and diverse ways people interpret and affiliate with the natural environment, and assign it significance. As such, cultural ecosystem services assessment draws attention to, and emphasises, a highly relational approach to the study of natural assets, and the shared - though by no means uncontested - values that cohere in, through and around them.

A general framework for understanding cultural ecosystem services, and their placement within a 'value chain' linking the biophysical domain to human well-being, is depicted in Figure 2 overleaf. This framework informs the overall approach taken by the study of the Falkland Islands natural environment.

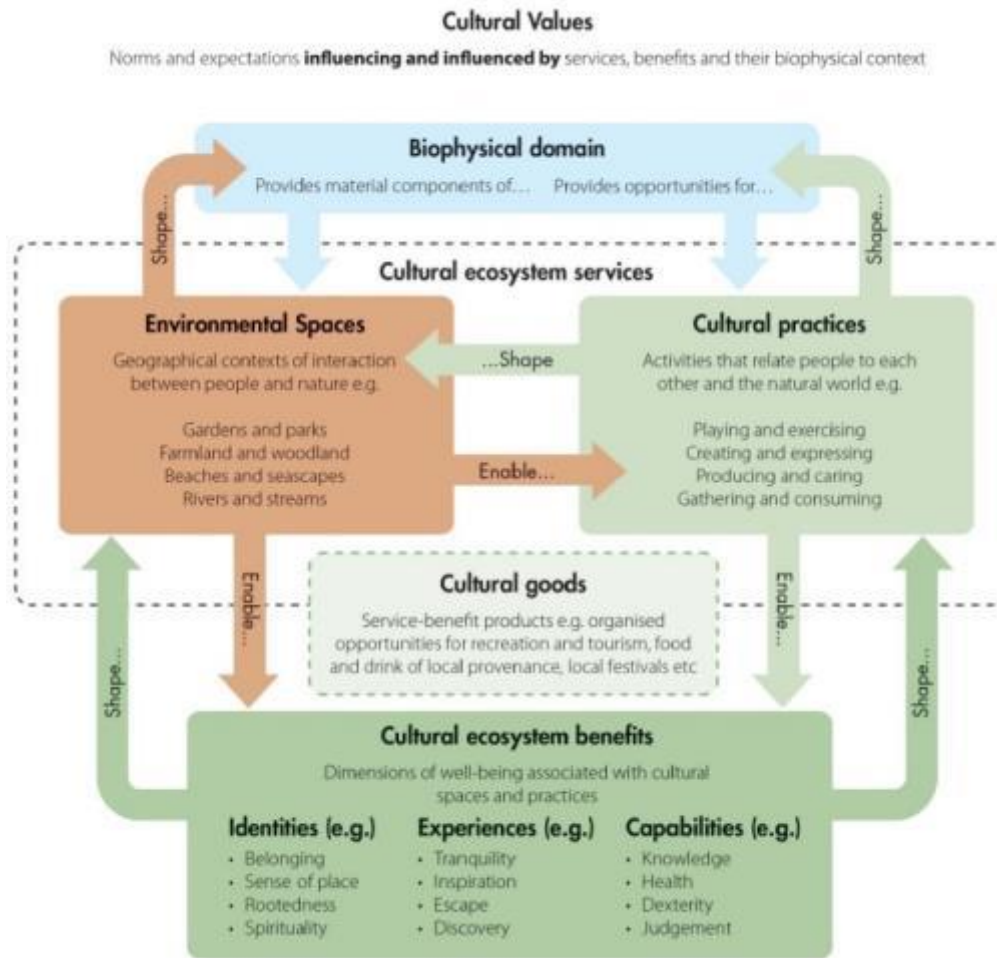


Figure 2. Cultural Ecosystem Services Framework (Source: Fish *et al.* 2016b).

The study of CES in NCA includes general consideration of the way people draw out and construct different ‘pictures’ of the natural environment in terms of its distinguishing features and attributes, and how patterns and elements in nature are qualified and evaluated by people, for example, through judgements of state, condition, taste, preference and quality. At least part of the interest in exploring NCA from the vantage point of culture is that it provides an indication of what people emphasise and prioritise in their local and nearby environments, and where sensitivities concerning the management and planning of natural resources may reside.

Although these generalised understandings of natural capital - and their social and spatial expression - are important to NCA, the overriding and larger concern of Assessment is to understand and empirically characterise the particular ways the natural environment functions as an asset to human well-being. In this respect, CES are described by Fish *et al.* (2016) as the “*contributions that ecosystems make to human well-being in terms of the identities they help frame, the experiences they help enable and the capabilities they help equip.*” An important dimension of NCA from the perspective of well-being is to understand and document the range of activities - or ‘cultural practices’ - enacted by people with respect to the natural world. The study of these practices - which in principle encompass a diverse constellation of physical embodiments and mental apprehensions of the natural world - are important since they represent the “*mechanism by which transactions between the biophysical domain and human well-being arise*”. That is to say, just as cultural practices materially shape patterns and arrangements in nature, so do they condition the environment as a resource of benefit to people. As such, analytical study of these cultural practices is of primary importance to the conduct of NCA from a cultural starting point.

3. METHODOLOGY AND APPROACH TO FI ASSESSMENT

The CES Assessment is based on the findings of an extensive survey and mapping exercise conducted across the FI in 2018. The approach taken builds on an established methodology for CES assessment (Fish *et al.* 2016b) and is included in Appendix Item 1. The survey and mapping instrument was designed by the University of Kent, working in consultation with SAERI. Specific elements of the research design were informed by a field visit undertaken by the principal investigator in December 2017. The visit involved formal discussion with key stakeholders on the culture, history and environment of the FI, observation and fact finding visits to a number of sites in Camp and Stanley, as well as presentation, discussion and feedback on the potential scope of the survey from the Advisory Group of the Falkland Islands NCA.

In general, the survey and mapping process was designed to follow the analytical and thematic considerations of CES assessment outlined in section 2 above, and to build on the findings of existing studies (Augé 2015; Blake *et al.* 2017)². Specifically it: examines how Falkland Islanders interpret the FI natural environment in terms of its distinguishing qualities and characteristics; captures the nature and diversity of cultural practices the FI natural environment enables and supports and; assesses the implications of these interactions for the well-being of people. In three salient respects, the study pays particular attention to the differentiated nature of these processes:

- First, the study aims to understand the full array of peoples' interactions with the natural environment on the FI. Specifically, it incorporates, but significantly extends understanding beyond, a 'leisure' orientated view of the cultural ecosystem benefits arising from peoples' interactions with nature. Leisure has provided one of the archetypal contexts in which studies of CES understand people as relating to, or even being 'in' nature, but this focus is highly partial and artificial as an interpretation of cultural practices, not least in the way it obscures the importance of work as a venue and context for cultural interactions with nature.
- Second, the study is concerned with discerning differences in these patterns and associations as they relate to social identities of Falkland Islanders. In the ES literature, societal difference has only recently started being taken into account (Brooks *et al.*, 2014; Caceres *et al.*, 2015; Chaudhary *et al.*, 2018) with consideration of the interrelation between CES and societal difference largely undeveloped. The evidence that exists suggests that many of the benefits associated with CES are mediated by identities such as class, race, gender or age (e.g. White *et al.* 2017).
- Third, the study is concerned with understanding how interpretations of, and interactions with, the natural world vary across space: that is, with respect to specific sites, places and areas of the FI. Mapping was an important dimension of our approach towards spatial explicitness.

² Work by Augé (2015) and Blake *et al.* (2017) has highlighted the value of the coasts and the near-sea environment in the FI for marine spatial planning. Augé (2015), found that natural beauty, recreation and connection to home and history were the most important coastal related CES in the FI, and that Falkland Islanders viewed the Island's wildlife and natural environment as an important part of their national identity. In Blake *et al.* (2017) the focus was on mapping four values along the coasts of the FI. They found that the Outer Islands were the most significant for natural beauty; Saunders Island, Keppel Island, the wrecks near Stanley and San Carlos for cultural history; the area near Stanley (including Stanley Common) for recreational value; and Stanley and Hill Cove for sense of place. Areas around Stanley had the highest levels of multi-value attachment, followed by Carcass, Saunders and Sea Lion Islands, and Bull Point.

3.1 The mapping methodology

Quantitative mapping is important to the practice of Natural Capital Assessment, and for Cultural Ecosystem Services (CES) largely falls into two categories: mapping using landscape features (e.g. certain habitats are associated with certain CES), and mapping using volunteered information, either from surveys or web-volunteered data (e.g. nature photographs uploaded to a publicly-open website such as Flickr or Instagram). Mapping using landscape features such as habitats or natural designations, can be referred to as a ‘potential-for-CES’ mapping. It is a fairly straightforward approach suitable for areas that have been surveyed extensively (such as EU countries), and can lead to time and space comparable results mainly from a natural science perspective – assuming one is willing to disregard the social and individual complexities inherent in the production/provision of CES. As such, this type of mapping has been incorporated in continent or national surveys and assessments (e.g. Maes *et al.* 2018), but is not compatible with the objectives of this project. Mapping using volunteered information is the most established method for capturing CES. In its mail survey varieties³, a questionnaire is sent out by mail to the population under study, along with a map of the area under study. Individuals fill in the questionnaire and mark areas on the map that they think are important for a variety of reasons. These reasons are usually pre-determined, and they are related to the various ways CES have been scientifically grouped into typologies.

The core methodology we used relied on collecting survey data from residents of the Falkland Islands, in combination with mapped points for sites they visit for work or leisure, places they think are iconic for the FI and places they feel negative about. It is adapted from Fish *et al.* (2016a), who combined a survey with simultaneous mapping by the respondents to map areas of CES.

To source the locations where people interact with nature, we sent a series of gridded maps along with the questionnaires, and asked respondents to mark the grids where they interact with nature (four maps: “essence of the natural environment”; “places of work”; “places of leisure”; and “places you feel negative about”; see Appendix Item 2). However, the vast majority of respondents did not interact with the gridded maps we sent, thus we changed our proposed methodology and relied on the following approach. To map the locations where people stated they interact with nature we used the technique of web-based geocoding. We took their written answers, e.g. “Cape Dolphin”, “Surf Bay” or “Mt Longdon” and using the *ggmap* package (Kahle and Wickham 2013) we accessed the Google Maps Application Programming Interface and established the spatial location for each place mentioned by the respondents. Regarding places for which Google Maps did not have in its database, we relied on Mapcarta (<https://mapcarta.com>), or on PCGN (2006). For places that were not included in all of the above, we relied on local knowledge. There are several issues with this approach, but the most important one, and the one which it shares with most CES mapping methods, is the mapping of places as locations (i.e. points) on a two dimensional map. We briefly discuss this issue at the end of Section 4.1 of the report.

³ Mapping using web-volunteered information is increasingly used to map cultural and other ES. In the FI context, where internet connections are not reliable, this type of methodology would be difficult to use for assessing and mapping the CES. However, it could be a useful methodology for assessing the “tourist gaze” of the FI (Royle 2006), i.e. what tourists see as the Islands’ important features. As Kate Sherren noted “the geographical and connectivity issues in the Falklands made a more typical web-based PPGIS (public participation GIS) process impossible, and so it called for careful design to elicit values from citizens” (<http://katesherren.org/index.php/2017/08/24/falklands-ppgis-paper-out/>). K. Sherren is a co-author of Blake *et al.* (2017) on coastal CES in the FI.

3.2 Survey implementation and response

The questionnaire was sent to every household in the FI (n= 1600) with an instruction of self-completion and return by an adult member of the household (over 16 years old). To publicise the survey and the intentions behind the project, SAERI and University of Kent wrote awareness raising articles in the FI's weekly newspaper (Penguin News) (See Appendix Item 3) and appeared in radio interviews to encourage interest. A total of 110 questionnaires were returned through this process, out of which 105 were usable for our purposes (6% return rate). Demographic analysis of the profile of respondents was conducted to determine social categories that were underrepresented in the initial returns. The dataset was grown through a second round of questionnaires, following the same questions but based on face-to-face completion. We specifically targeted younger males living in Camp. This brought the total number of completed questionnaires to 155. The demographics of the respondents roughly align with the demographics of the FI population circa 2016 (Table 1), with an exception regarding the education levels of the respondents; Falkland Islanders with tertiary education are overrepresented in the sample in comparison to Falkland Islanders with secondary qualifications or no qualifications at all.

Table 1. Demographics of survey respondents in comparison to FI population

| | Population (2016 census)* | Sample |
|---------------------------|---------------------------|--------|
| <i>Place of residence</i> | | |
| - Stanley | 2460 (86.6%) | 70% |
| - Camp | 342 (12%) | 20% |
| - Surrounding Islands | 40 (1.4%) | 2% |
| - Stanley/Camp | - | 2% |
| - Stanley/UK | - | <1% |
| - Mount Pleasant Camp | Excluded | <1% |
| - UK | - | <1% |
| <i>Gender</i> | | |
| - Male | 1452 (51%) | 43% |
| - Female | 1390 (49%) | 57% |
| <i>Age</i> | | |
| - 16-24 | 277 (10%) | 15.5% |
| - 25-34 | 375 (13%) | 11% |
| - 35-44 | 497 (18%) | 20% |
| - 44-54 | 450 (16%) | 15.5% |
| - 55-64 | 343 (12%) | 17% |
| - 65+ | 345 (12%) | 20% |
| <i>Education</i> | | |
| - No qualifications | 441 (15.5%) | - |
| - Primary | 119 (4%) | 2.5% |
| - Secondary | 1212 (42%) | 20% |
| - Vocational | 481(17%) | 20% |
| - Tertiary | 576 (20%) | 53.5% |
| <i>Employment status</i> | | |
| - FT and PT employees | 1497 (52.5%) | 53% |
| - Self-employed | 235 (8.3%) | 17% |
| - Retired | 350 (12.3%) | 14% |
| - Unemployed | 21 (<1%) | <1% |
| - Student | - | 5% |

* For calculating percentages with reference to the total population, we took the total population to be the sum of Stanley, Camp and Surrounding Islands, excluding Mount Pleasant Camp.

not very exotic, not as exciting as you would expect, tame, sparse); or as one respondent simply put it, “Mordor”⁴. Interestingly, another Lord of the Rings metaphor used by a (different) respondent brings these two visions together, i.e. the FI as a place that can be both beautiful and bleak. He writes that the FI are “[b]arren but beautiful; vast; simplistic; open spaces; amazing sunrises and sunsets; clean air; Lord of the Rings scenery; pastels; windy”.

The picture emerges of the FI as a place of a ‘sublime’ nature where, to follow the slogan of the tourist industry “*nature is still in charge*”. Either through its beauty and wildness, its bleakness, or through both, the FI environment is dominated by the way “nature” defines it: blandness, bleakness, windiness, and its unique wildlife, biodiversity, sunsets, or air. As two respondents aptly summarised it, the FI environment is:

Remote; Desolate; Isolated; Bleak ... Sometimes frustrating but always keeps you interested, surprised, and makes you realise just how good it is to be alive.

Beautiful; wild; barren; bleak; stark; dramatic; fantastic birdlife; delicate flora; wide-open landscapes; ever-changing skies; empty and remote.

We might note that these sublime constructions resonate strongly with the last verse of the Islands’ unofficial national anthem⁵:

*Now we’re off to the Falklands, so wild and so free,
Where there’s tussock and kelp and the red diddle-dee,
And the wild rugged beauty that thrills more than me
Is bred in the bones on the isles of the sea.*

The general characteristics of the environmental spaces outlined are further reflected in the respondents’ choice of what we could call the paradigmatic or iconic places of the natural environment for the Falkland Islanders. The survey asked respondents to name three places that “capture the essence of the FI environment”. The most prominent places listed by Falkland Islanders are particular outlying islands that have become iconic for their wildlife (Figures 4 and 5). In total, 18 outlying islands are mentioned at least once by the respondents and make up 33% (127) of all places mentioned, while just three of them (Sea Lion, Carcass and Jason Islands) make up 45% of them. The most popular is Sea Lion Island⁶, currently a popular tourist destination but a sheep farm until the late 1990s. It is famous as a breeding place for Southern sea lion and Southern elephant seal vulnerable and endangered birds such as Cobb’s wren and ruddy-headed goose as well as a number of other species such as gentoo, rockhopper, and Magellanic penguins and the southern giant petrel⁷. Similarly, Carcass Island, the Jason Islands, and the other outlying islands seem to best represent the “*beautiful, wild, and barren*” environment of the Falklands, with abundant wildlife in isolated, bleak environments. Port Stephens, which also features prominently in the answers, is a settlement in the West Falklands, whose landscape is highly rugged and thought to be amongst the most scenic in the FI. Other notable groups of places mentioned are: the

⁴ In J.R.R. Tolkien's fictional world of Middle-earth, Mordor is the realm and base of the arch-villain Sauron. It is described in the book as akin to hell, mountainous, with very little vegetation.

⁵ The official anthem of the FI is UK’s “God Save the Queen”. The verse cited comes from “Song of the Falklands”, written by Christopher Lanham was adopted in the 1930s as the local unofficial anthem (CIA Factbook, https://www.cia.gov/library/publications/the-world-factbook/geos/print_fk.html).

⁶ The FI tourist board notes: “The island is no longer farmed so native vegetation predominates. Birders will find many species of interest including Cobb’s wren and Magellanic snipe. *This is most definitely an island where nature is still in charge.*” (<https://www.falklandislands.com/explore/the-islands/sea-lion-island>, emphasis added).

⁷ Information from the Ramsar Convention: <https://rsis.ramsar.org/rsis/1104>.

wider Stanley area and peninsula (Surf Bay, Gypsy Cove, Cape Pembroke) which represent 12% (44) of the total places mentioned; mountains (6%, 23) and; beaches, bays and coves (16%, 62).

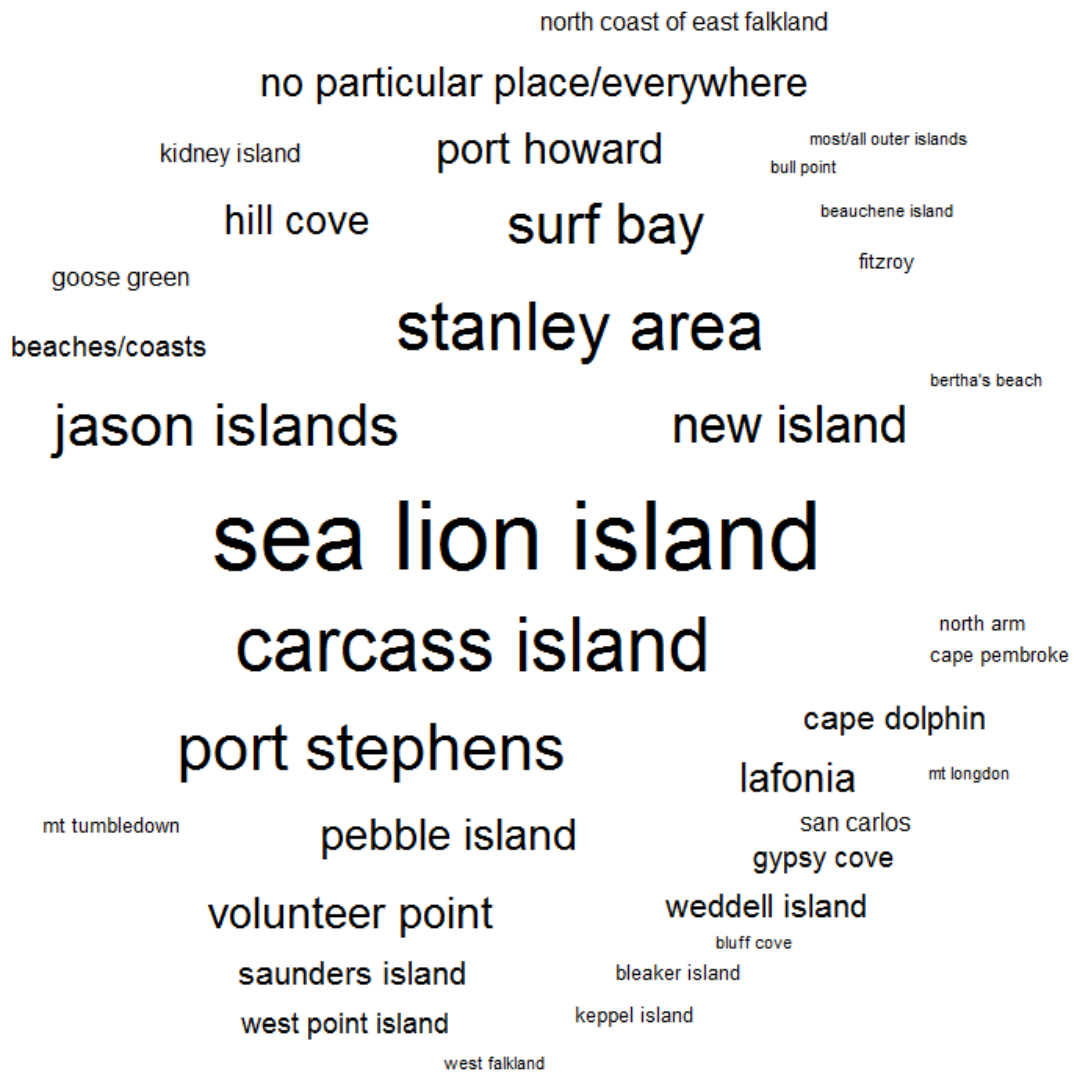


Figure 4. Places capturing the essence of the FI natural environment.

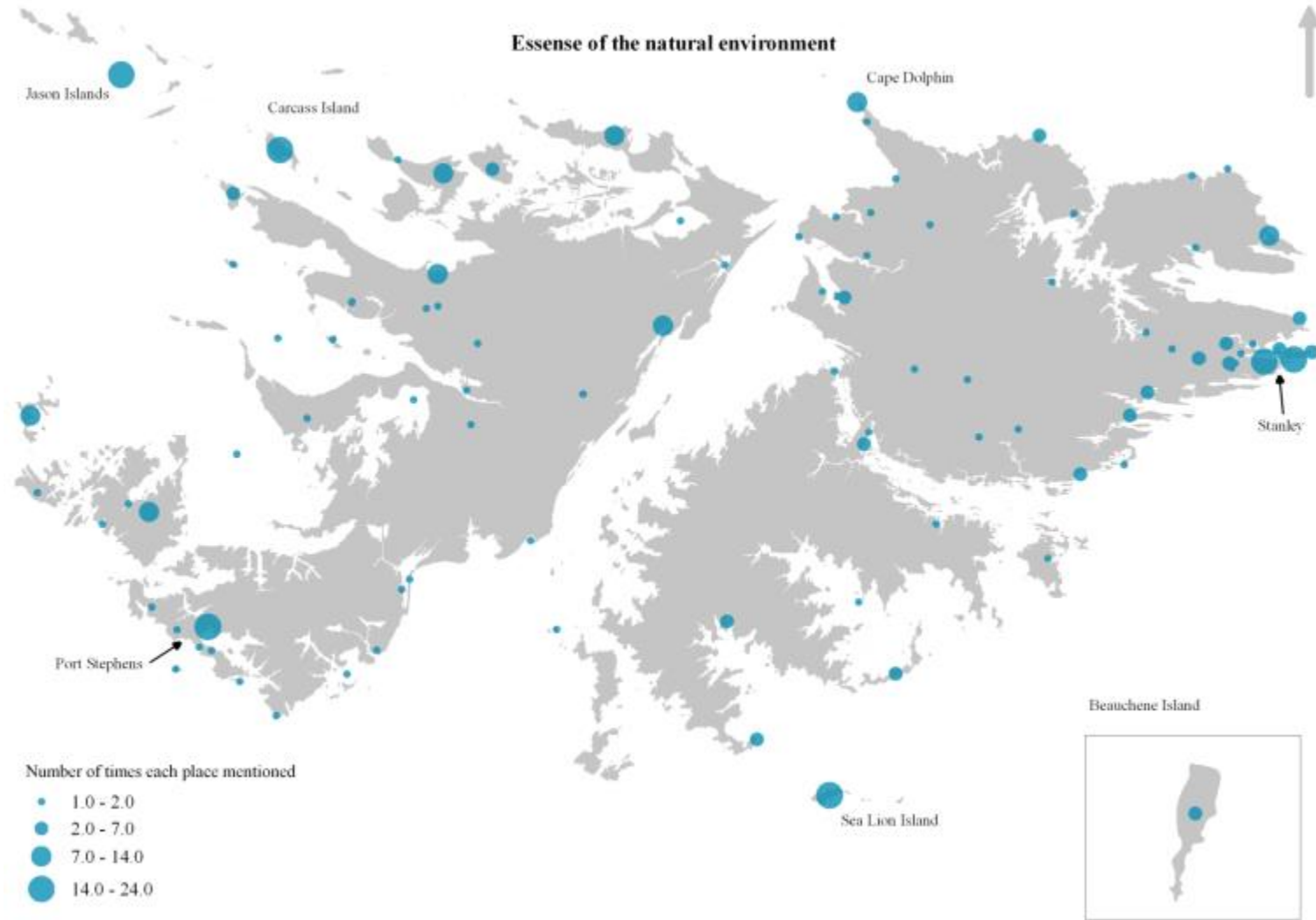


Figure 5. Places that capture the essence of the natural environment in the FI.

An interesting counterpoint to the notion that nature is ‘still in charge’ on the FI is found in the way respondents frequently wrote of human activities that despoil the environment. In asking respondents to consider places in the natural environment they might feel negative about – (for instance, places changing for the worse or neglected, or places they felt are unpleasant, disagreeable or threatened in some way) - it was the waste disposal area serving the capital, Stanley that emerged as a recurring concern. As we can see from the word cloud below (Fig. 6), most respondents (57, c. 1/3 of the sample) name Eliza Cove (the “*rubbish dump*”) as the place they feel most negative about.

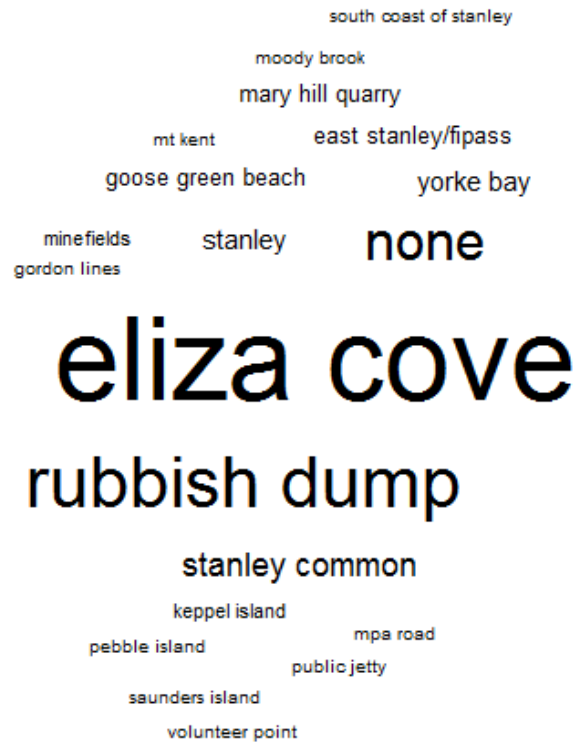


Figure 6. Places Falkland Islanders feel negative about.

The feelings associated with the place are very strong, as the following selection of quotes demonstrate:

Eliza Cove rubbish dump: this is a national disgrace (alongside all other open rubbish dumping sites).

*Eliza Cove: This is a national embarrassment. We have millions in reserve but haven't been willing to invest in proper management of our waste. Shameful!*⁸

The dump in Stanley: shame to the community.

Eliza Cove and surrounding area: embarrassment, disgusting, Falklands should feel ashamed!

Stanley rubbish tip/dump: It is an environmental disgrace.

⁸ The FI Government in their 2018 budget, released after the survey was undertaken, has devoted £600,000 “as a first step in improving waste management”. The Government notes: “We have listened to the public when they have told us that they are concerned with our current waste management practices, and so this year we will launch a new strategy to support a more environmentally friendly approach to waste” (<http://www.falklands.gov.fk/assets/Budget-environment-long-form-content.pdf>).

The issue with rubbish and or pollution is not confined to Eliza Cove, as many respondents felt that waste management is lacking in the FI as whole.

Stanley Harbour along Ross Road: when you see things floating in the water like baby wipes, sanitary pads; everywhere where beaches are cluttered with man-made plastics and debris especially tip (Eliza Cove) - disgraceful!

Berkeley Sound - marine debris in what's found to be a wildlife sanctuary.

Natural environment is very stunning, but has been let down by the amount of litter/pollution across settlement, beaches.

The beaches around Port North: are a mess with fishing rubbish. I've not seen so much mess elsewhere in the islands.

Although Stanley rubbish dump (and other dumps across the FI) dominated these sentiments of about national or community “shame”, “disgrace” or “embarrassment”, there were also additional places that mentioned in the responses. A common feature for a relatively large number of these places is that they reflect more or less recent (or future) changes in the economy of the FI. New industries, most commonly tourism but also oil exploration are seen as risks to the environment of the FI. For example, two respondents argued:

Destinations that are Government owned and not look after e.g. Bertha's Beach; not managed with visitors around the wildlife. No wildlife will stay if they keep letting people go there without a warden. Just 'higgledy piggledy' management.

Nearer 1982 Battlefield areas, eg Mt Tumbledown and Wireless Ridge in particular. An increasing number of visitors to these sites are destroying the access routes and leaving rubbish everywhere!

FIPASS East to Boxer Bridge: It is a mess and an eye sore. This area will get worse as the oil industry develops - but so much junk down that way already.

In contrast, others are more worried that tourism will lead to a “rewilded” FI, and perhaps erase elements of historical heritage – in the effort to attract nature tourism in newly “pristine” places.

Keppel Island: An important historical island for the Falklands, as well as being very beautiful. Now it is 'cleaned' to visitors and the historic buildings falling into ruin.

Bird Island – this is one of the most pristine areas - it captures what the Falklands were and hopefully could go back to in part; Kidney Island - same as above.

There is a general worry that as FI changes, it risks losing part of its natural, cultural or ‘natural-cultural’ heritage. For most that is a negative thing; for some, it is an unavoidable part of development.

Generally you can see the impact around the Islands of development. Not necessarily a bad thing, but not nice to see. I guess unavoidable.

The concerns of residents about the changing economy resonate with an interesting dialectic between isolation and connectedness that is implicit in the responses we received, especially when viewing negative and iconic places in combination. On the one hand, the FI are isolated oceanic islands, uninhabited for millions of years with an extremely brief social history, and very important natural history (Grove, 1985). The isolation and remoteness of the islands is seen by the respondents as an essential element of the natural environment, and it has both negative and positive aspects. On the other hand, the FI after habitation have never been truly isolated, but inescapably connected to world trends and events, and particularly so after the 1980s, with important changes happening in the Islands’ economy (break up of large farms, selling of fishing rights, more recently tourism). These changes are

bringing FI closer to the rest of the world, out of its “isolation”, a fact for which our respondents harbour both critical and positive opinions, not only for society, but for the biophysical environment too.

Although *places-as-places* were the dominant category mentioned by the respondents for both iconic and negative places (e.g. “Goose Green”, “Volunteer Point”, or “Eliza Cove”), a significant amount of locations that are not usually understood as places in the CES literature was also mentioned. These range from contiguous territories (“Lafonia”, “West Falklands”, “West”), to non-contiguous (“outer islands”, “North West islands”) implying that places can exist at many scales (Cresswell 2009), and thus hinting at the complexity of assigning specific CES to specific locations (i.e. specific coordinates in abstract space). Relatedly, many respondents did not mention particular places, but “places” that are united by a common natural characteristic, activity or practice. Thus respondents mention “coasts and beaches” (see Blake et al. 2017 for the importance of the coast for CES in FI), “rolling hills”, the “[Wickham Heights] mountain range”, or “mined areas” and “minefields”. Respondents also mentioned “rock runs” or “stone runs”, a series of peculiar rock formations that are scattered around the islands, which among many others also impressed Charles Darwin when he visited the FI⁹ in 1833 and 1834. They also mentioned “diddle-dee [berry] bushes”, “where my sister lives” or “1982 Battlefield areas” with no geographical references.

4.2 Practices in nature

Work

For the majority of Falkland Islanders, being outside as part of their work is a very frequent occasion. Circa 53.3% of the employed respondents reported that going outside is a feature of the work almost every day or more, while only 30% reported that they rarely or never go outside (Table 2).

Table 2. Frequency of working outside, in nature. Survey question: “How often does going outside feature in your work?”

| Frequency of working outside, in nature | Number of respondents | % of respondents |
|---|-----------------------|------------------|
| All the time | 26 | 16.7% |
| Every day | 26 | 16.7% |
| Most days | 14 | 9% |
| Quite Often | 28 | 18% |
| Very rarely | 21 | 13.5% |
| Never | 17 | 11% |
| Not Applicable | 23 | 14.8% |

Statistically significant sex, education, place of residence, age and employment interactions with frequency of working outside (Chi-square tests $p < 0.05$ for all categories; see Appendix Item 4) were identified:

- Women are more likely to rarely or never work outside.

⁹ Darwin devoted two pages (196 – 199) of his *Journal of researches into the natural history and geology of the countries visited during the voyage of H.M.S. Beagle round the world, under the Command of Capt. Fitz Roy* to describing the formations. He wrote (p. 197): “In many parts of the island the bottoms of the valleys are covered in an extraordinary manner by myriads of great loose angular fragments of the quartz rock, forming “streams of stones.” These have been mentioned with surprise by every voyager since the time of Pernety.” <http://darwin-online.org.uk/content/frameset?viewtype=text&itemID=F14&pageseq=209>.

- Respondents with secondary degrees are more likely to work outside, usually for performing scientific research and teaching.
- People that live in Camp or the Outer Islands are much more likely to work outside.
- Older Falkland Islanders, more than 55 years old, are more likely to go outside as part of their work than younger ones. In contrast, very young people, less than 25 years old, do not get to spend time outside as part of their work.
- Almost all self-employed respondents reported that being outside is a feature of their work time most days. In fact, 50% reported that they are outside while working all the time.
- Permanent residents are more likely to be outside as part of their work when compared to temporary residents.

To understand what kind of practices and activities bring people outside, we asked respondents to list what kind of work they do outside. During the analysis stage we coded their answers as seen in Figure 7 below. Considering that more than half of the people that go outside every day to work live in Camp or in the Outer Islands (see Appendix Item 5), it is not surprising that the most common work-related activity that brings Falkland Islanders outside is farm-related work.

The second and fourth most popular activities, guiding and driving tourists, are testament to the changing economy and culture of the FI. The tourism economy, driven primarily by nature and cruise tourism, is increasing its share in the national accounts. Many Falkland Islanders, in fact c. 25% of the economically active respondents, are in some way working in the tourism sector, mainly as tour guides. Interestingly, considering that the FI is an archipelago of c. 800 islands, we found among our respondents that marine and fishing-related activities are not a main feature of the work-related practices in nature in the FI. While whaling and other sea-related activities are part of the FI heritage, and despite the fact that fishing licences to foreign fleets are a significant income for the FI's national accounts, fisheries and generally the sea is absent from work-related practices and activities. Exceptions to that rule would be scientists and field workers collecting data or surveying in the sea such as "cetacean spotting" or "field work such as penguin counting and whale surveys".

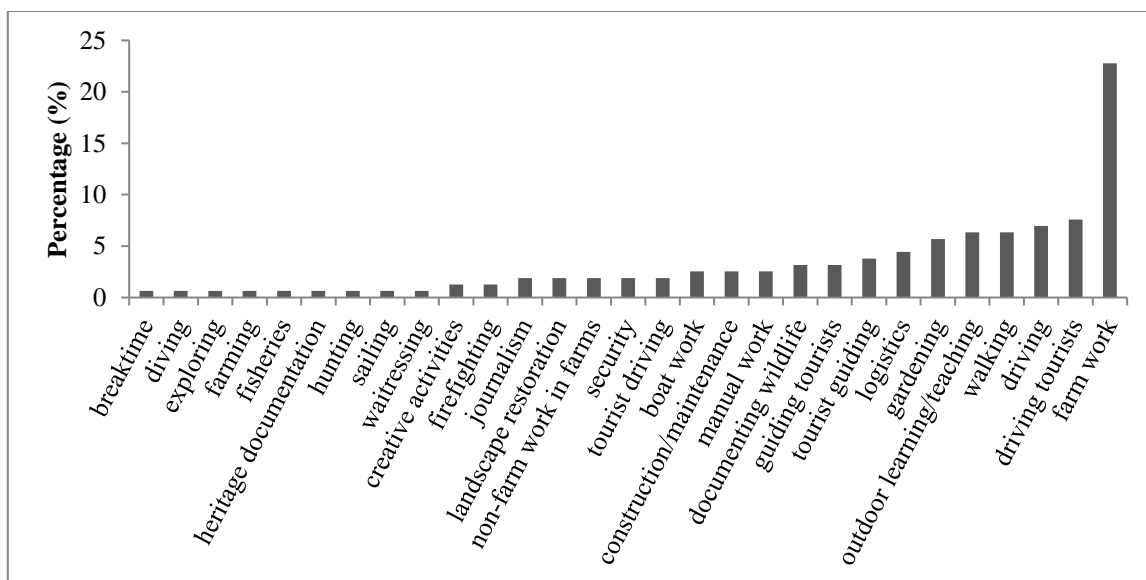


Figure 7. Activities, or practices, performed outside while working. Percentages refer to people who answered that they do work outside, or that they do go outside while working ($n = 98$).

In accordance with the frequency of working outside, different social strata of the FI population are engaged in different activities while working in the natural environment. In Figure 8 below we present some contrasts for sex, employment, residency status and age. What this finding hints at is that there are differences in the way cultural practices are spread across society, with some activities more common and others rarer in particular strata. For example, women are less likely to be engaged in farm-related activities than men, and more likely to experience natural settings while working as teachers. A female teacher responded that she does “[p]layground duty, lessons out in playground ... [and takes children to] *Kidney Island school trip*”, while another noted that she takes “*field trips with children, monitoring trips to educational settings around the islands*”. Similarly, for other social stratifications, the activities that relate to nature are often completely different (e.g. between full-time paid workers and the self-employed), although farming related activities seem to be the most common across society (with the exception of non-permanent residents).

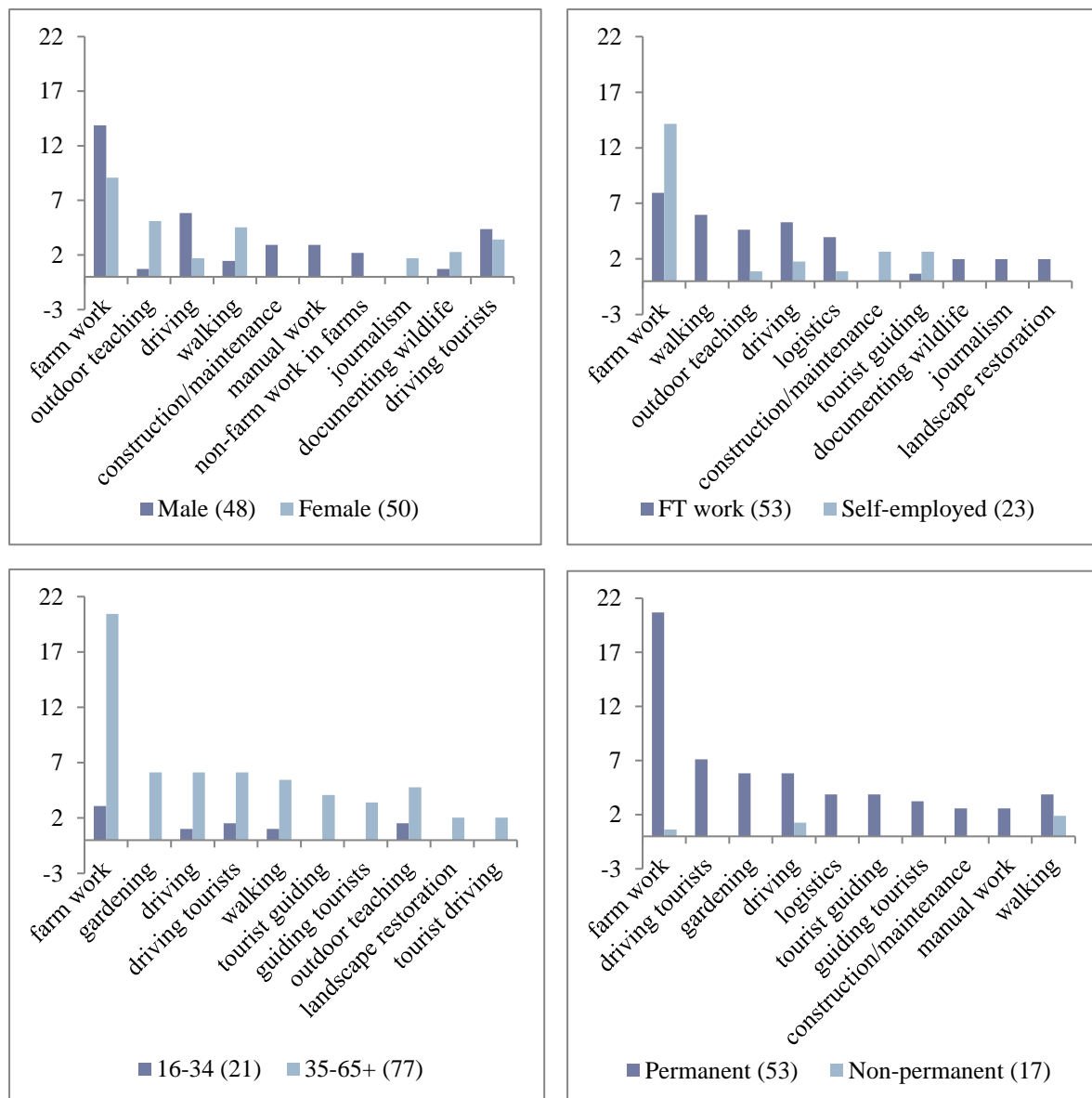


Figure 8. Work activities and their relation to different social strata. Clockwise from top left: gender, employment type, age and residency status. Sample size per category in parentheses. Only the 10 activities with the largest differences between categories are shown.

Thus, farming appears as the activity that is not only the most dominant work-related cultural practice in the Falklands, but it is also the one that is almost the common across several social strata. Although the FI farming community nowadays is small and the economy has diversified, with population growth now centred on Stanley, cultural connections with agriculture and sheep farming do exist and as our results reveal are actively maintained through particular practices that relate Falkland Islanders to the natural world. Open answers to the question “Can you tell us a bit more about the kind of work you do outside” reveal that there is indeed a variety of activities and practices associated with farming, both traditional and more modern.

Milking cows in the morning getting them back in in the afternoon, shut the calves in, when lamb marking out all day doing that.

The third job [farmer] is only 50 acres - so doesn't take up much time - walk around the paddock once a month checking fences and check the sheep once a week (ish).

Working islands - using boat, working in [withheld] - mountains, All revolve around sheep and working dogs and cattle.

Any farm work e.g. sheep cattle, creating gardens / veg flower; clearing beaches of plastic rubbish etc, Normal farm work and occasionally helping [withheld] with sheep work.

The environmental spaces where Falkland Islanders interact with nature while working outside can be seen in Figure 9. The first point to note when analysing the map is that the majority of points are in or close to settlements, which is to be expected, since most people would work close to where they live. Secondly, we can see that the area around Stanley has the highest density of points, again, to be expected since c. 90% of FI population lives (and most of them work) in the capital. Other relatively big settlements such as Goose Green and Port Howard are also represented multiple times in the map. We can also note the scattered dots in Camp which represent farming practices and form the majority of cultural practices that relate work and the environment in FI. Noticeably, a significant amount of the dots we see in Camp or Outlying Islands represent tourist guiding activities, which are also major work-related practices that take Falkland Islanders outside and allow them to interact with nature – practices that could increase in the future in proportion to farming, as the FI are further economically diversifying away from agriculture.

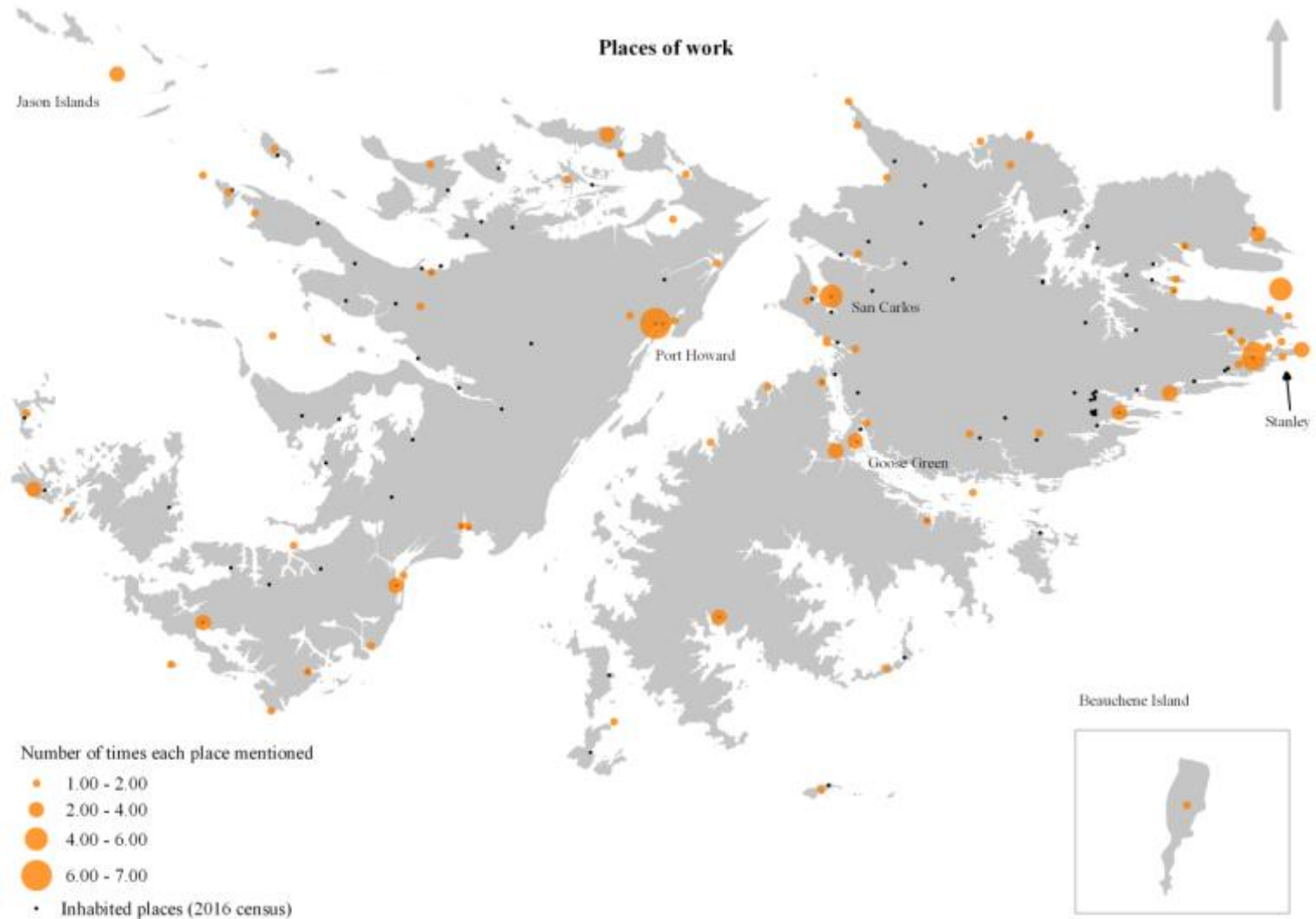


Figure 9. Places where Falkland Islanders interact with nature while working.

Leisure

Cultural ecosystem services are also associated with activities and places people do and visit during leisure. We asked a range of questions related to leisure and the natural environment in the FI, grouped around frequency of outdoor leisure activities, type of activities, and places visited. We also investigated the effects of social stratification on these types of practices. The general finding would be that almost all Falkland Islanders (>90%) are spending time outdoors during their leisure time, with no significant interactions recorded for sex, age, employment, residency status, place of residence and education (Chi-square tests $p > 0.05$) stratifications. Furthermore, Falkland Islanders are spending leisure time outdoors fairly frequently, since c. 70% do that more than most days (Table 3), also with no evidence of significant social stratification (Chi-square test $p > 0.05$, Tables 7 to 12 in the Appendix), except for place of residence, which indicated that people in Camp are more likely to spend leisure time outside (Chi-square test $p < 0.05$).

Table 3. Frequency of outdoor leisure.

| Frequency | No of respondents |
|------------------------|--------------------------|
| All the time | 6 |
| Everyday | 36 |
| Most days | 56 |
| Most weeks | 40 |
| Less than once a month | 6 |

As expected from such frequency of outdoors leisure, Falkland Islanders are enjoying a variety of outdoors activities during their leisure time (Fig. 10). The most popular activities (mentioned by > 50% of respondents) are short walks or gentle strolls around nature spots, general wildlife watching and observation, eating outside in the natural environment e.g. barbeques, sitting & contemplation of natural scenes, foraging (such as diddle-dee berries or “egging”¹⁰) and driving cars off-road (“off-roading”)¹¹. While the former three practices are probably quite popular in places across the world, the egging and off-roading are less so. Here, the relational construction of CES becomes clear, as both practices are the product of particular environmental spaces and the human histories and societies that interact with them. The lack of roads on the island, along with its sparse population density, make off-roading an almost everyday practice for Falkland Islanders - in contrast to much of the world. Off-roading nowadays is a common leisure activity (e.g. on the weekends), and involves using a 4 x 4 car or off-road bike to roam on the islands.

Leisure activities related to nature are not only taking place outside though. To reflect this, we asked respondents to select from a list which activities they performed at home, or inside. As expected for such a remote island with a big tradition in farming and agriculture, preparing local produce is by far the most common activity with over 80% of respondents enjoying dishes made from local ingredients. This is followed by displaying art from the FI such as photographs and paintings, and by another activity which is iconic for Falkland Islanders; spinning, felting, or knitting using local wool.

¹⁰ Egging is the foraging practice of collecting wild bird eggs. It is allowed in the Falklands, and collection is regulated by the Government (e.g. which bird species’ eggs one is allowed to collect). <http://www.fig.gov.fk/epd/environment/egging-licenses>.

¹¹ See Blake et al. (2017, 198): “in the Falkland Islands, the road network is both poor in maintenance and coverage with the majority of travel occurring over rough countryside in 4 x 4.”

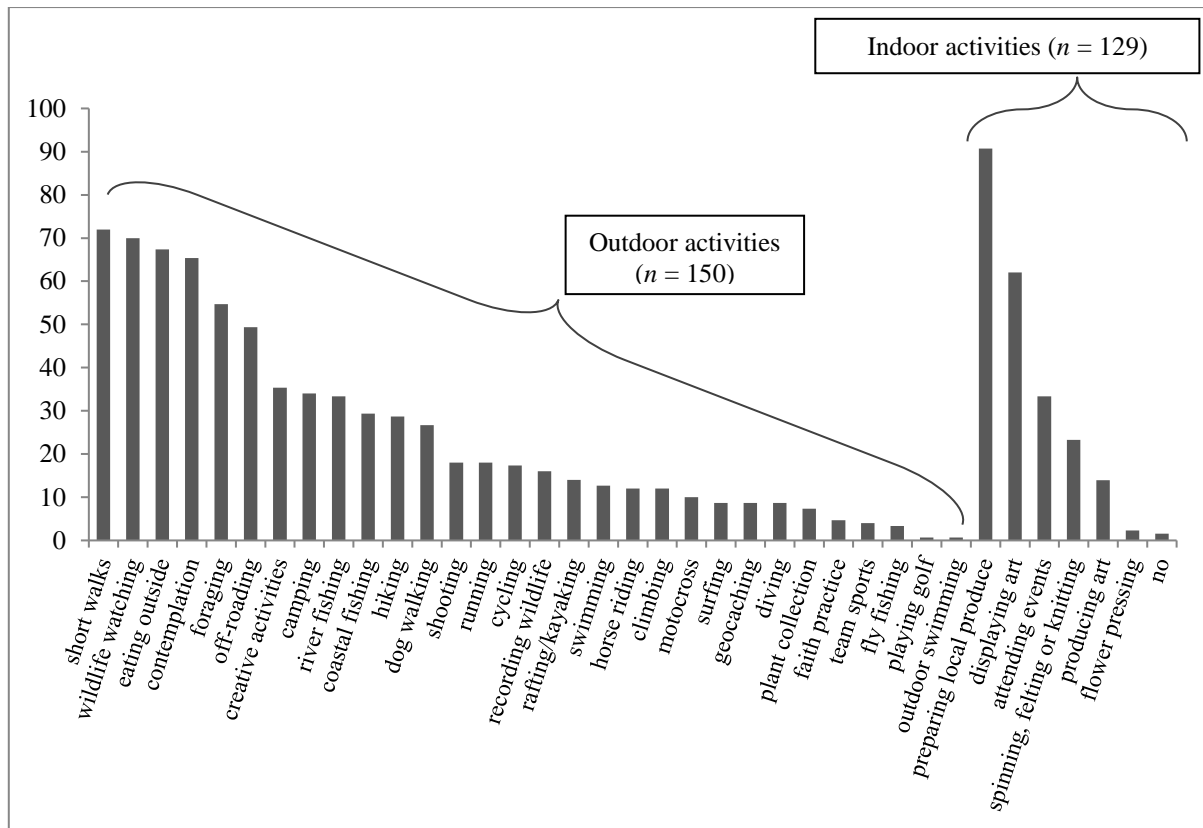


Figure 10. Indoor and outdoor activities carry out by Falkland Islanders in their leisure time.

In contrast to work activities outdoors, the frequency of leisure outside did not seem to differ along social axes. The number and type of activities pursued outside do seem to differ (Fig. 11), albeit visibly less than work-related activities. Most activities are common across social strata, with the exception of some interesting cultural practices. For example, running, cycling and hiking seem more popular amongst non-permanent residents, indicating that perhaps it is an activity not associated with indigenous Falkland Islander cultural practices. On the other hand, non-permanent residents seem to go foraging much less than permanent residents for whom it is a top overall activity, as well as being among the most popular activities across the other social stratifications presented below. As perhaps would be expected, foraging is most popular in Camp, correlated to the higher percentage of Falkland Islanders living there. There are interesting parallels between male and female and older and younger respondents, who mainly differ in the ranking of activities and not the activities themselves, hinting that outdoors leisure activities are enjoyed by all.

To gain a better sense of the amount of different activities Falkland Islanders pursue in the natural environment in their leisure time, we also computed the number of different activities each respondent carries out from the aforementioned list. The mean number of activities is 7.46 (median = 7), indicating that on average Falkland Islanders do indeed enjoy a range of different outdoors activities. The number of activities did not significantly differ along place of residence, residence status, education, or sex (Appendix 7). It did differ along age and employment classes (Kruskal-Wallis test, $p < 0.01$), with the youngest and oldest respondents being the ones that participate the least in outdoors leisure activities (*post-hoc* pairwise comparisons, Wilcoxon rank sum test, $p < 0.05$).

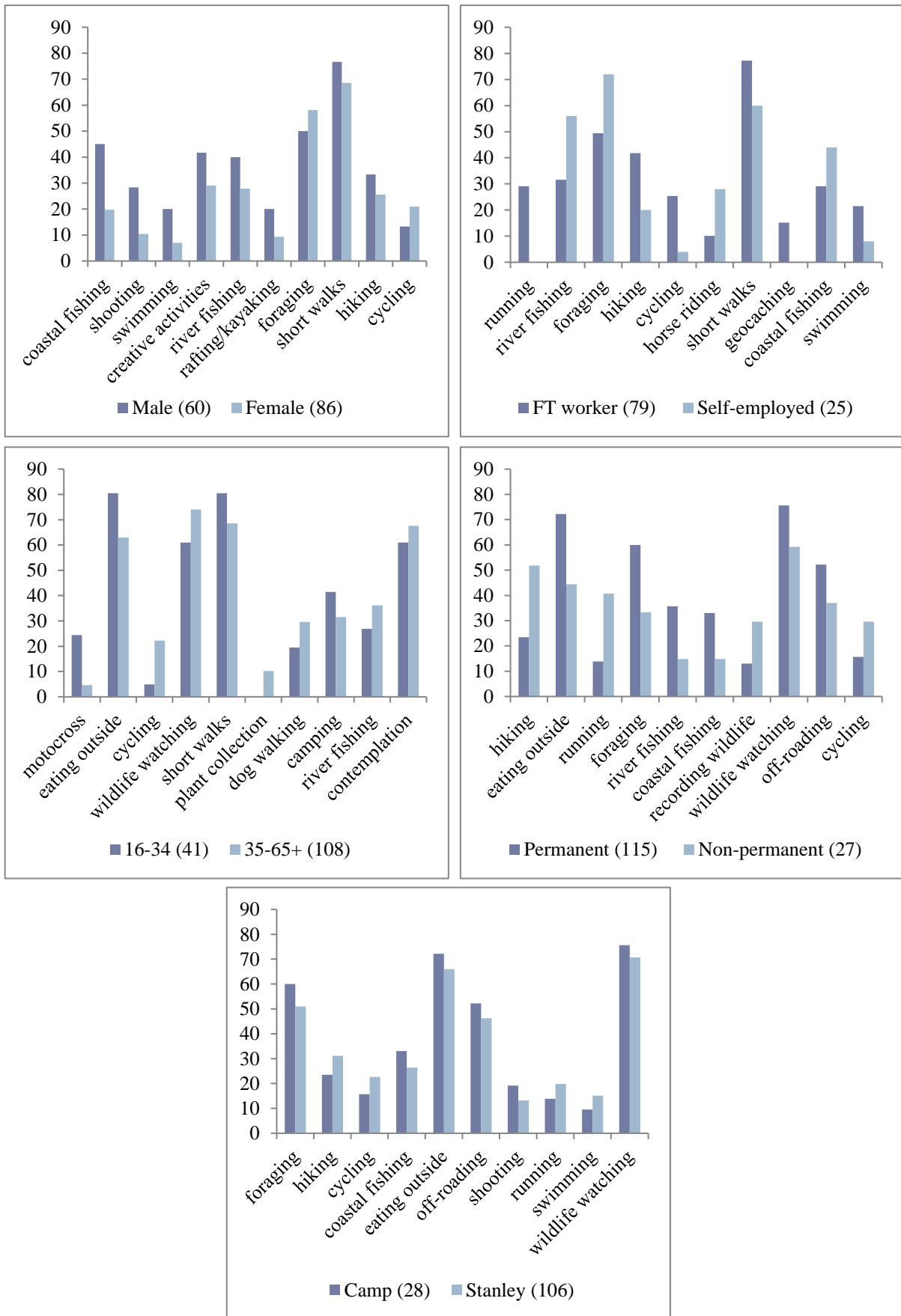


Figure 11. Top leisure activities for different social strata. Clockwise from top left: gender, employment type, residency status, place of residence, and age. Sample size per category in parentheses. Only the 10 activities with the largest differences between categories are shown.

Interestingly, the comparison between individuals' leisure activities and the places they named as capturing the essence of the natural environment reveals linkages between activity and views on the environmental spaces of FI (Fig. 12). Thus, the respondents whose answers to the question "Name three places that capture the essence of the natural environment of the FI" contain referents for mountain ("Mt", "mountain" and "mount") are almost four times more likely to enjoy climbing as a leisure activity compared to the full sample (column "All respondents"). They are also more likely to go hiking, shooting, swimming, and surfing, and less likely to enjoy creative activities like photography or wildlife recording.

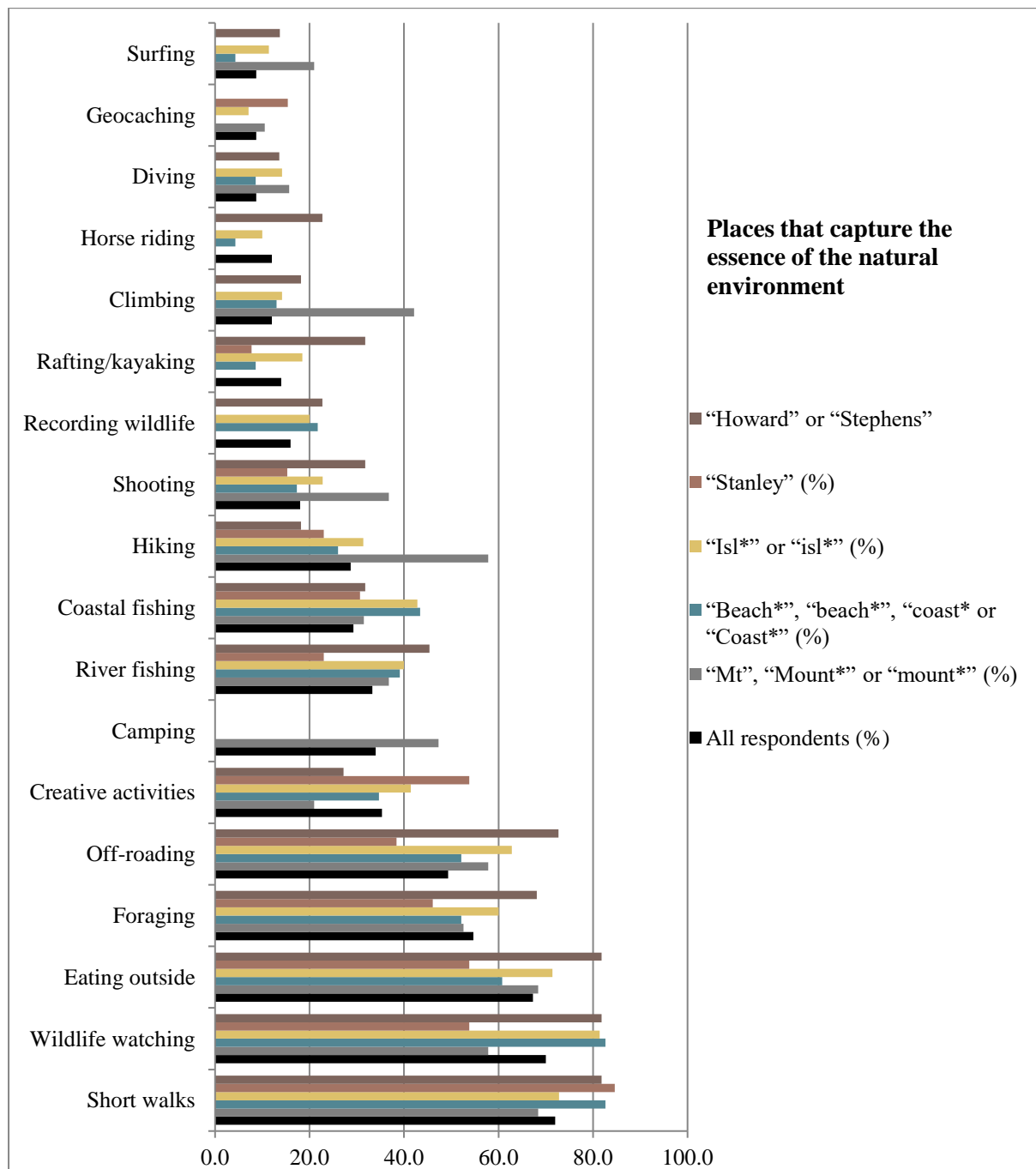


Figure 12. Relations between individuals' leisure activities and stated places that capture the essence of the environment in the FI.

The majority of the activities mentioned above are to a large extent enjoyed individually – although not exclusively. 15% of respondents indicated that they participate in groups in at least one of the outdoor leisure activities mentioned above (the most common being short walks, eating outside, foraging, and hiking). The majority of respondents (77%) stated that in addition to these individual or group activities they also take part, either actively or as part of the social gathering, in events that have a more national or at least large scale character (Fig. 14). These kinds of events are frequent in FI, and are usually organised by related associations or clubs, or supported by parts of the government as a way to bolster the image of FI. Traditionally, the most important of these events has been sheep shearing competitions, flowing from the tradition of the Falkland Islanders as sheep farmers. However, more recently, other events such as the Midwinter Swim or the Standard Chartered Stanley Marathon (in its ninth year in 2019) are also attracting many participants.

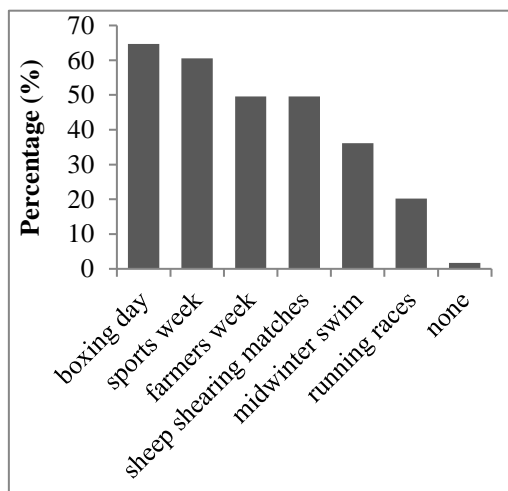


Figure 13. Outdoors leisure activities carried out in a social setting.

As expected, these kinds of events are not attended evenly across social strata (Appendix Fig. 2). More pronounced differences are related to where people live, which is in turn related to what kind of lives they lead. For example, people in Camp are much more likely to attend sheep shearing competitions than people living in Stanley, who are in turn more likely to attend running races or the midwinter swim event than people living in Camp. Interesting discrepancies were observed related to whether respondents grew up in FI: for example, respondents who grew up in FI are more likely to attend “traditional” FI events such as Boxing Day activities, sheep shearing competitions or sports weeks than people who grew up elsewhere. Younger people seem to be more frequent visitors to this type of event, as are the self-employed.

The environmental spaces where Falkland Islanders interact with nature in their leisure time can be seen in Figure 14. In accordance with the places of work map above, the majority of points are in or close to settlements. The Stanley area features very prominently on the map, which is to be expected since for most respondents, most leisure activities tend to take place nearer to home. Nevertheless, there are a significant number of places of leisure that are not related to settlements, and it is in these environmental spaces that activities such as off-roading, hunting, egging, or river fishing take place. Notably, Falkland Islanders are able to travel almost freely across the whole surface of the islands despite the fact that there are barely any paved roads, by employing large 4 x 4 cars, cross-country motorbikes and small aeroplanes run by the Falkland Islands Government Air Service that frequently travel across the FI. Respondents often combine these activities with smaller or larger trips away from home (Table 4), which are to a large extent related to visiting family and friends. Interestingly, societal difference does not seem to play a role in how often respondents spend time away from home, although some respondents did mention that it is “too expensive” for them (Chi-square tests, $p > 0.05$).

Table 4. Frequency of spending time away from home

| Frequency | No of respondents spending single nights and weekends away from home | No of respondents spending longer periods away from home |
|--------------|--|--|
| Frequently | 31 | 16 |
| Occasionally | 67 | 65 |
| Hardly ever | 46 | 60 |

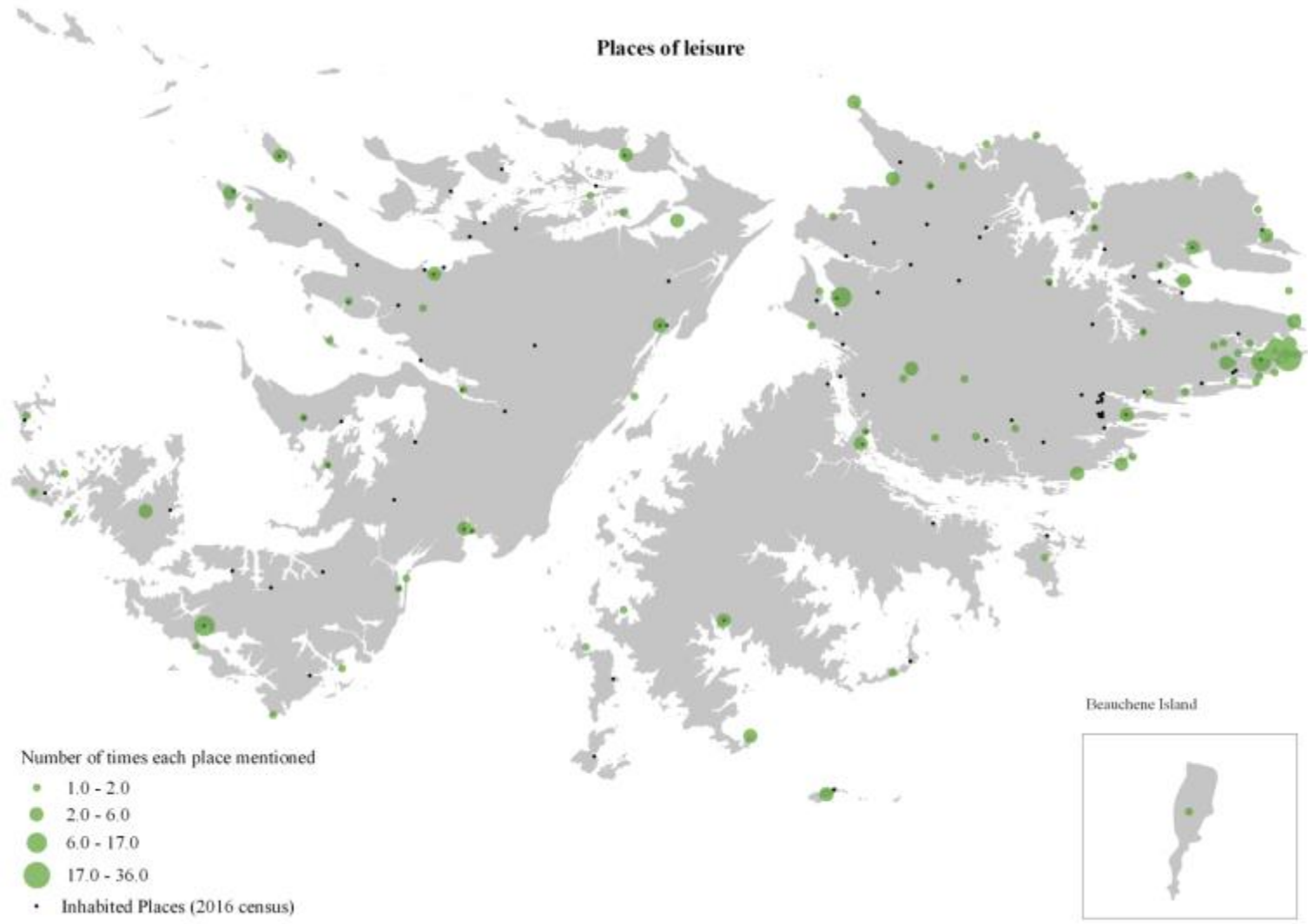


Figure 14. Places where Falkland Islanders enjoy leisure-related activities.

4.3. Cultural Ecosystem Benefits

As documented above, the environmental spaces of the FI are both part of national cultural heritage, and part of the everyday lives of the vast majority of Falkland Islanders through a variety of activities (i.e. cultural practices), ranging from walking outside during work to off-roading and egging. The interactions between environmental spaces and cultural practices sometimes – but not always – through the mediation of cultural goods such as local festivals, produce a range of cultural ecosystem benefits. In this section, we look at some of the benefits enabled by these interactions.

Subjective well-being and activities in nature

Research has found that being close to nature contributes positively to human well-being (White et al. 2013, 2017; Bieling et al. 2014; Fagerholm et al. 2016; de Bell et al. 2017). This finding holds for different populations, although it has not been tested in FI. Furthermore, the majority of this research, similarly to CES research in general, is mainly preoccupied with leisure activities or with scenic or beautiful landscape views (e.g. from work windows). Following White et al. (2017) we asked respondents to answer a series of four questions related to subjective well-being (OECD 2013): a) life satisfaction (evaluative), b) meaningful/ worthwhile activities (eudaimonic), and c/d) happiness and anxiety yesterday (positive/negative experiential)¹².

Only four lifestyle or demographic characteristics of the respondents seem to have statistically significant associations with subjective well-being. But, they are highly interesting and in agreement with some of the literature on well-being. Firstly, and perhaps most interestingly, it seems that the frequency by which respondents work outside is significantly associated with higher evaluative well-being (Table 5). Analysis reveals that respondents who work outside more frequently are more likely to report they are more satisfied with their lives (Kruskal-Wallis test, $p < 0.05$, post-hoc Benjamin and Hochberg correction)¹³. Remarkably, as the table below reveals, an exposure-response relationship appears to hold; respondents reported higher values of life satisfaction with each increase of working in nature frequency. Frequency of working outside was not significantly associated with the other subjective well-being metrics.

Table 5. Frequency of working outside and self-reported life satisfaction.

| How often does work outside feature in your work | No of people | How satisfied are you with your life? (1 – 10; mean) |
|---|---------------------|---|
| All the time | 26 | 8.9 |
| Every day | 26 | 8.7 |
| Most days | 14 | 8.3 |
| Quite Often | 28 | 8.2 |
| Very rarely | 21 | 7.4 |
| Never | 17 | 7.4 |
| NA | 23 | 7.7 |
| Grand Total | 155 | 8.0 |

¹² Questions: Evaluative wellbeing: “How satisfied are you with life nowadays” (1-10); Eudaimonic well-being: “To what extent do you feel that the things you do in your life are worthwhile?” (1-10); Positive experiential well-being: “How happy did you feel yesterday?” (1-10); Negative experiential well-being: “How anxious did you feel yesterday?” (1-10). See Appendix Item 1.

¹³ The relationship holds even when controlled for additional variables in a multivariate ordinal regression setting. See Appendix Table 7.

Secondly, eudaimonic well-being, i.e. the subjective evaluation of meaningful/worthwhile life, seems to be associated with frequency of outdoor leisure (Table 6). Similar to evaluative well-being, the relationship between frequency of outdoor leisure and subjective well-being appears to have an exposure-response relationship too: the more frequent outdoor leisure is for the respondents, the higher opinion they have on the things they do in life (Kruskal-Wallis test, $p < 0.05$, *post-hoc* Benjamin and Hochberg correction)¹⁴. Frequency of outdoor leisure was not significantly associated with the other subjective well-being metrics.

Table 6. Frequency of outdoor leisure and self-reported life satisfaction.

| How frequently do you spend time outdoors in the natural environment | No of people | To what extent do you feel that the things you do in life are worthwhile? (1-10; mean) |
|---|---------------------|---|
| Everyday | 42 | 8.9 |
| Most days | 56 | 8.1 |
| Most weeks | 46 | 7.6 |
| NA | 11 | 8.7 |
| Grand Total | 155 | 8.2 |

Thirdly, also related to leisure, respondents who are satisfied with the time they spend outdoors for leisure tend to report higher scores of subjective well-being for both evaluative and eudaimonic well-being (Table 7; Kruskal-Wallis tests $p < 0.05$ *post-hoc* Benjamin and Hochberg correction).

Table 7. Satisfaction with time spent outdoor leisure and self-reported life satisfaction and eudaimonic well-being.

| Would you say you spend as much time outdoors as you like? | No of people | How satisfied are you with your life? (1 – 10; mean) | To what extent do you feel that the things you do in life are worthwhile? (1-10; mean) |
|---|---------------------|---|---|
| Yes | 70 | 8.6 | 8.7 |
| No | 82 | 7.6 | 7.7 |
| NA | 3 | 9.0 | 7.5 |
| Grand Total | 155 | 8.0 | 8.2 |

No significant associations were found for happiness and anxiety yesterday. Notably, for all measures of subjective well-being, no significant differences were observed for demographic characteristics, such as place of residence, whether respondents grew up in FL, whether they have lived abroad, education, sex, or employment or residency status (Kruskal-Wallis tests $p > 0.05$ *post-hoc* Benjamin and Hochberg correction).¹⁵

Positive experiences in nature

Another dimension of well-being associated with CES is related to the positive experiences gained when pursuing activities in nature (Fish et al. 2016b). These experiences are enabled by the relations between environmental spaces and cultural practices, sometimes mediated by cultural goods such as

¹⁴ This relationship also appears to hold even when controlled for additional variables in a multivariate ordinal regression setting. See Appendix Item 8.

¹⁵ Even after adopting a more lax significance threshold (< 0.05 *post-hoc* Benjamin and Hochberg correction), only residency status has a marginal influence, with non-permanent residents reporting that they felt more anxious yesterday (negative experiential wellbeing).

local food or drink, organised opportunities for recreation, or local tourism. We grouped positive experiences in five categories (see Appendix 1 and Tables 8 and 9), and asked respondents to tell us how they feel while working or recreating outside by scoring each category from “I strongly” to “I strongly disagree”. Both for work and leisure, respondents seem to be overwhelmed with positive experiences when outside. In general, respondents appear to have more positive experiences while at leisure outdoors, although working outside is also very positive.

Both working and recreating in nature are conducive to positive experiences related to ecosystem benefits. In the tables below we see that large majorities in both cases agree that positive experiences are definitely part of work and leisure in the natural environment (calculation of means after transforming raw data to Likert scale (1: Strongly agree; 5: Strongly disagree). Outdoor leisure appears strongly related to all categories of experience we listed, but most importantly to tranquillity, inner peace and contentment, and freedom, escape and independence. The former, inner peace and contentment, perhaps helps explain why the frequency of outdoors leisure is related to self-reported life satisfaction, the subjective evaluation of meaningful/ worthwhile lives.

Table 8. Positive experiences while associated with outdoors leisure. To calculate the mean we transformed the categories into a Likert scale (1: strongly agree to 5: strongly disagree).

| Being outdoors for LEISURE I feel: | Mean | Strongly agree/Tend to agree | Tend to disagree/Strongly disagree |
|---|-------------|-------------------------------------|---|
| Tranquillity, inner peace & contentment | 1.46 | 88% | 0 |
| Freedom, escape & independence | 1.47 | 86% | <1% |
| Exhilaration, excitement & stimulation | 1.76 | 75% | 1.5% |
| Achievement, accomplishment & purpose | 1.81 | 75% | 3% |
| Belonging & attachment | 1.66 | 81% | 2.8% |

Being outside working also appears strongly related to all categories of experience we listed, but most importantly to achievement, accomplishment and purpose, and freedom, escape and independence. The experience of achievement is the only type of experience for which working outside appears stronger than leisure, and helps explain why respondents who work outside more frequently are more likely to report higher life satisfaction.

Table 9. Positive experiences while working outside. To calculate the mean we transformed the categories into a Likert scale (1: strongly agree to 5: strongly disagree).

| While WORKING outside I feel: | Mean | Strongly agree/Tend to agree | Tend to disagree/Strongly disagree |
|---|-------------|-------------------------------------|---|
| Tranquillity, inner peace & contentment | 1.86 | 72% | 5.8% |
| Freedom, escape & independence | 1.84 | 70% | 6% |
| Exhilaration, excitement & stimulation | 2.04 | 64% | 6% |
| Achievement, accomplishment & purpose | 1.79 | 75% | 2.4% |
| Belonging & attachment | 1.82 | 70% | 5% |

Considering that the frequency of work and leisure outside appears to be related to life satisfaction and eudaimonic well-being, it is worth looking at whether subjective well-being is related to different activities in nature. We grouped self-reported life satisfaction into two groups, low (≤ 7 in the 1-10 Likert scale) and high (> 7). Based on this grouping of the respondents, we calculated the percentages of different working and leisure activities for the two groups (Figure 15). It seems that respondents who reported higher life satisfaction have jobs that actually demand being outside (e.g. farm work, guiding and driving tourists), while in contrast, for respondents who reported lower life satisfaction being outside is incidental to their work (e.g. driving, walking). For leisure activities, it seems that people who reported higher life satisfaction are taking part in more activities than people who reported lower life satisfaction.

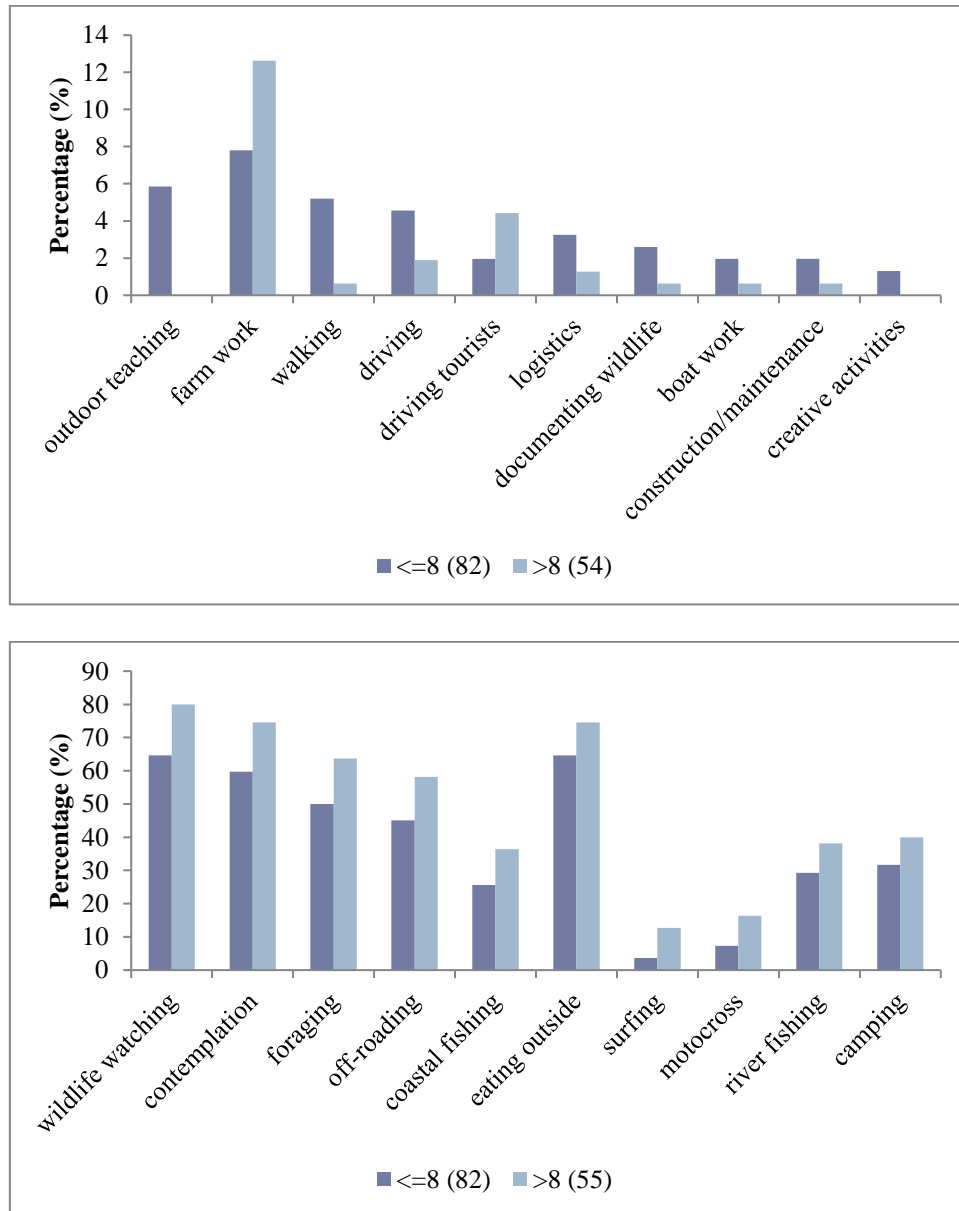


Figure 15. Work (top graph) and leisure (bottom graph) activities plotted against two life satisfaction groups: one group of respondents that report lower subjective well-being (" ≤ 8 ") and those that report higher (" > 8 ").

CONCLUSION

In this exercise we have documented four elements that are related to how Falkland Islanders relate to natural capital. Firstly, we have explored how Falkland Islanders view the natural environment in the islands. Secondly, we explored what type of activities the Islanders practice outside, and what are temporal and spatial patterns of these activities. Thirdly, we attempted to document the benefits Islanders accrue from being active outdoors, and tried to relate them to temporal and spatial patterns. Fourthly, we documented how all the above are instantiated in the Falkland Island space in a series of maps that capture places of work and leisure, and places that represent the essence of the natural environment (Fig. 16 for a combined map). A series of concluding remarks follow.

Both work and leisure outside, i.e. the practical interactions with environmental spaces and features we explored have clear benefits in terms of feelings and sentiments as well as subjective well-being. This is a novel finding afforded by the CES framework we employed, which does not make a distinction between work and leisure, but considers all kinds of practices articulated in environmental spaces and features as constitutive of ecosystem services and of the benefits that arise from them. This implies that work and leisure outside could be promoted in the Falkland Islands, and initiatives like the Marathon or the Midwinter Swim may be expanded and multiplied. Also, perhaps “new” kinds of occupations that are bound to increase in the Falkland Islands, like nature monitoring or tourist guiding, could have beneficial impacts on the lives of the islands’ populations.

The connection between the practice of outdoors activities and social and/or individual benefits is modulated by the influence of social stratification. While in terms of subjective well-being the demographic variables we used did not seem to have a significant effect, they did have an influence on the temporal and spatial patterns of work and leisure. Social stratification also influences the type of activities respondents reported they practice (e.g. gender, age or origin). Despite recent work (Brooks et al. 2014; Caceres et al. 2014; Chaudhary et al. 2018), the links between societal difference and CES are underexplored. Our findings in the Falkland Islands suggest that more work is needed to explore these links, especially as they are directly related to socio-demographic change (which is already underway in the Islands). Particularly interesting and underexplored in this context are the relations between societal difference and environmental spaces.

The relational production of CES happens at a multiplicity of scales, from the very local corresponding to a particular location or point in abstract space (“Top of the road, coming into Hill Cove”) to scales better understood as places in the geographical sense (“Where I live; where sister lives; where friends live”). They are better understood as “environmental spaces”, the places, localities, landscapes and seascapes in which people interact with each other and the natural environment. In practical terms, from a management perspective, this means that attention should be paid not only to the “natural” characteristics of an area, but to uncovering, understanding and maintaining these relationships between diverse places and practices that among others sustain mental and well-being benefits for the Islanders and provide a connection to the past (e.g. farming) and future (e.g. nature conservation). In this sense, the process of mapping the diverse ways Falkland Islanders interact with the environment and each other is informative in providing managers with a sense of spatial location, magnitude and type of interaction for each space-practice category (Fig. 16 below). This type of information can be useful in diverse cases including but not limited to prioritising environmental spaces of cultural importance (e.g. rock runs, beaches) for protection or promotion.

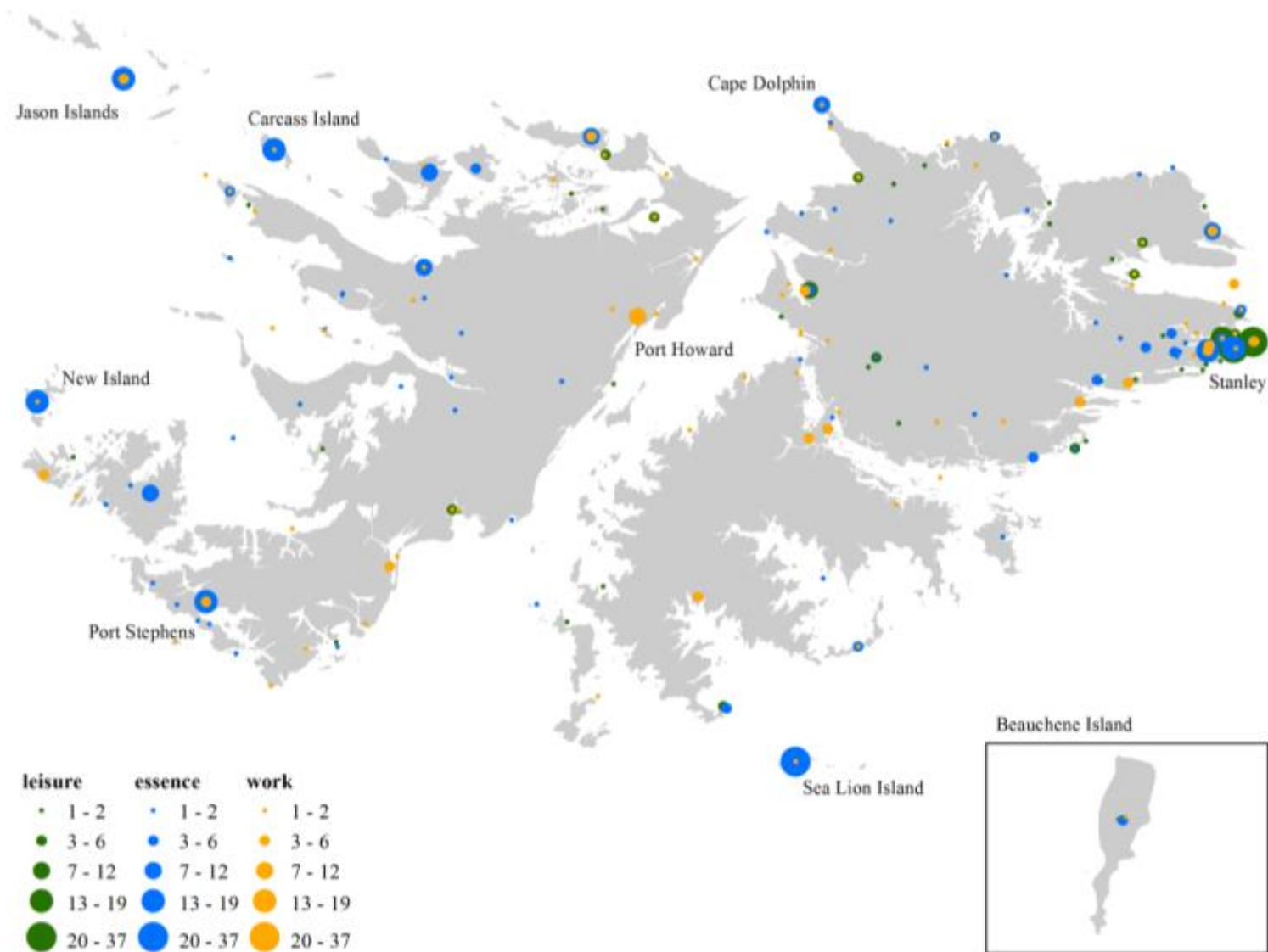


Figure 16. Combined map: places that capture the essence of the natural environment, work- and leisure-related places.

Care should be taken though to avoid using the map as an accurate and infallible representation of reality in this respect. Firstly, as mentioned above, many places mentioned by the respondents do not correspond to locations or do not have clear boundaries (e.g. “The whole of the Falklands!”, “Anywhere outside of Stanley”; “West Falkland”, “all over”; “the mountains”; “beaches”) and are thus not represented in the map. In contrast to the spatial, this “platial” way of viewing the geographic world (Goodchild 2015), i.e. as *places* in relational space which are actively made through symbolism and practice, hints and perhaps validates the understanding of CES as being produced by the interactions between environmental spaces and cultural practices (Fish et al. 2016b). In turn, viewing CES in this manner presents challenges to the “point-based” or “feature-based” way CES is predominantly mapped in scholarly and policy assessments, a challenge that has not yet been fully met by the cartographic community and is an active research stream (Westerholt et al. 2018). Furthermore, a “platial” conceptualisation of CES also challenges traditional ways of managing and protecting nature, since places that are deemed exceptional or worthy of protection are not always the most distinctive in terms of wildlife or other environment-related features, but places that are made exceptional through – often historical – cultural practices and symbolism.

Finally, but importantly, this report, along with similar recent work (Augé 2015; Blake et al. 2017), can serve as baseline for future assessments for the state of natural capital in the Islands. Considering that the Falkland Islands are undergoing a steady process of economic and social change, it is safe to assume that the way environmental spaces and cultural practices interact and the benefits this interaction produces are bound to evolve. Monitoring, studying and understanding this process of change would be crucial for implementing any interventions (or even letting things be) at the nature-culture interface. Furthermore, considering that CES assessments are a way of acknowledging people within discussions of conservation and the environment, they thus can be both useful data points and engagement mechanisms to make sure decisions are taken in transparent, informed and participatory manner.

Future work could include:

- Deeper interrogation on how practices interact with places to produce CES and how social stratification affects this interaction. That could involve more in depth work, employing thicker, perhaps ethnographic or arts-based empirical and analysis methodologies;
- Identifying particular places and particular characteristics of these places that are particularly conducive of positive feelings and benefits. Again, this could require deepening and extending data gathering methodologies, but it could also include innovative quantitative and qualitative mapping and cartographic methodologies (e.g. see Westerholt et al. 2017 and “platial” mapping).
- Historical studies of the relation between Falkland Islands’ culture and the environment. Exploring these historical links (whaling, kelp, farming, the Falklands’ War) in archival material (newspapers, journals, diaries, or Government archives) would extend the baseline backwards in time, help us link the past with the present and the future and aid in understanding how Islanders interact with particular spaces.

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Appendix 1. Survey



University of
Kent
School of
Anthropology
and Conservation

Public survey

Our natural environment

March 2018

Dear Resident

As you may have seen in the Penguin News, The *South Atlantic Environmental Research Institute* (SAERI) is conducting a survey across the Falklands about peoples' views on the natural environment. This survey is building on the cultural coastal values mapping conducted two years ago, to gather more detailed information for inland, coast and inshore areas.

With your participation, we hope to build up a detailed picture about how people interact with their natural environment and what special qualities they feel it has. The results of the survey will be made available to the Falkland Islands Government to help them better understand Islander priorities for the natural environment. The survey is being run in conjunction with researchers at the University of Kent in the UK.

We'd be delighted if you would be kind enough to complete and return the survey to us in the envelope. The survey should be answered by **ONE** member of your household, **AGED 16** years or over. *If you would like to be sent additional copies of this survey please let me know on the email below!*

All responses will be anonymised. Answer as much or as little as you can. Every survey response really counts for us and there is a free post envelope for you to return it. We'd be very grateful for a response by **Friday 13th April**. If you require further information about this questionnaire, please do not hesitate to contact me.

Yours sincerely

Ness Smith, Natural Capital Project Manager South Atlantic Environmental Research Institute

Email: projectmanager.natcap@env.institute.ac.fk

Staying in contact!

If you would like to hear directly about the general findings of this survey and how they are being used, please complete your details below. *Please note these details will be separated from any information you provide in this survey*

The South Atlantic Environmental Research Institute

SAERI is an academic organisation conducting research in the South Atlantic from the tropics down to the ice in Antarctica. Its remit includes the natural and physical sciences. It aims to conduct world class research, teach students, and build capacity within and between the South Atlantic Overseas Territories.

Q1. What WORDS or PHRASES would you choose to describe the natural environment here in the Falklands? *Choose any words or phrases that come spontaneously to you.*

Q2. Which places do you feel best capture the ‘ESSENCE’ of the natural environment of the Falklands?

*Try to think of **THREE** places that capture this ‘essence’.*

*Mark and number them on the **BLUE MAP (1)***

*In the **BOXES** below briefly explain your choices.*

PLACE NUMBER 1:

PLACE NUMBER 2:

PLACE NUMBER 3:

Q3. What is your employment status? Tick the box that best applies.

- | | | | |
|--|--------------------------|-------------------------------|--------------------------|
| Full-time paid work (30+ hours per week) | <input type="checkbox"/> | Retired | <input type="checkbox"/> |
| Part-time paid work | <input type="checkbox"/> | Unemployed (seeking work) | <input type="checkbox"/> |
| Full-time education | <input type="checkbox"/> | Unemployed (not seeking work) | <input type="checkbox"/> |
| Self-employed | <input type="checkbox"/> | | |

If you are not employed, please go to **Question 10**, otherwise go to **Question 4**.

Q5. How often does going outside feature in your typical work routines?

Q4. What do you do for a living? If you have more than one job, please list them all.

| | | | | | |
|----------------------------------|-------------|-------------|-----------|-----------|--------------|
| 1. Never First Job | Very rarely | Quite Often | Most days | Every day | All the time |
|----------------------------------|-------------|-------------|-----------|-----------|--------------|

If you circled 'Never' then please go to **Question 10**. Otherwise go to **Question 6**.

2. Second Job _____

3. Third Job _____

Q6. When you spend time working outdoors is this primarily occurring:

- | | |
|---|--------------------------|
| In your settlement/Stanley? | <input type="checkbox"/> |
| In the wider vicinity of your settlement/Stanley? | <input type="checkbox"/> |
| Further afield: over extensive distances? | <input type="checkbox"/> |
| All over the place: both near and far? | <input type="checkbox"/> |

Tick the box that best applies

Please can you tell a bit about the kind of work you do that takes you outdoors:

Q7. To what extent do you agree with the following statements? Tick the box that best applies.

As I spend time outdoors **WORKING** I often experience feelings of.....

| | | | | |
|-----------------------|----------------------|-----------------------------------|-------------------------|--------------------------|
| Strongly agree | Tend to Agree | Neither agree nor disagree | Tend to Disagree | Strongly disagree |
|-----------------------|----------------------|-----------------------------------|-------------------------|--------------------------|

| | | | | |
|---|--|--|--|--|
| Tranquillity, inner peace & contentment | | | | |
| Freedom, escape & independence | | | | |
| Exhilaration, excitement & stimulation | | | | |
| Achievement, accomplishment & purpose | | | | |

Belonging & attachment

| | | | | |
|--|--|--|--|--|
| | | | | |
|--|--|--|--|--|

If you feel able to expand on any of your responses, please do so here:

Q8. As you go about your WORK, are there any places in the natural environment that you have come to feel are particularly special, significant or important to you?

Try to think of **THREE** places that are special, significant or important in your work
Mark and number them on **ORANGE MAPS (2 & 3)**. You can use either or both maps.
In the **BOXES** below briefly explain your choices

PLACE NUMBER 1

PLACE NUMBER 2

PLACE NUMBER 3

Q9. Is spending time outdoors a feature of your LEISURE time?

(Circle 'yes' or 'no')

| | |
|-----|----|
| Yes | No |
|-----|----|

*If no, please go to **Question 18***

Q10. Excluding holidays and vacations, how frequently do you spend time outdoors in the natural environment?

(Circle the box that most applies)

| | | | | |
|------------------------|------------|-----------|----------|--------------|
| Less than once a month | Most weeks | Most days | Everyday | All the time |
|------------------------|------------|-----------|----------|--------------|

Q11. Excluding holidays and vacations, where do you spend time outdoors during your free time?

(Circle the box that most applies)

| | | | |
|---------------------------------------|--|--|---------------------------------------|
| In and around you settlement/ Stanley | In the wider vicinity of your settlement/Stanley | Generally further afield; over extensive distances | All over the place: both near and far |
|---------------------------------------|--|--|---------------------------------------|

Q12. How often do you spend NIGHTS AND WEEKENDS away from your home, e.g. in Camp? *(Circle the box that most applies)*

| | | |
|--|--------------|-------------|
| Frequently | Occasionally | Hardly Ever |
| <i>Please state any typical locations and reasons:</i> | | |

Q13. How often do you complete LONGER PERIODS AWAY from your home, e.g. in Camp? *(Circle the box that most applies)*

| | | |
|--|--------------|-------------|
| Frequently | Occasionally | Hardly Ever |
| <i>Please state any typical locations and reasons:</i> | | |

Q14. Do you ever attend the following?

(Circle all boxes that apply)

| | | |
|--|-----------------------|------------------------|
| Sports week | Farmers week | Sheep shearing matches |
| Running races (e.g. Falklands Half Marathon) | Boxing day activities | Midwinter swim |
| | | |

Do you directly participate in any activities on these occasions? Please specify:

Q15. To what extent do you agree with the following statements? Tick the box that best applies

As I spend time outdoors during my **LEISURE** time I often experience feelings of.....

Strongly agree

Tend to Agree

Neither agree nor disagree

Tend to Disagree

Strongly disagree

Tranquillity, inner peace & contentment

Freedom, escape & independence

Exhilaration, excitement & stimulation

Achievement, accomplishment & purpose

Belonging & attachment

| | | | | |
|--|--|--|--|--|
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

If you feel able to expand on any of your responses, please do so here:

Q16. Do you spend any of your time doing any of the following activities?

| ACTIVITY | <i>Tick if yes</i> | <i>Tick if a major activity for you</i> | <i>If this is done as part of an organised club or association, please specify</i> |
|--|--------------------|---|--|
| <i>Short walks/gentle strolls around nature spots</i> | | | |
| <i>Eating outside in the natural environment e.g. smokos, and barbeques</i> | | | |
| <i>Creative activities in a natural setting, such as photography, painting and drawing</i> | | | |
| <i>Sitting & contemplation of natural scenes</i> | | | |
| <i>General wildlife watching and observation</i> | | | |
| <i>Recording/documenting wildlife or environment</i> | | | |
| <i>Foraging –e.g. Diddle Dees, egg collecting</i> | | | |
| <i>Collecting plants – Ornamental</i> | | | |
| <i>Practising Faith</i> | | | |
| <i>Running</i> | | | |
| <i>Cycling</i> | | | |
| <i>Dog walking</i> | | | |
| <i>Horse riding</i> | | | |
| <i>Playing Golf</i> | | | |
| <i>Outdoor team sports: e.g. football</i> | | | |
| <i>Off-roading</i> | | | |
| <i>Long distance trekking/hiking</i> | | | |
| <i>Climbing</i> | | | |
| <i>Geocaching</i> | | | |
| <i>Camping</i> | | | |
| <i>Rafting/kayaking</i> | | | |
| <i>Motocross</i> | | | |
| <i>Shooting</i> | | | |
| <i>Coastal fishing</i> | | | |
| <i>Fly fishing</i> | | | |
| <i>River fishing</i> | | | |
| <i>Outdoor swimming</i> | | | |
| <i>Diving</i> | | | |
| <i>Surfing (including wind- and kite-surfing)</i> | | | |
| Others (specify): | | | |

Q17. As you spend LEISURE time outdoors, are there any places in the natural environment that you feel are particularly *special, significant or important* to you in some way?

Try to think of **THREE** places that are special, significant or important for your leisure
 Mark and number them on **GREEN MAPS (4 & 5)**. You can use either or both maps
 In the **BOXES** below briefly explain your choices

PLACE NUMBER 1

PLACE NUMBER 2

PLACE NUMBER 3

Q18. In general, would you say you spend as much time outdoors as you would like?

(Circle the box that best applies)

| | |
|-----|----|
| Yes | No |
|-----|----|

Q19. What sort of reasons might stop you spending time outdoors? *(Circle the box that most applies)*

| | | | | |
|-----------------------|-------------------------|-------------------------|------------------|---------------------|
| Weather | Poor health/ disability | Lack of companion | Cost | Access to transport |
| Time/other priorities | Safety concerns | Lack of suitable places | Other (specify): | |

Q20. Do you do any of the following INDOOR based activities?

| ACTIVITY | <i>Tick if yes</i> | <i>Tick if a major activity for you</i> | <i>If this is done as pay of an organised group, club or association, please specify</i> |
|---|--------------------|---|--|
| <i>Spinning, Felting or Knitting</i> | | | |
| <i>Painting and drawing the natural world (landscapes, wildlife)</i> | | | |
| <i>Attending talks or events about the landscape, environment and wildlife of the Falklands</i> | | | |
| <i>Displaying pictures or photographs of natural scenes from the Falklands in your home</i> | | | |
| <i>Preparing and eating local produce from the Falklands</i> | | | |
| <i>Flower pressing</i> | | | |

Q21. Are there any places in the natural environment that you feel **NEGATIVE about in some way?** These may be for instance:

*Identify up to **THREE** places that you feel negative about*

*Mark and number them on **YELLOW MAP (6)**.*

*In the **BOXES** below briefly explain your choices*

PLACE NUMBER 1

PLACE NUMBER 2

PLACE NUMBER 3

Q22. Overall on a scale of 1-10 (where 1 = not at all and 10 = completely):

| | Value (1 to 10) |
|---|------------------------|
| <i>How satisfied are you with life nowadays?</i> | |
| <i>How anxious did you feel yesterday?</i> | |
| <i>To what extent do you feel that the things you do in your life are worthwhile?</i> | |
| <i>How happy did you feel yesterday?</i> | |

Place of residence _____

Approximate length of time at residence _____ Years

Did you grow up in the Falklands? No Yes If Yes: Specify where: _____

Have you ever lived outside the Falklands? No Yes If yes: can you provide brief details _____

Are you a permanent resident? No Yes If Yes, how long have you lived here? _____ Years
 If No, are you a contract worker Yes No
 If No, is this your first time living here? Yes No

About you

What is your highest level of education attainment? (Circle the box that best applies)

| | | | |
|---------|-----------|------------|------------------|
| Primary | Secondary | Vocational | Higher Education |
|---------|-----------|------------|------------------|

Male Female

Age: 16-24 25-34 35-44
 45-54 55-64 65+

How many people under 16 live in your household _____

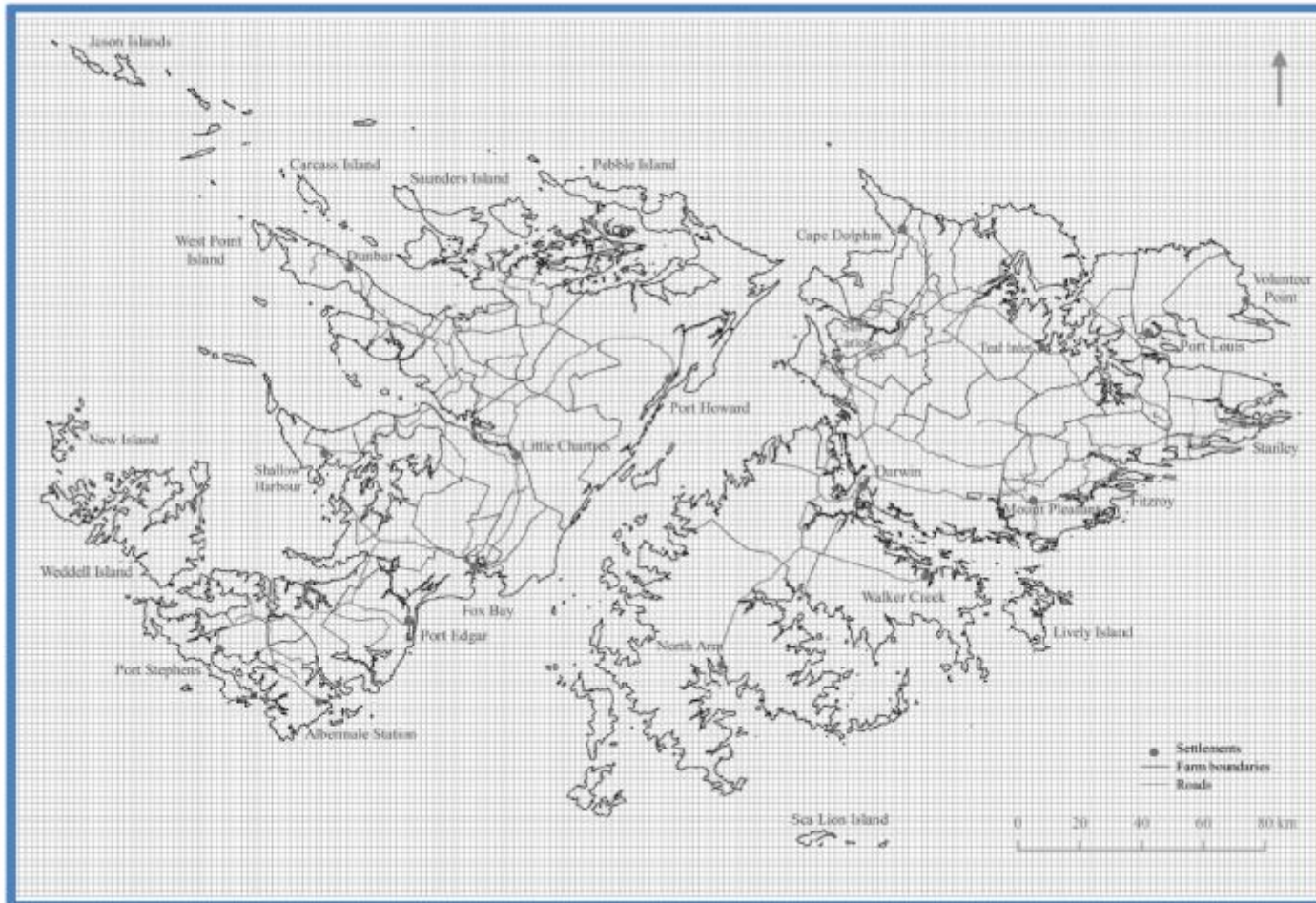
How would you describe your ethnicity? _____

Appendix 2: Gridded maps of the Falkland Islands

SEE QUESTION 2

MAP 1. THE 'ESSENCE' OF THE NATURAL ENVIRONMENT

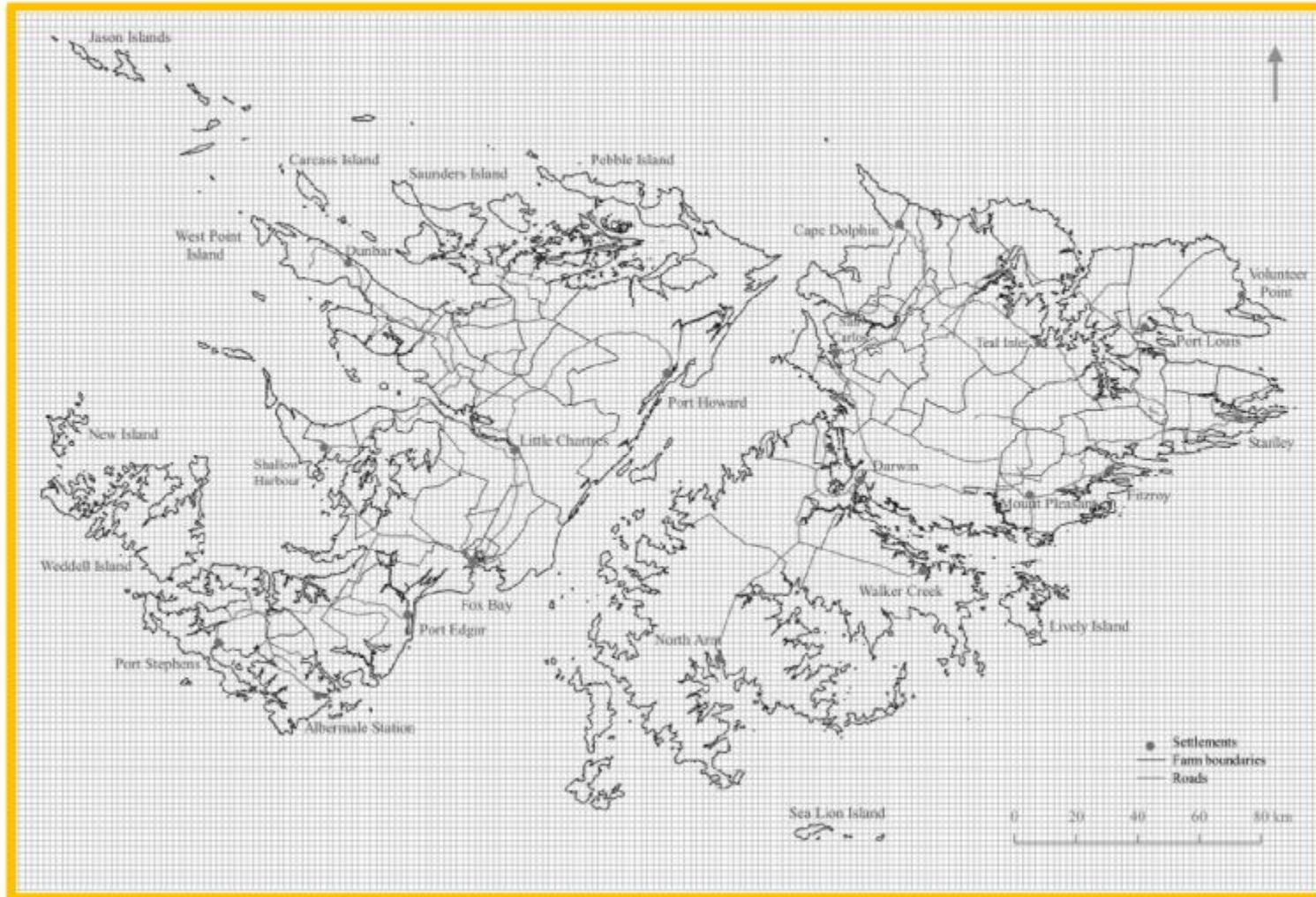
SEE QUESTION 2



SEE QUESTION 8

MAP 3. YOUR WORK: SPECIAL, SIGNIFICANT OR IMPORTANT PLACES

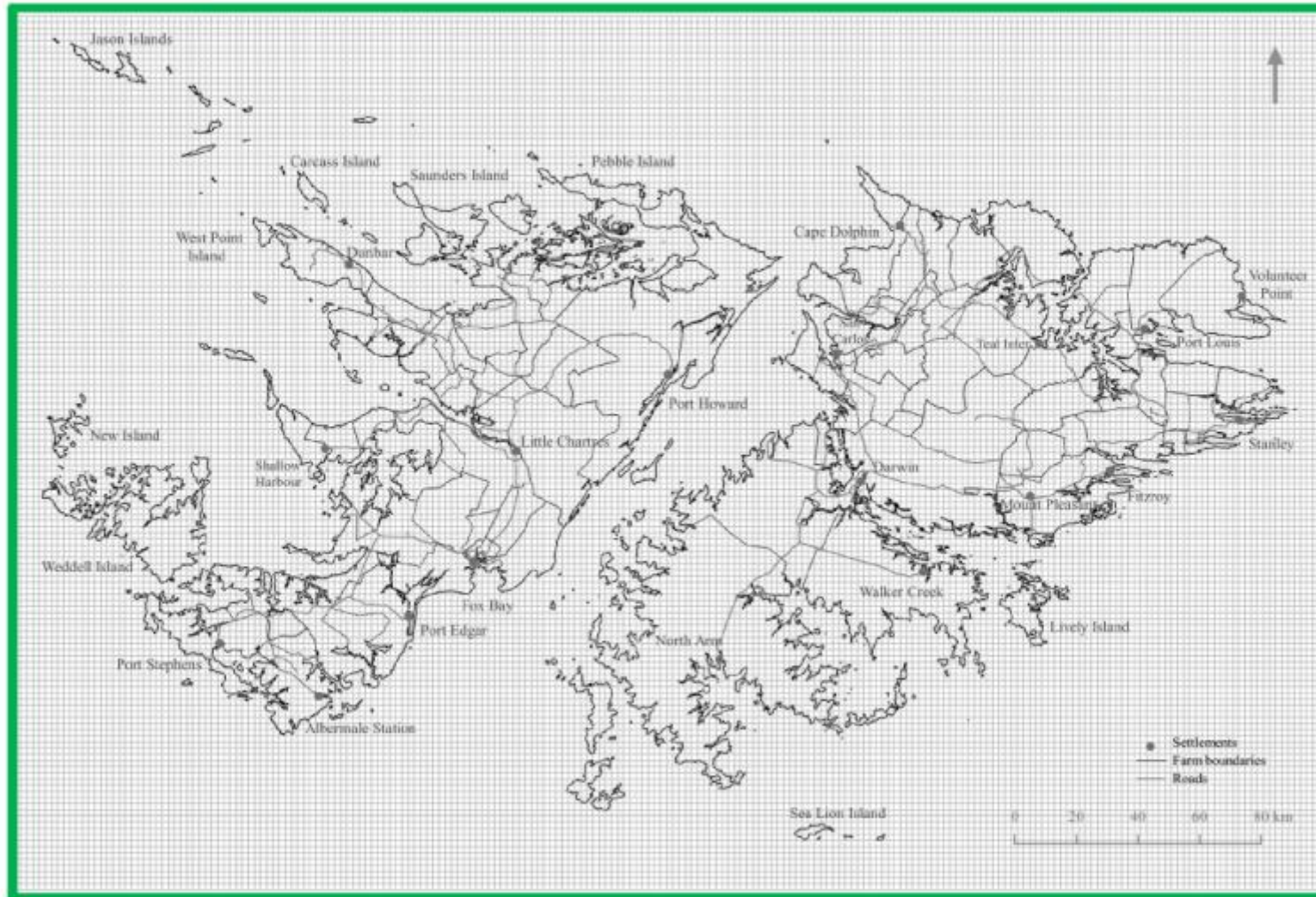
SEE QUESTION 8



SEE QUESTION 17

MAP 5. YOUR LEISURE: SPECIAL, SIGNIFICANT OR IMPORTANT PLACES

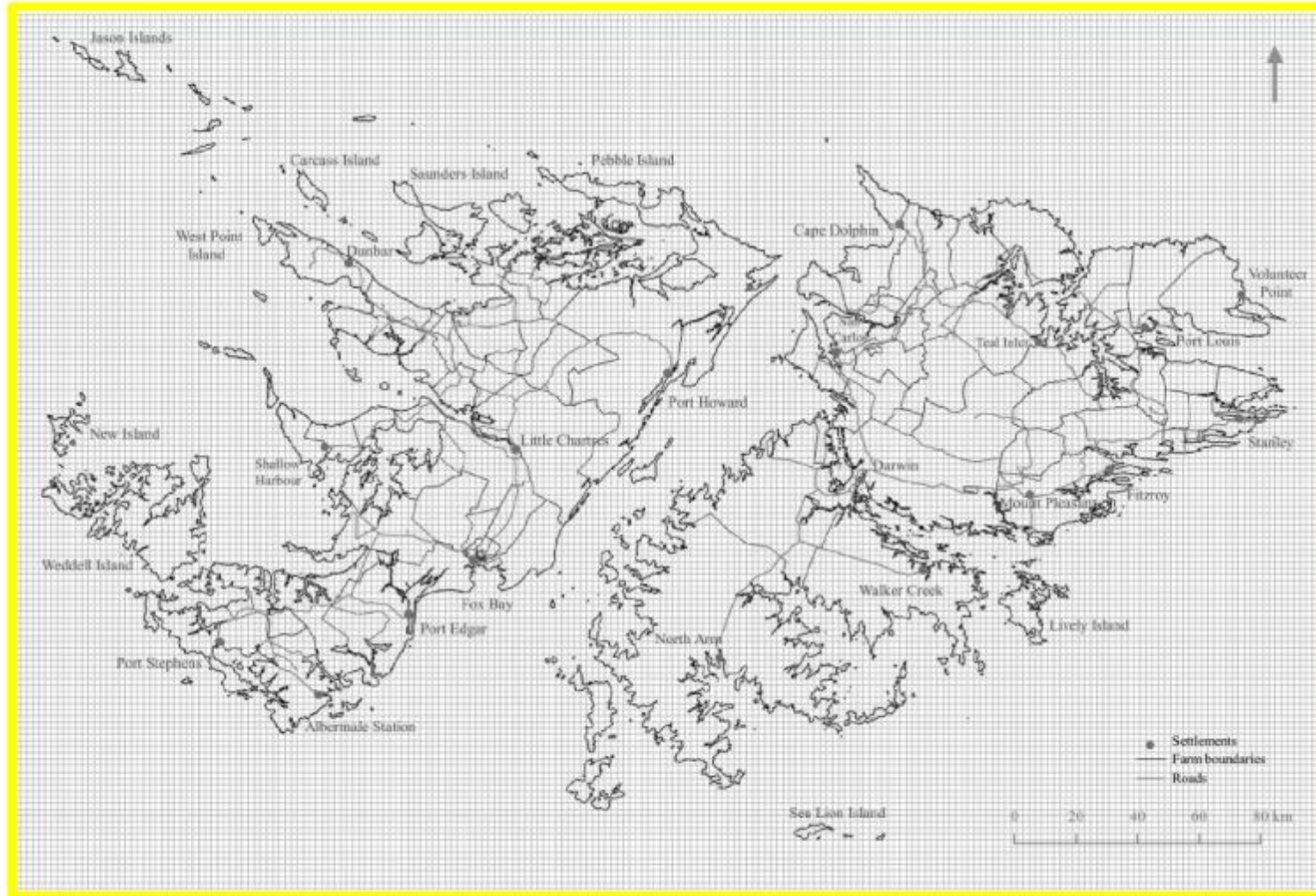
SEE QUESTION 17



SEE QUESTION 21.

MAP 6. PLACES YOU FEEL *NEGATIVE* ABOUT

SEE QUESTION 21.



Appendix 3: Article in the FI's largest newspaper (Penguin News)

Islanders' connection with environment is subject of SAERI research

RESEARCHERS at the South Atlantic Environmental Research Institute (SAERI) are to conduct a major survey of people's views about the natural environment of the Falklands. Led by Ness Smith at SAERI, the survey is part of a programme of research exploring the environment's contribution to the prosperity and culture of the Islands.

Ness has been working with Dr Robert Fish of the University of Kent in the UK to design the survey, which will land on the doorsteps of all residents soon.

Speaking about the survey Dr Fish said, "I visited the Falklands in December to help SAERI set up this research, which is all about understanding what matters about the natural environment to people here on the Falklands, and why".

As Dr Fish explained: "One of the remarkable aspects I noticed was the deep connection that Falkland Islanders have with the natural world and the importance of it to people here today. The survey is all about researching this connection."

In sending the questionnaire to residents in Stanley and across Camp, SAERI hopes to capture a large and diverse body of evidence that can be used to inform decision making in the future. "This survey will provide im-



The Falklands environment - picture SAERI

portant new information on the health and wellbeing benefits which Falkland Islanders get from their environment, and I encour-

age every household to complete and return it," said Director of SAERI Paul Brickle.

Appendix 4: Comparisons of frequency of working outside in nature for sex, education, place of residence, age, employment and residency status social stratifications.

Table 1. Gender and frequency of working outside, in nature. We merged “All the time”, “Every day” and “Most days” into “>Most days” and “Very rarely” and “Never” into “<Rarely”.

| Frequency of working outside, in nature | Female | Male |
|---|--------|------|
| >Most days | 31 | 37 |
| Quite often | 16 | 10 |
| <Rarely | 29 | 9 |

Table 2. Education and frequency of working outside. We merged “All the time”, “Every day” and “Most days” into “>Most days” and “Very rarely” and “Never” into “<Rarely”.

| Frequency of working outside, in nature | Higher Education | Primary | Secondary | Vocational |
|---|------------------|---------|-----------|------------|
| >Most days | 26 | 1 | 21 | 13 |
| Quite often | 23 | 0 | 2 | 3 |
| <Rarely | 25 | 0 | 6 | 7 |

Table 3. Place of residence and frequency of working outside. We merged “All the time”, “Every day” and “Most days” into “>Most days” and “Very rarely” and “Never” into “<Rarely”.

| Frequency of working outside, in nature | Camp | MPA | Outer islands | Stanley |
|---|------|-----|---------------|---------|
| >Most days | 27 | 2 | 5 | 31 |
| Quite often | 1 | 0 | 0 | 23 |
| <Rarely | 0 | 0 | 0 | 35 |

Table 4. Age and frequency of working outside. We merged “All the time”, “Every day” and “Most days” into “>Most days” and “Very rarely” and “Never” into “<Rarely”.

| Frequency of working outside, in nature | 16-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ |
|---|-------|-------|-------|-------|-------|-----|
| >Most days | 5 | 10 | 11 | 9 | 15 | 14 |
| Quite often | 3 | 5 | 8 | 8 | 3 | 1 |
| <Rarely | 15 | 1 | 11 | 6 | 5 | 1 |

Table 5. Employment and frequency of working outside. We merged “All the time”, “Every day” and “Most days” into “>Most days” and “Very rarely” and “Never” into “<Rarely”.

| Frequency of working outside, in nature | FT paid work | PT paid work | Self-employed |
|---|--------------|--------------|---------------|
| >Most days | 27 | 8 | 25 |
| Quite often | 22 | 4 | 0 |
| <Rarely | 30 | 2 | 1 |

Table 6. Type of residence and frequency of working outside. We merged “All the time”, “Every day” and “Most days” into “>Most days” and “Very rarely” and “Never” into “<Rarely”.

| Frequency of working outside, in nature | Permanent resident | |
|---|--------------------|----|
| | Yes | No |
| >Most days | 57 | 5 |
| Quite often | 16 | 10 |
| <Rarely | 29 | 7 |

Appendix 5: Comparisons of frequency of spending leisure time outside in nature for sex, education, place of residence, age, employment and residency status social stratifications.

Table 7. Gender and frequency of spending leisure time in nature. We merged “All the time”, “Everyday” into “>Every day” and “Most weeks” and “Less than once a month” into “<Every week”

| Frequency of spending leisure time outside, in nature | Female | Male |
|---|--------|------|
| >Every day | 25 | 17 |
| Most days | 35 | 20 |
| <Every week | 23 | 20 |

Table 8. Education and frequency of spending leisure time in nature. We merged “All the time”, “Everyday” into “>Every day” and “Most weeks” and “Less than once a month” into “<Every week”.

| Frequency of spending leisure time outside, in nature | Higher Education | Primary | Secondary | Vocational |
|---|------------------|---------|-----------|------------|
| >Every day | 23 | 0 | 9 | 7 |
| Most days | 28 | 2 | 10 | 14 |
| <Every week | 29 | 1 | 6 | 9 |

Table 9. Place of residence and frequency of spending leisure time in nature. We merged “All the time”, “Everyday” into “>Every day” and “Most weeks” and “Less than once a month” into “<Every week”

| Frequency of spending leisure time outside, in nature | Camp | MPA | Outer islands | Stanley |
|---|------|-----|---------------|---------|
| >Every day | 12 | 0 | 2 | 27 |
| Most days | 11 | 0 | 1 | 40 |
| <Every week | 2 | 2 | 1 | 37 |

Table 10. Age and frequency of spending leisure time in nature. We merged “All the time”, “Everyday” into “>Every day” and “Most weeks” and “Less than once a month” into “<Every week”

| Frequency of spending leisure time outside, in nature | 16-24 | 25-34 | 35-44 | 45-54 | 55-64 | 65+ |
|---|-------|-------|-------|-------|-------|-----|
| >Every day | 4 | 4 | 12 | 6 | 9 | 7 |
| Most days | 14 | 6 | 11 | 8 | 5 | 12 |
| <Every week | 4 | 7 | 8 | 8 | 9 | 9 |

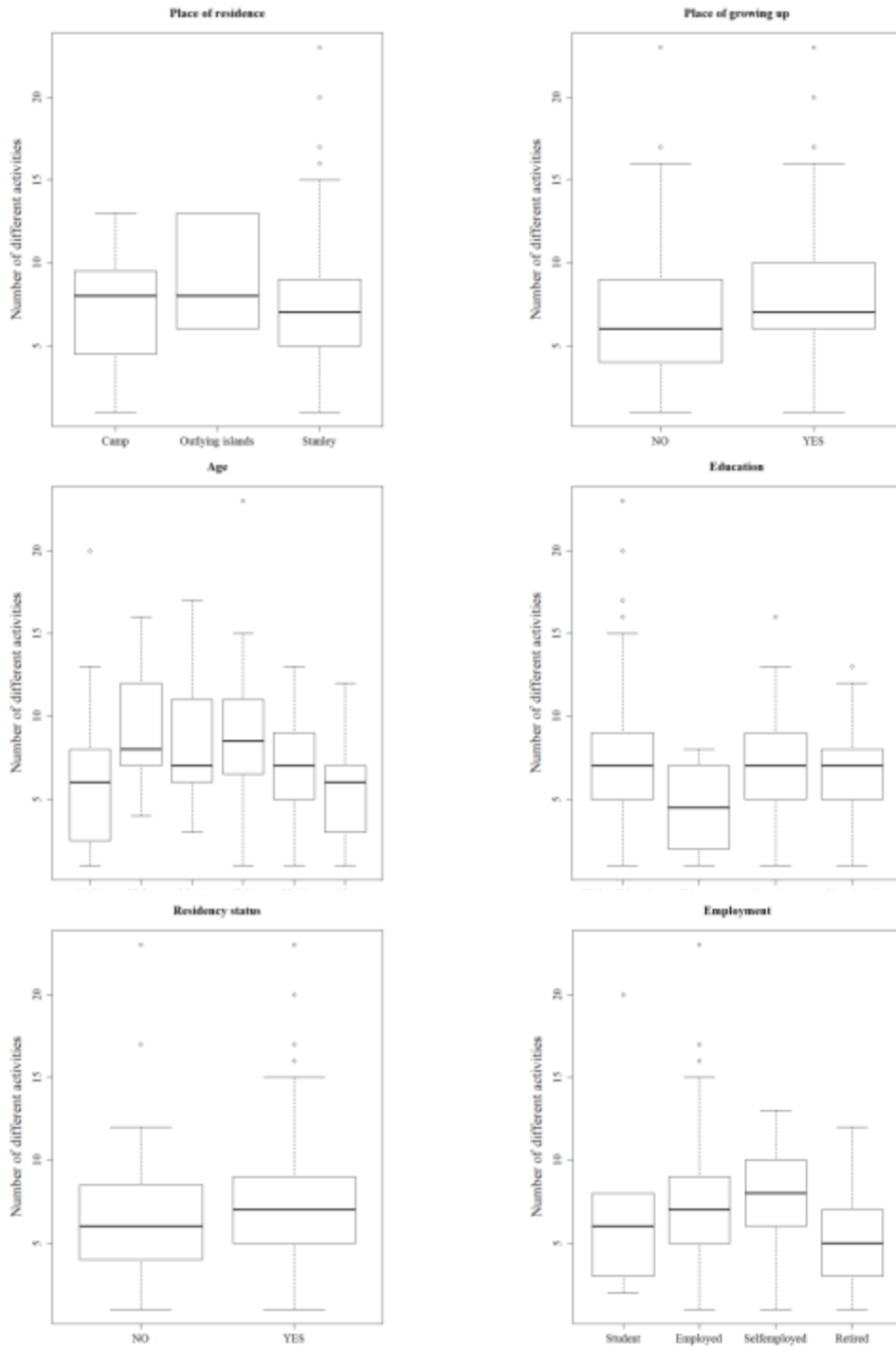
Table 11. Employment and frequency of spending leisure time in nature. We merged “All the time”, “Everyday” into “>Every day” and “Most weeks” and “Less than once a month” into “<Every week”

| Frequency of spending leisure time outside, in nature | FT paid work | PT paid work | Self-employed |
|---|--------------|--------------|---------------|
| >Most days | 24 | 4 | 7 |
| Quite often | 33 | 5 | 7 |
| <Rarely | 22 | 6 | 6 |

Table 12. Type of residence status and frequency of spending leisure time in nature. We merged “All the time”, “Everyday” into “>Every day” and “Most weeks” and “Less than once a month” into “<Every week”

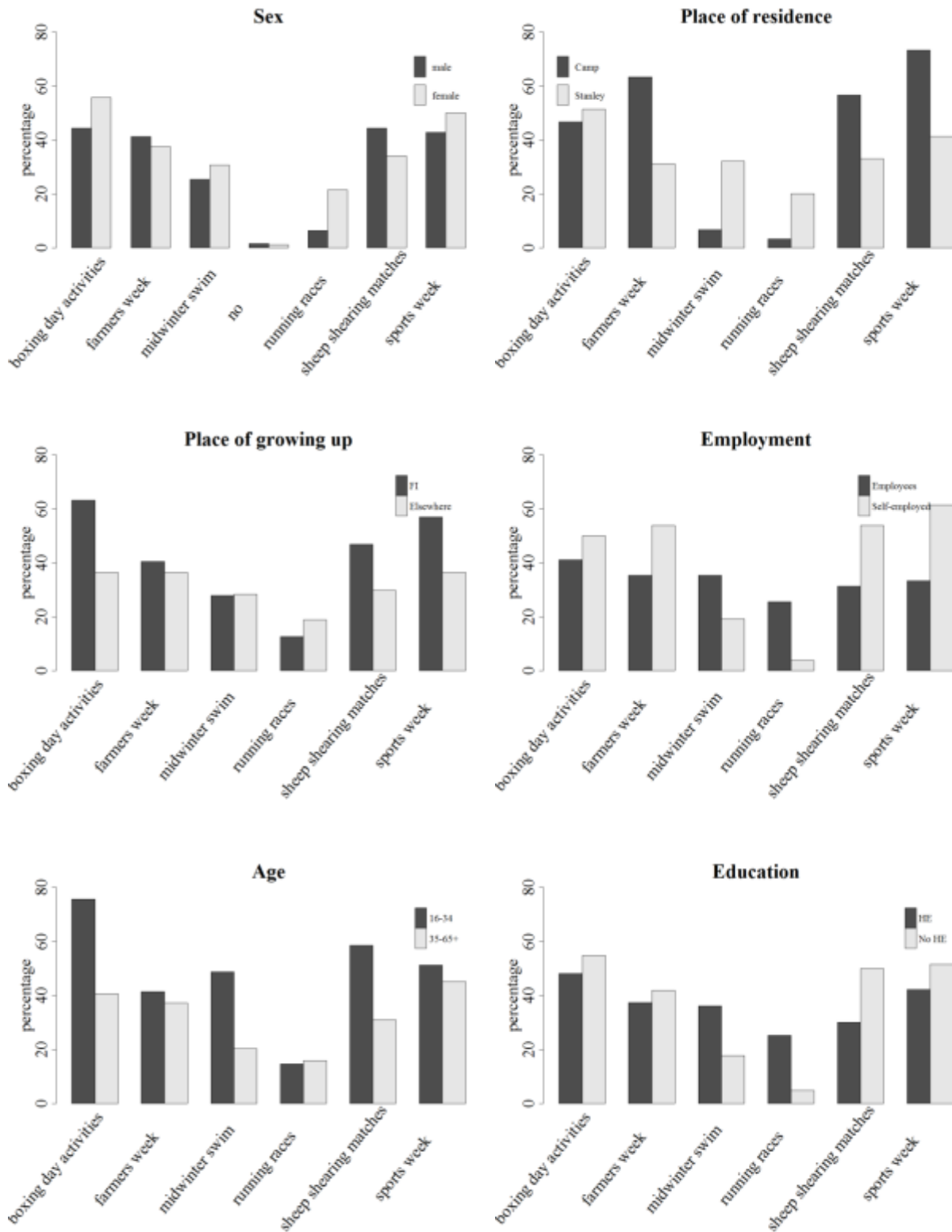
| Frequency of spending leisure time outside, in nature | Permanent resident | |
|---|--------------------|----|
| | Yes | No |
| >Every day | 32 | 8 |
| Most days | 43 | 12 |

Appendix 6



Comparisons of number of different outdoors activities enjoyed outside for place of resident, place of growing up, residency status, education, age, and employment. Only age and employment are significant according to the Holm corrected Kruskal-Wallis test.

Appendix 7



Social activities by sex, place of residence, place of growing up, employment, age and education.

Appendix 8: Table 13. Results from an ordinal regression on Q22_1

| Dependent variable: Q22_1 | |
|--|-----------------------------|
| Q10_1Most days | -0.212 (0.572) |
| Q10_1Most weeks | -1.477** (0.620) |
| Q5_correctedOften | -0.975 (0.862) |
| Q5_correctedRarely | -2.096** (0.993) |
| Q5_correctedNever | -2.364** (0.952) |
| Q5_correctedNotWorking | -5.000** (2.030) |
| P12Male | 0.457 (0.446) |
| P1Outlying islands | -1.451 (1.380) |
| P1Stanley | -0.814 (0.817) |
| P13A_25_34 | -1.200 (0.777) |
| P13A_35_44 | -0.289 (0.706) |
| P13A_45_54 | 0.242 (0.781) |
| P13A_55_64 | -0.122 (0.898) |
| P13A_65 | -1.629 (1.133) |
| Q3Full-time paid work (30+ hours per week) | -2.447** (1.190) |
| Q3Part-time paid work | -1.891 (1.309) |
| Q3Retired | 2.459 (1.826) |
| Q3Self-employed | -3.551** (1.417) |
| Q3Unemployed (not seeking work) | -1.480 (2.175) |
| Observations | 97 |
| Log Likelihood | -140.429 |
| Note: | *p<0.1; **p<0.05; ***p<0.01 |

Appendix 9: Table 14. Results from an ordinal regression on Q22_3

| Dependent variable: Q22_3 | |
|--|-----------------------------|
| Q10_1Most days | -0.521 (0.560) |
| Q10_1Most weeks | -1.300** (0.629) |
| Q5_correctedOften | 0.729 (0.863) |
| Q5_correctedRarely | 0.308 (0.997) |
| Q5_correctedNever | -0.580 (0.959) |
| Q5_correctedNotWorking | 1.211 (2.179) |
| P12Male | 1.011** (0.461) |
| P10Outlying islands | 0.335 (1.490) |
| P1Stanley | -1.333 (0.865) |
| P13A_25_34 | -1.719** (0.789) |
| P13A_35_44 | -0.848 (0.723) |
| P13A_45_54 | -1.049 (0.755) |
| P13A_55_64 | -0.814 (0.854) |
| P13A_65 | -0.746 (1.089) |
| Q3Full-time paid work (30+ hours per week) | -1.235 (1.225) |
| Q3Part-time paid work | -0.816 (1.395) |
| Q3Retired | -2.440 (1.929) |
| Q3Self-employed | -1.376 (1.401) |
| Q3Unemployed (not seeking work) | -3.747 (2.287) |
| Observations | 94 |
| Log Likelihood | -141.557 |
| Note: | *p<0.1; **p<0.05; ***p<0.01 |

Appendix 10

Work activities and eudaimonic well-being

