



Health & Well-Being from Coastal Environments

ECEHH & Plymouth University Team: Ian Alcock, Kat Ashbullby, Debbie Cracknell, Michael Depledge, Karin Dijkstra, Josey Field, Amanda Hignett, Rebecca Jenkin, Sabine Pahl, Cassie Phoenix, Jo Ross, Chloe Thomas, Ben Wheeler, **Mat White**, Kayleigh Wyles

Local Partners: Cornwall Council, Exhale, Global Borders, National Marine Aquarium, National Trust, Ocean Housing, Tectona Trust, Torrington Dental Practice, Wembury Conservation Zone....



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PROJECT DETAILS



Psycho-physiological responses to different environments

Physical activity can have a host of benefits for this study we are trying to understand more about exercising in different environments.

Listen to Dr White explaining the study to BBC

We are doing this in a controlled setting by asking 15 minutes whilst viewing images and sounds of

1. Coast
2. Countryside
3. Town
4. Blank wall (this acts as our control condition)

Over a period of 4 weeks participants will cycle. We are monitoring participant's mood, arousal before, during and after cycling.

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PROJECT DETAILS



The beach as a setting for families' health promotion

This multi method project involving in-depth interviews with 15 families aged 8-11 years living in Cornwall and Devon is exploring the following:

- how families spend their time at the beach
- children and parents perceptions of the risks and benefits of it
- children and parents perceptions of the barriers and enablers to beach and children active free play in coastal settings

Natural outdoor environments are increasingly being considered as health promotion and for the role they can play in increasing human wellbeing. This is in light of evidence that engagement with nature can promote physical activity, reduce stress, restore cognitive ability, social interaction and facilitate pro-environmental attitudes and behaviour.

For children in particular, natural environments can offer multiple benefits for physical activity through active play, the nature, creative play, social interaction and the development of independence in being outdoors. Of course, in addition to offering benefits for children and adults, natural environments also can provide

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PROJECT DETAILS



Blue space and health: Secondary data analysis

As part of the Centre's programme of research on how aquatic environments (blue space) are related to health and wellbeing, we are conducting secondary data analyses.

Secondary data are those that have already been collected, and by using these alongside data we collect ourselves (primary data), we can set out to address our research questions in a powerful, highly efficient and cost-effective manner.

These secondary data can be used within Geographic Information Systems (GIS) in order to map environmental, socio-economic and health data together. GIS allows us to visualise how, for example, rates of disease vary spatially, and to carry out geographical analysis to determine how environmental conditions are related to health outcomes.

We are currently working with health/socio-economic datasets derived from the UK Census and other large scale surveys, and environmental datasets from landuse surveys, satellite imagery and so on.

These data permit us to address questions such as to what extent access to 'blue space' (coastal, inland waterways and urban waters) might have positive effects on public health and wellbeing.

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ALTHOUGH





1) Secondary data sets (today's main focus)

- Where people live and health indicators

2) Field research

- Beach studies; Aquarium studies; Dental practice studies

3) Experimental lab work

- Reactions to images, videos and sounds

4) Qualitative interviews

- Adults, children & families

5) Narrative & visual methods

- Older adults & exercise



Choosing a hotel room.....

All 3 rooms are identical (2-3 star, size, furniture, en-suite, price) except view from the balcony

A



£60.81

B



£72.85

C



£47.96

Mean Willingness to Pay (per night) – 120 images



Hotel rooms & houses with water views cost roughly 10% more (Luttik, 2000, Lange & Schaffer, 2001)

UK – 250 million visits to the coast per year
– 180 million visits to inland waterways
(Natural England, 2009)



£Multi-million Spa & “Wellness” industry has water as it's centre (Spa Business Association, 2006)

Growing water sports industry





Lab Work: People think the coast is stress reducing

Urban



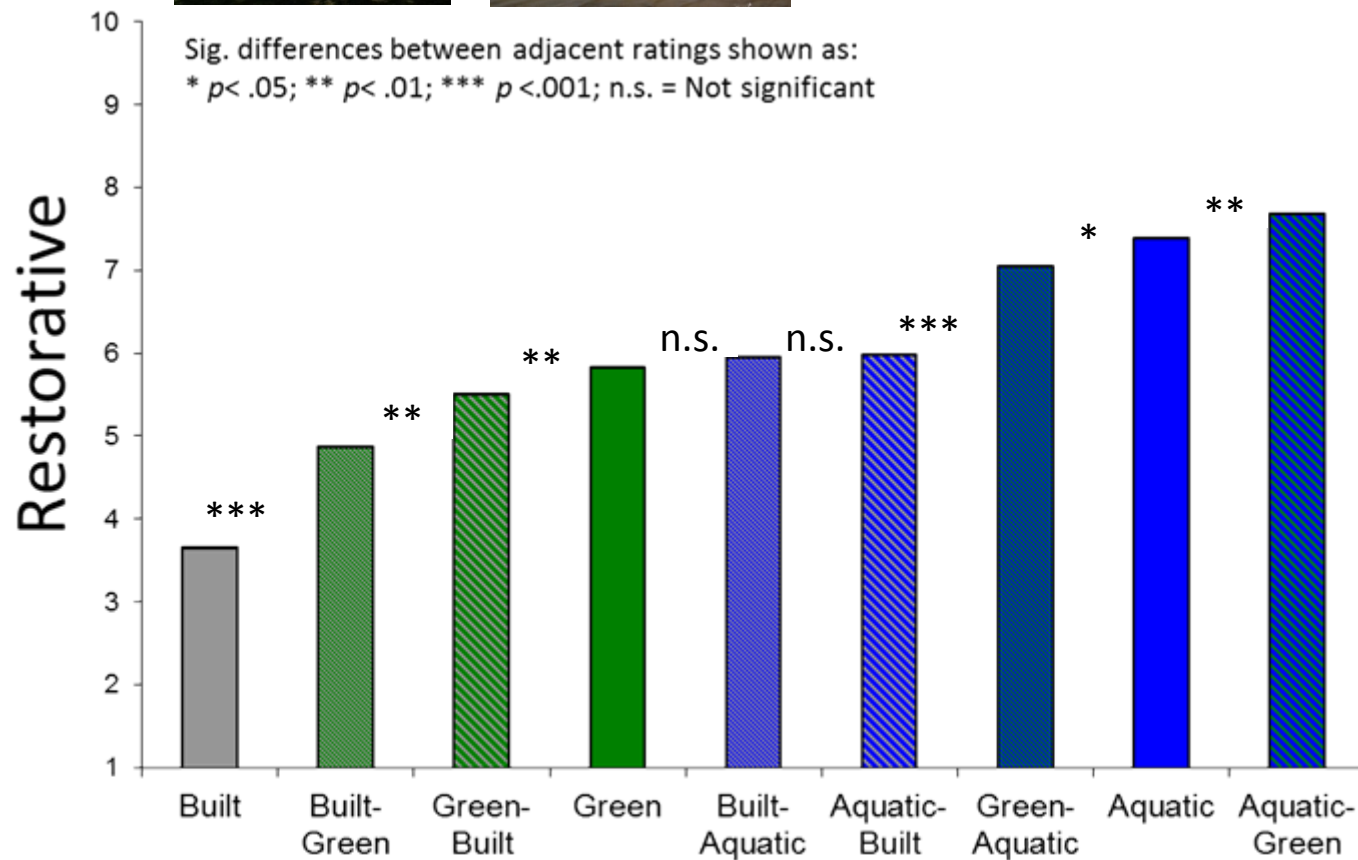
Rural



Coastal



120 images controlling
for content





Stress Reduction & Sounds

116 students (between-participant design)

Blindfolded and listened to one of 4 recordings

Control;



Urban;



Green;



Coast

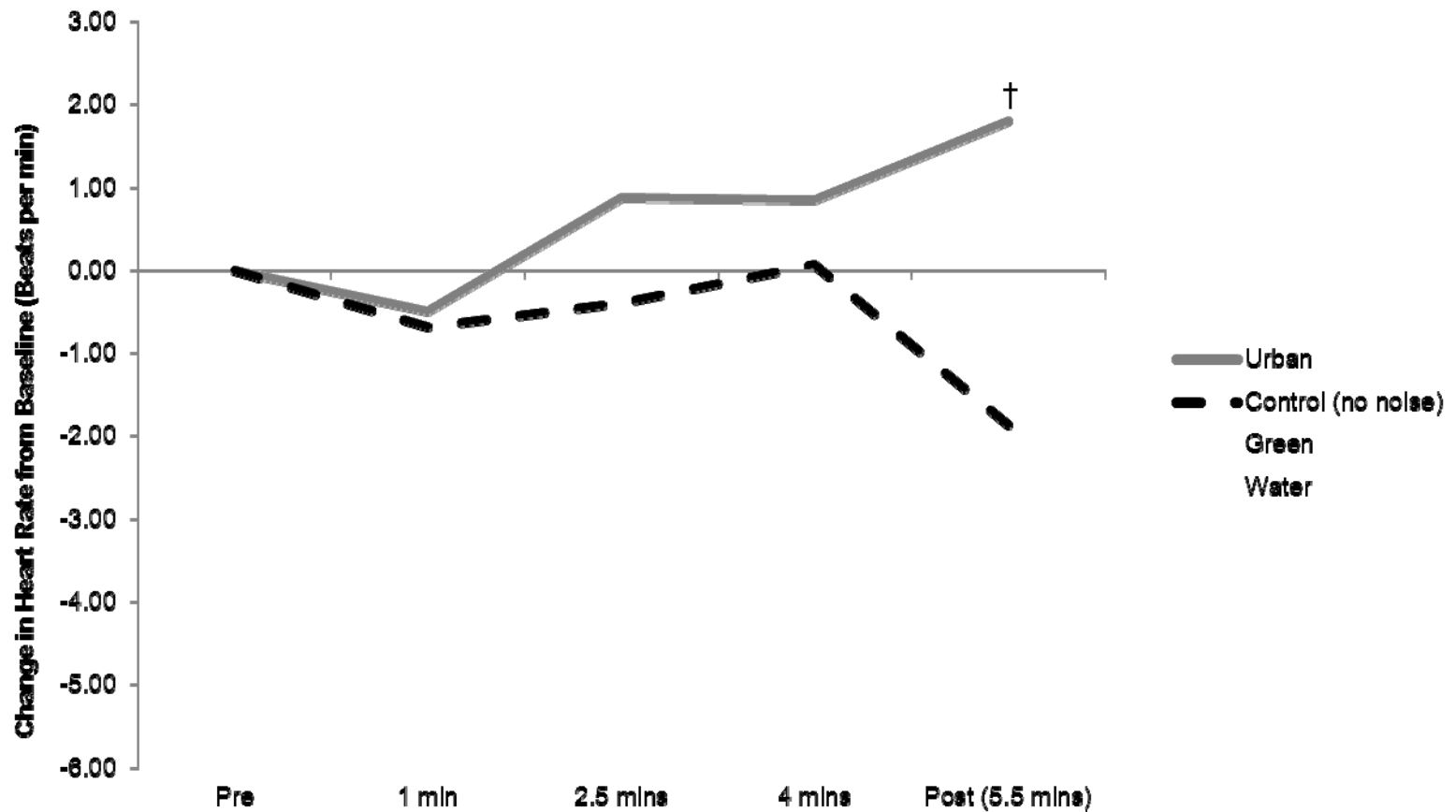


Duration = 5 minutes

Several DVs – focus here on health outcomes (HR)



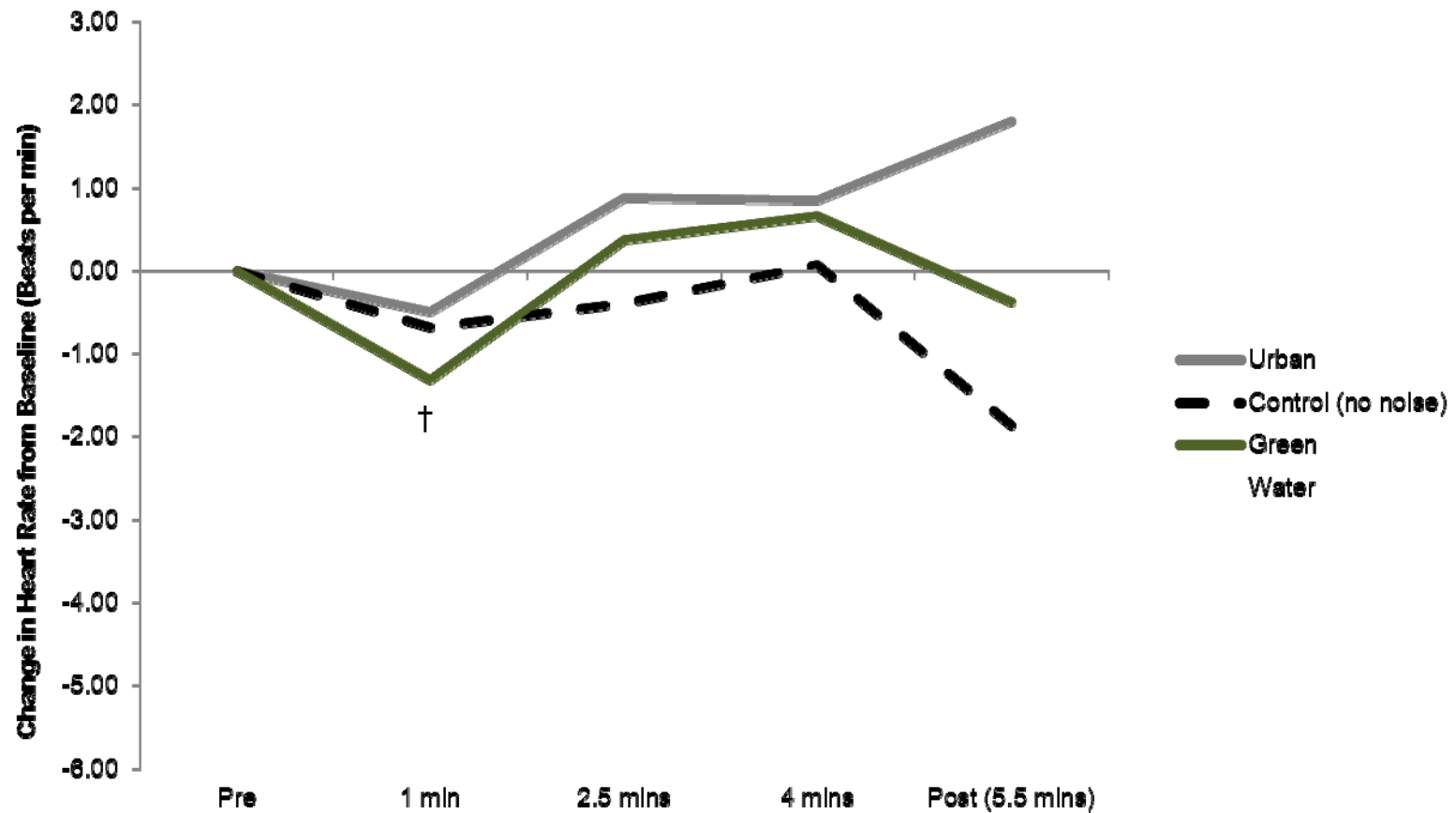
Stress Reduction & Sounds



† p < .1; * p < .05; ** p < .01; *** p < .001



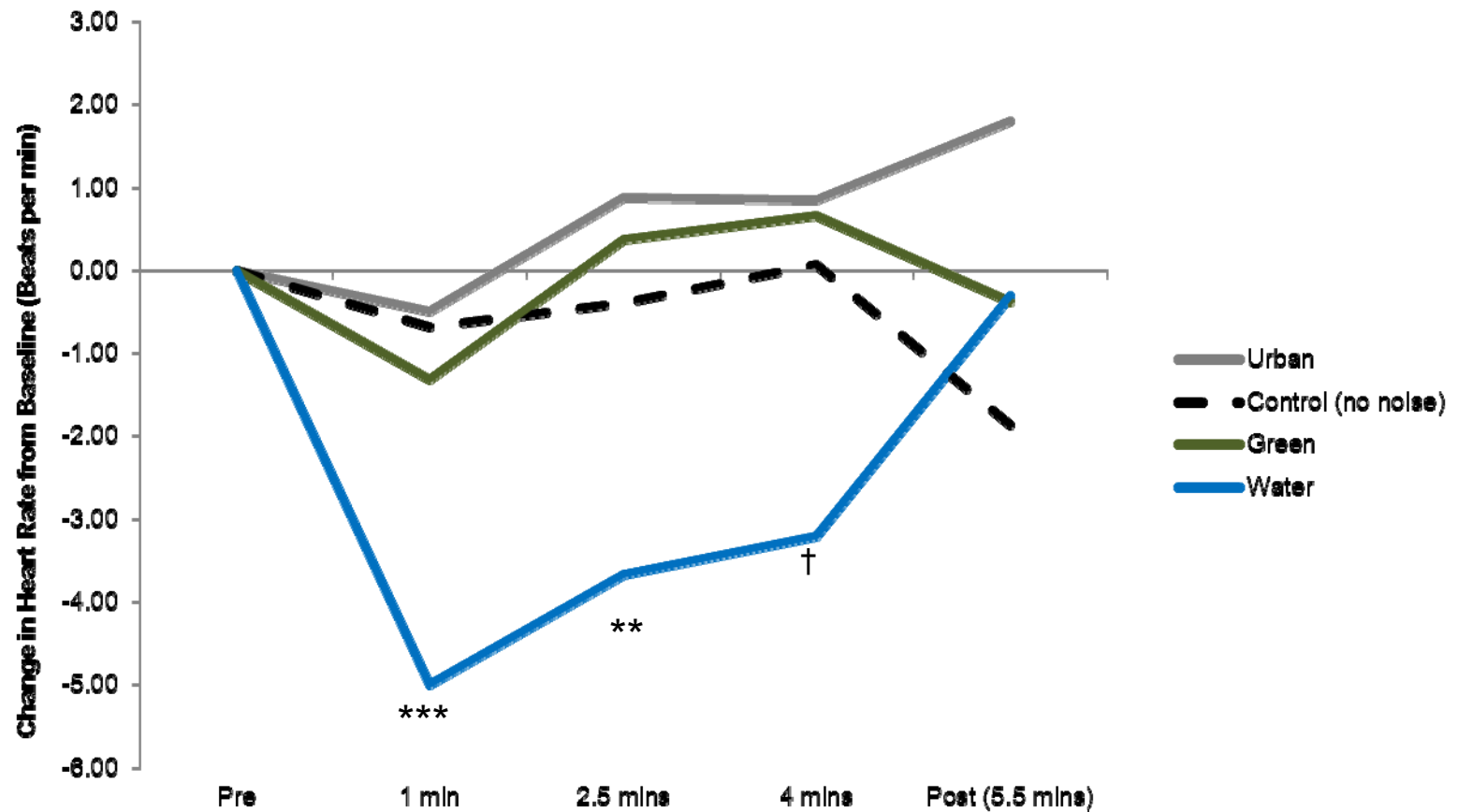
Stress Reduction & Sounds



† p < .1; * p < .05; ** p < .01; *** p < .001



Stress Reduction & Sounds



† $p < .1$; * $p < .05$; ** $p < .01$; *** $p < .001$



What we find.....

Lab studies: Stress reduction from
coastal scenes/sounds



Yea but.....

Is this true of “real” people in “real”
environments?



Natural England's: Monitoring Engagement with the Natural Environment (MENE)

- Face-to-face interviews with 94,613 individuals (2009-2011).
- 37,763 (39.9%) people made ≥ 1 nature visit in last 7 days
 - 1) *Town or city (parks)* = 41%;
 - 2) *Countryside* = 45%
 - 3) *Seaside resort or town* = 10%
 - 4) *Coast beaches/cliffs* = 4%
- 70% of coastal visits were made by people living <5miles
- All demographics equally (ages, gender, SES)



MENE Subset (n = 2,700)
asked about experiences

We focused on 2,854 on a trip
from home

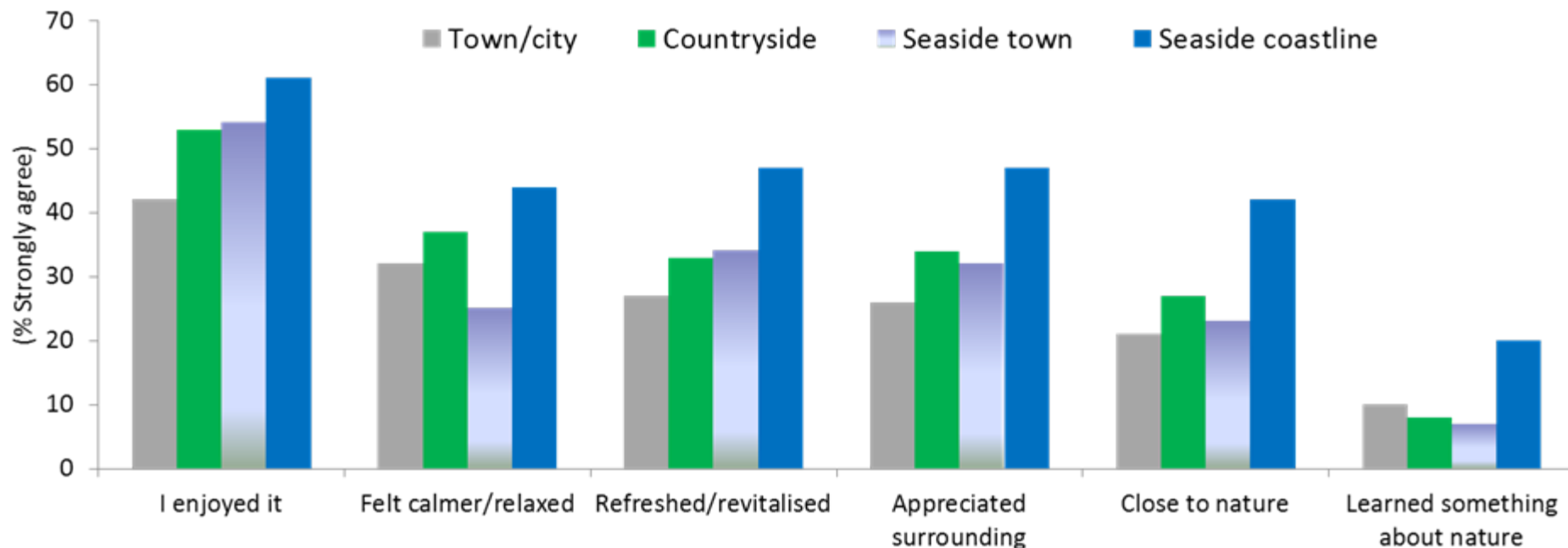
We also compared those who only
“went for a walk” to account for
differences in physical activity in
different places

Also took account of dog walkers





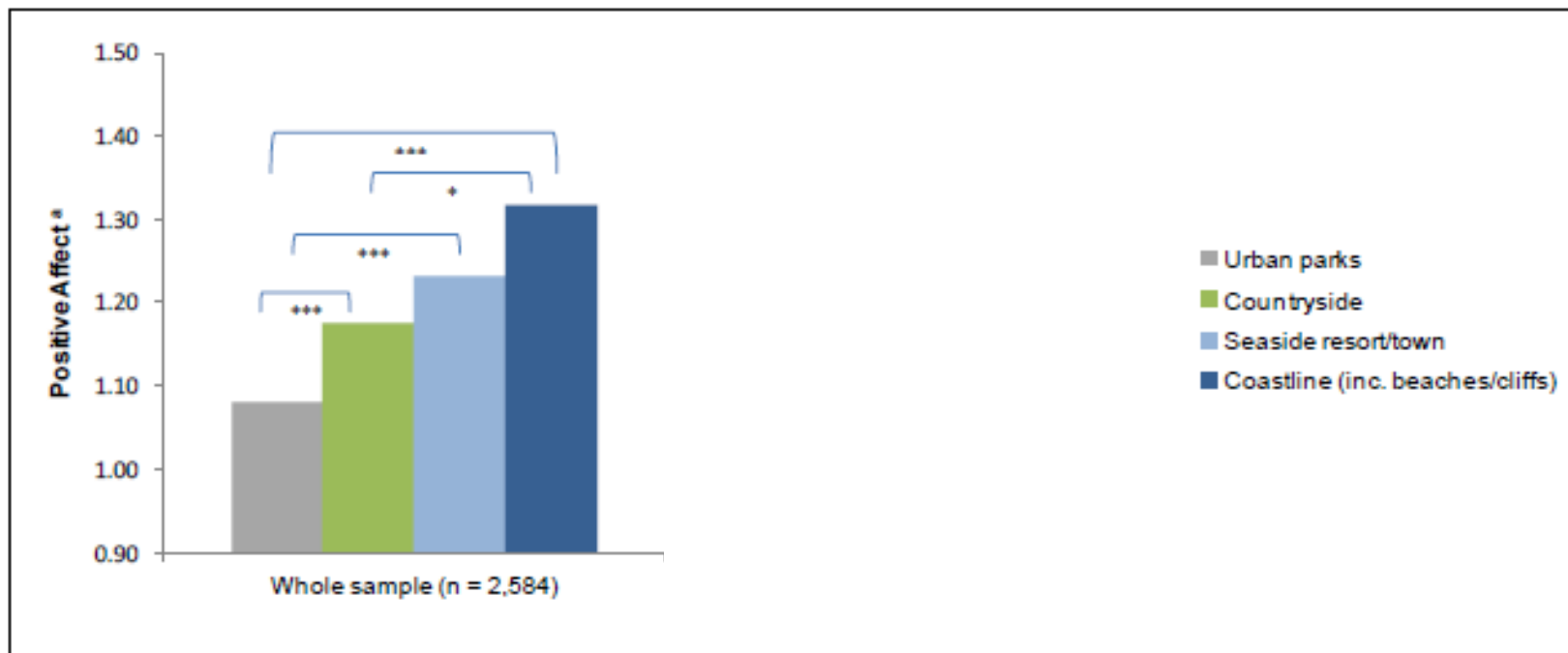
To what extent would you agree with the following statements about your visit?





Emotional experiences: *enjoyed, calm, relaxed, revitalised, refreshed*)

All activities All locations (+) but.....



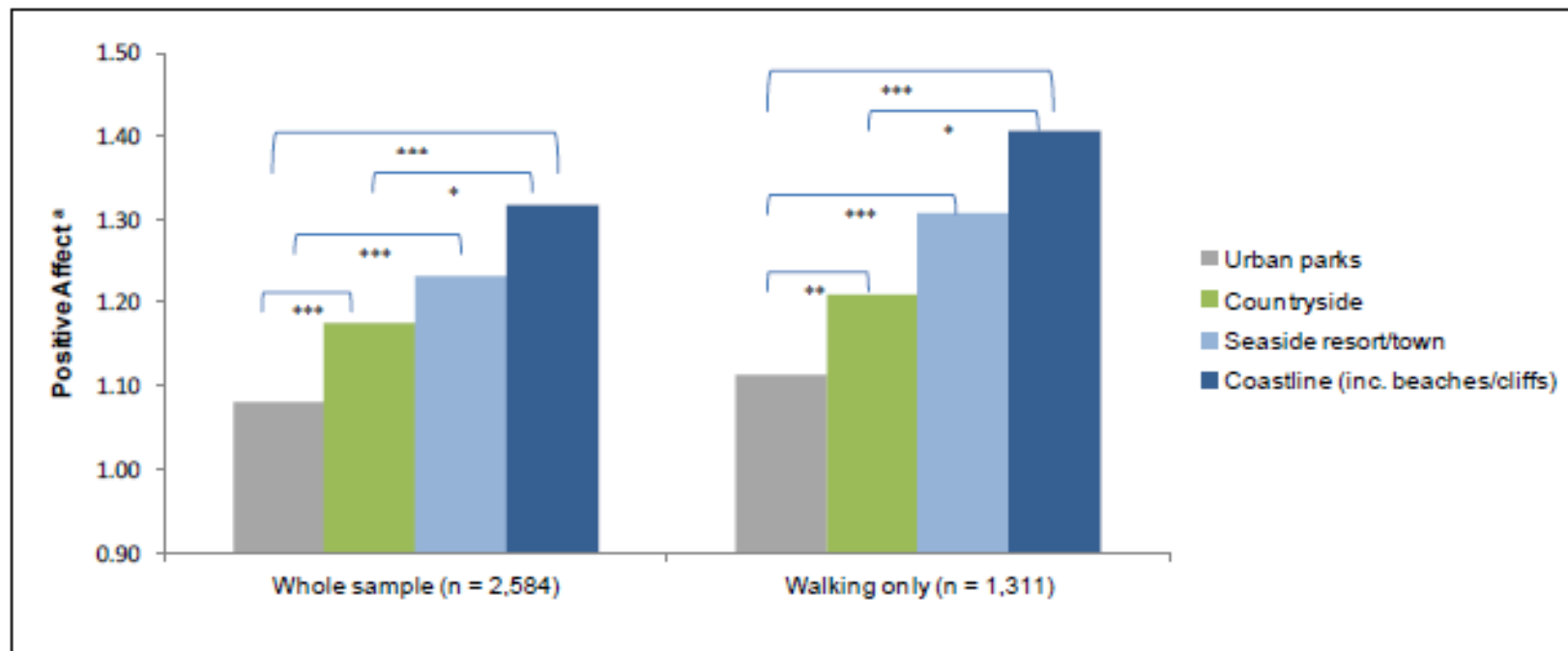
* Estimated marginal means controlling for age, gender, socio-economic status, distance travelled, means of travel, and visit companions. Inferential statistics based on repeated contrasts. * $p < .05$; ** $p < .01$; *** $p < .001$.



Emotional experiences: *enjoyed, calm, relaxed, revitalised, refreshed*

All activities
All locations (+) but.....

Walkers only
(no dog effect)



^a Estimated marginal means controlling for age, gender, socio-economic status, distance travelled, means of travel, and visit companions. Inferential statistics based on repeated contrasts. * $p < .05$; ** $p < .01$; *** $p < .001$.



What we find.....

Lab studies: Stress reduction from coastal scenes/sounds

MENE data suggests yes (& not a function of different activities). Visit-proximity gradient.



Yea but.....

Is this true of “real” people in “real” environments?

But does this have any real impact on public health? Stress reduction related to physical health (and proximity?)



Self-reported health Census Data (England, n = 48 million)

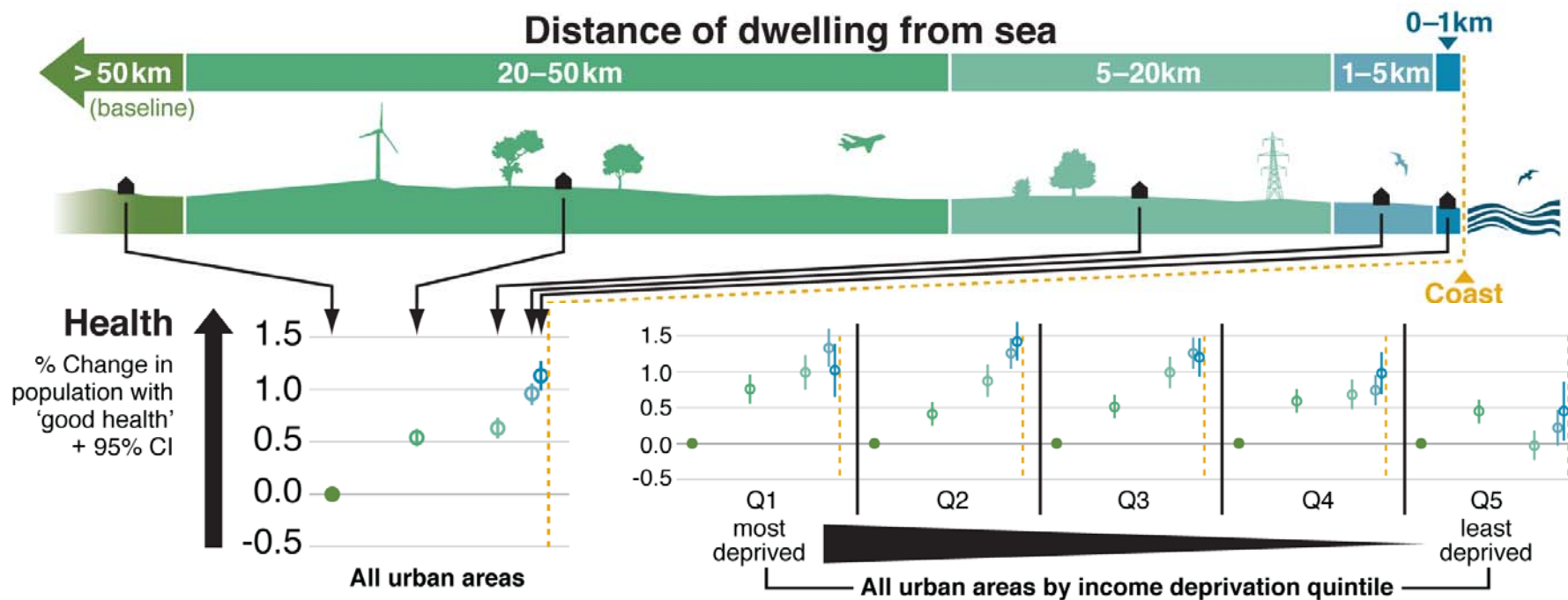


Fig 1. The coast and good health in urban areas. Age standardised % of population stating 'good health' relative to those in areas furthest from the coast (>50km) - adjusted regression coefficients with 95% confidence intervals; total and by income deprivation quintile.



What we find.....

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Census data suggests that coastal proximity is associated with better health (esp. for lower SES areas).



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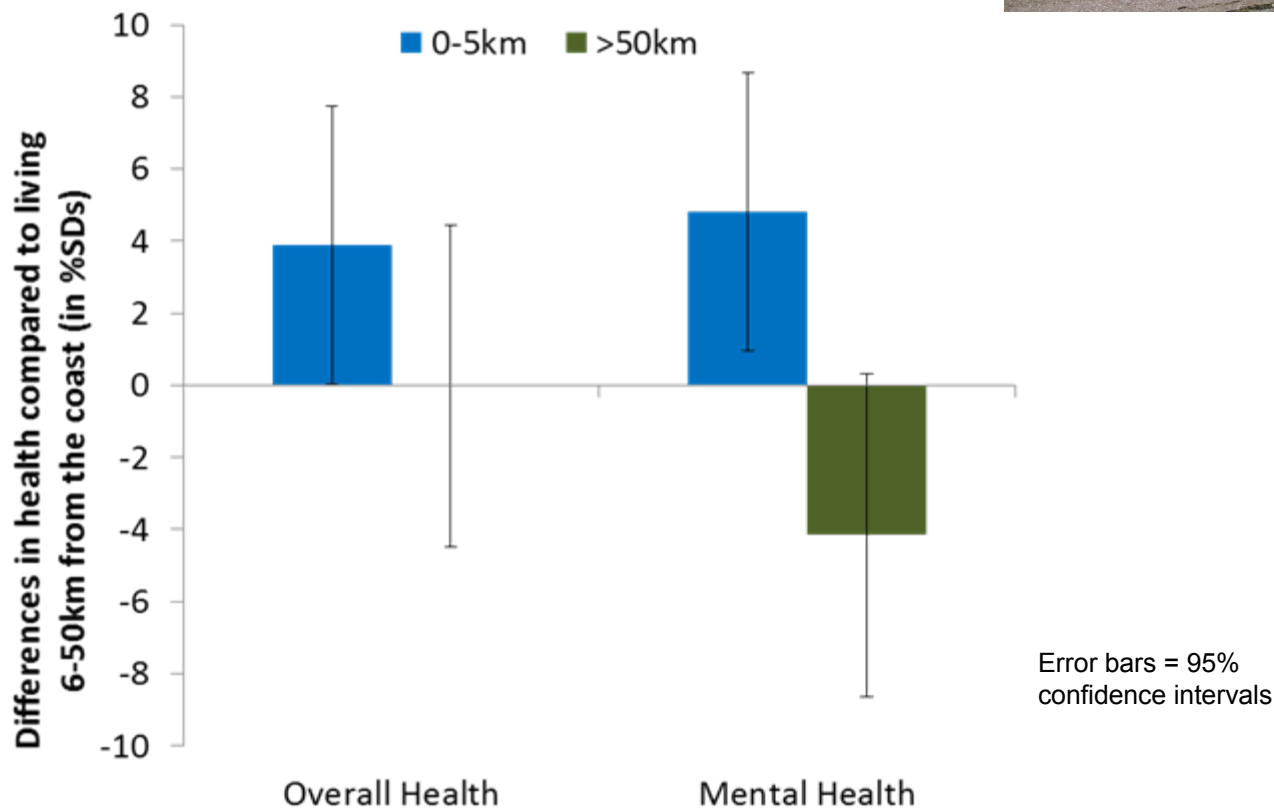
What about self-selection effects, maybe people nearer the coast are already healthier?



British Household Panel Survey (N =15,471, Obs = 109,844)



Self-reported
overall and mental
(GHQ) health
(1991-2008)
32,000 LSOAs
Moves>2,000



Controlling for:

Individual Level - age, income, education, health, employment status, marital status, children, commute, house type, house size
Area Level: Income, Employment, Education, Crime,



What we find.....

Lab studies: Stress reduction from coastal scenes/sounds

MENE data suggests yes (& not a function of different activities). Visit-proximity gradient.

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Following the same people over time we find health improves when they move nearer the coast



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Imagine the cumulative, community level gain. Besides do you know the effect sizes of drugs, marriage etc?



Yea but.....

Is this true of “real” people in “real” environments?

But does this have any real impact on public health? Stress reduction related to physical health (and proximity?)

What about self-selection effects, maybe people nearer the coast are already healthier?

These effects are pretty small!

Okay, I’m starting to buy it... but hey maybe it’s just an English thing?



- 1) Other countries? (Mike Depledge)
- 2) What is the optimal dose? (Kat Ashby)
- 3) How long do effects last? (Amanda Hignett, PhD)
- 4) What about children? (Becky Jenkin, PhD)
- 5) Environmental impact? (Lewis Elliot, PhD)
- 6) Comparisons to drugs (e.g. depression)?**



- People who live near the coast are (slightly) healthier
- Effects strongest for those in more deprived areas

WHY?

- 1) They are more likely to visit the coast
- 2) Coastal visits are relaxing/stress reducing
- 3) Lower stress = better mental & physical health



BUT...

Still much to learn about other countries, dose-response, duration of effects, key populations, environmental costs, comparisons to drugs etc.



Seaside is healthy place to be

PLYMOUTH researchers have concluded that being beside the seaside is good for your health.

They found exercise in the open air is beneficial, but it is better to head for the coast or the countryside than an urban park.

The study was conducted by Katherine Ashbullby and Dr Mathew White from the European Centre for Environment and Human Health (ECEHH), Peninsula College of Medicine and Dentistry, and the School of Psychology, University of Plymouth.

Dr White presented the findings today to the British Psychological Society Annual Conference in London.

He said: "There is a lot of work on the beneficial effects of visiting natural environments, but our findings suggest it is time to move beyond a simple urban vs



19 April 2012 Last updated at 00:53

People really do like to be beside the seaside, study says

By Sean Coughlan
BBC News education correspondent

The songs and postcards appear to be right - a study suggests we really do like to be beside the seaside.

The study of 2,750 people presented to the British Psychological Society examined the effects of different types of outdoor environments on people.

Researchers found the bracing seaside air had a more positive effect than the countryside or an urban park.

Researcher Mathew White said it could reflect an "innate preference" for the sights and sounds of water.

The study examined how different types of outdoor environments could generate different reactions from people in terms of encouraging a sense of relaxation and calm.

Seaside rocks

This found that being beside the coast was significantly more likely to create a feeling of well-being



Researchers discovered people of all age groups found the seaside more refreshing than the countryside

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British seaside tourism 'growing'



In praise of... the seaside

The Victorians associated the sea with melancholy and death. The Edwardians just thought the sea was fun - and they were right. The do like to be beside the sea all up. The Edwardians, in fact, were right. Research by Katherine Ashbullby and Dr Mathew White of Plymouth University really do like to be beside the sea. The British Psychological Society annual conference in London said coastal visits generate par of satisfaction - as defined by pleasure, health and appropriate visits to the countryside. Proximity to the sea has attempts to craft a world. But, since the happiest nation found to be Denmark, Finland, Netherlands and Canada, it needs to be taken into account. limits to this theory on the list.

Recent Media Coverage

Forget science – instinct tells us a day at the coast does us good

New research shows we really do love to be beside the sea – to the delight of **Martin Hesp**

There is something heartening about watching scientists and researchers labouring hard to come up with facts that most of us knew all along – it points to

factors like people's age, how far they had travelled, the presence of others and the activity they undertook.

The findings were delivered to the British Psychological Society Annual Conference this week, thereby giving scientific backing to the old song "Oh we do like to be beside the seaside".

I am fascinated by the underlying psychology of why we like to be by the sea, and what factors like people's age, how far they had travelled, the presence of others and the activity they undertook.

isolated bacteria from salt-marsh mud and located the single gene responsible for the emission of the strong-smelling gas we all know and thought we loved.

This seems to fly in the face of my "if we instinctively know it's good for us, then it must be" theory. Perhaps, when we go to the seaside, the "ozone-smell" simply brings back a plethora of emotions as memories of happy childhood holidays come flooding back.

My own theory is that we are hard-wired to like the seaside because our ancestors spent so long living beside

about 1.5 million years ago. Erectus (upright man) began a journey on the shores of Southern Africa, and his

ancestors – the first real humans – spent the best part of 100,000 years on the shores of that continent. For those early folk, the sea was a source of food, and their successors, known as Homo Sapiens, began to travel over the land bridges into Europe some 500,000 years ago.

For those early folk, the beaches were good places to be. They're fairly safe when compared with impenetrable jungles – and they're rich in food. Shellfish are easy to harvest and are extremely nutritious, as is seaweed. And, if you're clever enough, you can even catch fish in quantities that will sustain you for days.

All these thousands of years later, we're still addicted to the beach. This week Dr White, a lecturer in health and risk from the ECEHH,



26 April 2012 Last updated at 14:47

Scientists study health benefits of Cornish coastline

Scientists in Cornwall are carrying out a study to determine if the coastline can really benefit people's health.

The research is taking place at Truro's European Centre for the Environment and Human Health. Participants exercise on a static bike or treadmill while watching video clips of different environments, including some from Cornwall.

Reactions will then be analysed. The clips encourage more time outdoors. "Value of being outdoors is a key factor in the study," says Dr White.

that healthy ozone is not ozone at all, nor is it particularly healthy. The distinctive smell we enjoy emanates from something called dimethyl sulphide (DMS), and inhaling it is not necessarily good for you.

A few years ago scientists from the University of East Anglia discovered what gives the seaside its unique smell and actually managed to extract and bottle it. The team

and visits to urban areas are least beneficial. This remained the case when the researchers took account of

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We really do like to be beside the seaside, say psychologists

By JENNY HOPE

PUBLISHED: | UPDATED:

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It may be something to do with the soothing sound of the waves in accordance with the music hall song – we do like to be beside the sea, psychologists have confirmed.

Given the choice of the beach, the countryside or an urban park, the seaside wins hands down.

A study of data on 2,750 people aged eight and over in England was analysed by researchers at the Plymouth.



Is surfing therapy for dis

By Jonathan Morris
BBC News, Plymouth

26 June 2012 Last updated at 14:47

Surfing is being used as a therapy for disabled children. A study has found that surfing sessions leave him more relaxed and more at ease with other children.

She said: "Before surfing, finding things for him to do was very difficult. He would not get kitted out appropriately for British waters, and his family have never looked back.

Surfing sessions leave him more relaxed and more at ease with other children. She said: "Before surfing, finding things for him to do was very difficult. He would not get kitted out appropriately for British waters, and his family have never looked back.

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We do like to be beside the seaside

Psychological benefits may be the reason why so many people like to be beside the seaside. A study has found that a walk on a beach has more impact on emotional well-being than a stroll

Thursday, 19 April 2012

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Thursday, 19 April 2012



17 July 2012 Last updated at 01:40

People feel 'healthier' on the English coast

People living on the English coast are more likely than those living inland to say they are fit and well, an analysis of census data suggests.

The researchers said living in areas such as Skegness, St Ives or Scarborough was linked to a "small, but significant" improvement in health.

Lower stress and more opportunities to exercise were suggested as possible explanations.

The findings were published in the journal *Health and Place*.

The researchers looked at data from 48 million people in England from the 2001 census. They compared how close people were to the bracing sea air and their answer to a question about their own health.

The study was conducted by the European Centre for Environment and Human Health at the Peninsula College of Medicine and Dentistry at the University of Exeter.

It found people living less than 1km from the sea were more likely to say

Related Stories

Seaside 'really is good for you'

Green spaces 'reduce health gap'



	URBAN (n=26455)			TOWN/FRINGE (n=3081)			RURAL (n=2946)		
	b	95% CI	n	b	95% CI	n	b	95% CI	n
Distance to coast									
>50km*	0	-	10098	0	-	1023	0	-	870
>20-50km	0.54	(0.46,0.62)	8096	0.04	(-0.20,0.28)	898	0.22	(0.01,0.42)	990
>5-20km	0.63	(0.53,0.73)	3571	0.43	(0.16,0.71)	620	0.41	(0.17,0.64)	705
>1-5km	0.96	(0.85,1.06)	3133	0.89	(0.54,1.25)	303	0.73	(0.41,1.05)	317
<1km	1.13	(0.99,1.27)	1557	1.19	(0.79,1.59)	237	-0.09	(-0.69,0.51)	64
% greenspace by area									
Quintile 1*	0	-	5291	0	-	617	0	-	590
Quintile 2	-0.02	(-0.13,0.08)	5291	0.13	(-0.17,0.43)	616	0.14	(-0.12,0.40)	589
Quintile 3	-0.01	(-0.11,0.10)	5291	0.15	(-0.14,0.45)	616	0.31	(0.04,0.57)	589
Quintile 4	0.23	(0.13,0.33)	5291	0.49	(0.19,0.79)	616	0.25	(-0.03,0.52)	589
Quintile 5	0.36	(0.26,0.47)	5291	0.69	(0.39,0.99)	616	0.59	(0.30,0.88)	589
Deprivation indices (b coefficient per quintile)**									
Income	1.61	(1.56,1.66)	26455	0.84	(0.71,0.96)	3081	0.42	(0.33,0.52)	2946
Employment	1.23	(1.19,1.28)	26455	1.19	(1.08,1.30)	3081	0.86	(0.77,0.95)	2946
Education	1.58	(1.54,1.61)	26455	1.52	(1.42,1.62)	3081	1.21	(1.13,1.29)	2946
Crime	0.07	(0.04,0.10)	26455	0.25	(0.17,0.32)	3081	0.07	(0.01,0.13)	2946
Environment	0.13	(0.10,0.16)	26455	-0.17	(-0.25,-0.10)	3081	-0.05	(-0.12,0.01)	2946
Constant	53.49	(53.38,53.61)		59.58	(59.20,59.96)		66.11	(65.71,66.50)	
R²	0.84			0.75			0.66		

OLS regression coefficients; all models adjust for age, sex, 5 deprivation domains



	Overall self-reported health				Mental Health (Inverse - GHQ)		
	B	(se)	p value		B	(se)	p value
LSOA Level Variables ^a							
Coastal proximity (km) ^b	.0007	.0003	.026		.0033	.0011	.003
% Green space	.0001	.0003	.058		.0027	.0010	.010
% Freshwater	-.0001	.0007	.893		-.0017	.0024	.480
Income	.0211	.1094	.847		-.3147	.3953	.426
Employment	.0001	.0017	.723		.0050	.0061	.410
Education	.0000	.0005	.962		-.0002	.0017	.907
Crime	.0032	.0076	.677		.0140	.0274	.610
Individual Level Variables							
Age (see full model)	-	-	-		-	-	-
Diploma/degree level qualified	-.0001	.0107	.993		-.0020	.0387	.959
Married ^c	-.0060	.0095	.532		.3975	.0346	.000
Living with children ^d	.0071	.0087	.409		-.0562	.0315	.074
HH income ^e	-.0023	.0052	.658		.0212	.0185	.251
With work-limiting health ^f	-.5624	.0078	.000		-.8806	.0288	.000
Labour Market Status							
Employed (ref)	/	/	/		/	/	/
Unemployed	-.1753	.0144	.000		-1.1908	.0519	.000
Retired	-.0796	.0147	.000		-.1003	.0533	.060
In education/training	-.0472	.0154	.002		.0499	.0549	.363
Family carer	-.0798	.0145	.000		-.3561	.0523	.000
HH Residence type (see full model)	-	-	-		-	-	-
HH Space ^g (see full model)	-	-	-		-	-	-
Commuting Time (see full model)	-	-	-		-	-	-
Constant							
Constant	3.9925	.0604	.000		9.845	.2173	.000
N. observations		109,844				114,133	
N. individuals		15,471				15,361	
Model R ²		.194				.0602	