

# Digital health equity for older people

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Digital Health Equity/Equality The problem – is well known A quick reminder

The age-gap in internet use is getting smaller but is still substantial.

And 'using the internet' is a very blunt measure – ranging from people who occasionally email to those who are permanently online

Source UK Office of National Statistics (ONS) Percentage of adults who have used the internet in the last three months,

#### by age group and sex, UK, 2011 and 2018



% of internet users





Geographical variation with rural areas having slower broadband speeds

> Contains Royal Mail Data ©2015 Contains National Statistics Data ©2015 Shape file courtesy of http://www.opendoorlogistics Median Download Speed (Mbps) 7 13.4 20.1 26.8 33.5 40.2 46.9 53.6



Internationally big differences in cost vs income

Source: Statista.com (2021)

# How Many Hours of Work Pay the Internet Bill?

Monthly work hours<sup>\*</sup> needed to pay for the cheapest broadband connection in selected countries (in hh:mm)





Source: Graham, De Sabbata, Zook (2015)

Internet use in England depends on age and wealth (independently)

Understanding digital engagement in later life Katey Matthews and James Nazroo University of Manchester May 2015

Based on English Longitudinal Study of Ageing (ELSA) people aged 50+

See eg https://digitalinclusion.blog.gov.uk/2016/02/01/digital-engagement-in-later-life/

# Digital design barriers

Look at W3C web accessibility initiative  

 Web Accessibility Initiative
 Strategies, standards, resources to make the Web accessible to people with disabilities

 Accessibility Fundamentals
 Planning & Policies
 Design & Develop
 Test & Evaluate

 Home / Accessibility Fundamentals / How People with Disabilities Use the Web / Diverse Abilities and Barriers

Accessibility Fundamentals

Introduction to Accessibility

Foundations Online Course

Components of Web Accessibility

Accessibility Principles

Perspectives Videos

How People with Disabilities Use the Web

Stories of Web Users

**Diverse Abilities and Barriers** 

Tools and Tochnique

#### **Diverse Abilities and Barriers**

in How People with Disabilities Use the Web

#### Summary

This page explores the wide diversity of people and abilities. It highlig commonly experience because of inaccessible websites and web tools

Note: This page is illustrative and is not a complete list of all disabilitie

#### **Page Contents**

- Diversity of abilities
- Auditory
- Cognitive, learning, and neurological
- <u>Physical</u>
- Speech
- <u>Visual</u>

# Many disabilities come with age In the UK...

- Hearing loss: 40% of people 50+, >70% of people 70+
- Sight loss: 20% of people 75+, 50% of people aged 90+
- Dementia: 17% 85-89, 28% 90-94, 38% 95+
- Dexterity decreases with age (both cognitive and 'healthy')

Goodman-Deane, Joy, Mike Bradley, and P. John Clarkson. "Digital technology competence and experience in the UK population: who can do what." *Proceedings of ergonomics and human factors* (2020).

- Survey 2019, frequency of use and ability to use common interfaces
- Technology experience and competence decline with age
- Older users may really struggle with interfaces
- They recommend

"that designers avoid the use of interaction patterns that have no real-world analogue equivalents. If using them is unavoidable, then we encourage designers to provide clear guidance on how to use them."

# At home I have cable TV, an external speaker, and connected Facebook portal



### (Poll)

If you had to choose just one, which do you think is the biggest problem for digital equity of older people where you are?

Physical access
Cost
Lack of personal IT skills
Lack of support
Poor design



#### Published on 2.9.2013 in Vol 2, No 2 (2013): Jul-Dec



Development of a Questionnaire and Cross-Sectional Survey of Patient eHealth Readiness and eHealth Inequalities

Ray Jones<sup>1</sup> 💿

Physical access
Cost
Lack of personal IT skills
Lack of support
Poor design

# Addressing the problems

# We know the problem What can be done to address it?

#### Draw on my own work and that of colleagues including....



Dr Hannah Bradwell



Dr Toni Page



Dr Sonam Zamir



**Prof Katharine Willis** 

Physical Access

# Glasgow: late 1980s/early 90s Pre-Internet: The problem was physical access

 Public access touch screen kiosk
 Healthpoint

• Worth watching for the hairstyles alone...



Kiosk used by older people Example from Greater Glasgow Health Board (Clydebank 1994)

# Recent review on kiosks



#### Published on 29.3.2022 in Vol 10, No 3 (2022): March

This is a member publication of University of Plymouth, Centre of Health Technology, Plymouth, United Kingdom

Preprints (earlier versions) of this paper are available at https://preprints.jmir.org/preprint/26511, first published December 14, 2020.



#### The Role of Health Kiosks: Scoping Review

Inocencio Daniel Maramba <sup>1</sup>, Ray Jones <sup>1</sup>, Daniela Austin <sup>1</sup>, Katie Edwards <sup>1</sup>, Edward Meinert <sup>1</sup>, Arunangsu Chatterjee <sup>1</sup>

# Working with partners Nudge in Stonehouse (a deprived part of Plymouth) and with broadband supplier Wildanet in rural villages in Cornwall







# Care homes in UK have been particularly left behind in digital access

- 17,000 care homes, half a million residents
- UK total population 67 million
- So about 4% of UK population live in care homes

# Giving access to 'digital' to care home residents

 Ageing well for a resident with dementia may mean use of devices such as companion robots

 Others may be able to make good use of videocalls to family, friends, or digital befrienders





Monday 7th August 2017 at 10.00 am Weston Mill Crematorium, Testimonial of use of Facetime (90 year old) – here remaining connected while in hospital



How can we ensure that care home residents have access to videocalls? —Physical access

–Technical/social support –Digital befrienders And for residents who maybe won't manage videocalls?

Digital equity for people with dementia may come via robotics



Various care homes and other sites now buying their own cats and dogs, including Derriford Hospital Plymouth Care of Elderly ward



Importance of design User-centred design or (better) co-design



# Is Paro's fate sealed?



Roboticists like the £5000 Paro but older people prefer an £80 cat, says Plymouth researcher.



#### Younger roboticists preferred Paro and 'mythical' robots with more sophisticated features. Older people liked the familiar cats and dogs.



**BMJ Open** 

For author Latest content Archive

Geriatric medicine

Companion robots for older people: importance of user-centred design demonstrated through observations and focus groups comparing preferences of older people and roboticists in South West

(D Hannah Louise Bradwell<sup>1</sup>, (D Katie Jane Edwards<sup>1</sup>, (D Rhona Winnington<sup>2</sup>, (D Serge Thill<sup>3</sup>, (D Ray B Jones<sup>1</sup>

# Voice and multimodal Interfaces

Original Paper Published: 24 July 2019

#### Are older people any different from younger people in the way they want to interact with robots? Scenario based survey

```
Mriganka Biswas, Marta Romeo, Angelo Cangelosi & Ray B. Jones 
Journal on Multimodal User Interfaces 14, 61–72 (2020) | Cite this article
796 Accesses | 9 Citations | 1 Altmetric | Metrics
```



People over 65 were more like people under 21 than those aged 22–64 in preferring speech over tablet for robot–human interaction.

Differences may come from a more home based lifestyle and difficulties with vision, hearing, or dexterity rather than lack of interest in technology

# Echo Spot into care homes project

- Aim: to develop a large user-base for companies working in voice or multi-modal applications for assistive care
- Echo Spot potential for video calls as well as usual Alexa functions.
- We installed Echo Spots (Alexa devices with small screen) in 150/225 (67%) Cornish care homes
- Here's a care home manager to tell you what they are using it for.....



### Use of Echo Spot by care homes (Haley Blake, Trevern Care Home, Falmouth)





# Working with Sentai



Leonie Cooper

- •Alexa+ motion sensor + easy on/off
- Communicate older person plus family carer
- Family carer gets confirmation that older person out of bed
- Older person can turn Sentai on/off
- Use to audio message/communicate
- Plymouth (Leonie) running a trial with 30 pairs of older person/younger relative living independently

# Genie connect – desktop robot

- Trial with 10 people aged 80-92 living independently (pre-market)
- Five positive, three negative (2 of which withdrew), two neutral.
- Positive comments included 'feeling not alone'; 'having someone to talk to'; and enjoying being asked 'how are you feeling'.
- Negative comments were mainly not liking the eyes.
- Design adaptations continued with usercentred design



Home > Conferences > HRI > Proceedings > HRI '22 > Affective Responses of Older Adults to the Anthropomorphic GenieConnect Companion Robot During Lockdown

RESEARCH-ARTICLE

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Affective Responses of Older Adults to the Anthropomorphic GenieConnect Companion Robot During Lockdown of the COVID19 Pandemic

Authors: 📳 Rachel Wilson, 📳 Imogen Keane, 📳 Ray Jones Authors Info & Claims

# But reminder, that in the UK...

- Hearing loss: 40% of people 50+, >70% of people 70+
- Sight loss: 20% of people 75+, 50% of people aged 90+
- Dementia: 17% 85-89, 28% 90-94, 38% 95+
- Dexterity decreases with age (both cognitive and 'healthy')

Getting help

### Digital Health Champions





# **Digital Health Scheme**

Supporting local communities in learning about and using digital health





Toni Page



To support local persons with their health needs via digital media.

To show at least two people (family member, friend, neighbour) who are inexperienced in using digital health how to access a digital health website or app.

#### How to achieve bronze?

Research and introduce one of the following:

Care OpinionSkypeTheir GP websiteFacetimeNHS AppHealthtalk OnlineNHS Apps LibraryNHS Choices



# Silver



To support local persons with their health needs via digital media. To demonstrate digital skills and analyse knowledge and technology.

#### Supporting the local community

Focus on supporting one person/family/organisation to use digital health. This could be through :

- placement speak to your placement mentor and tutor
- local organisations contact a local organisation
- local projects contact a project
- support groups contact a support group
- local library



Gold



To support local persons with their health needs via digital media. To demonstrate digital skills and analyse knowledge and technology. To co-design digital media and utilise digital information and devices innovatively with patients and public.

#### Supporting the local community

Build your links:

- Networks with forums and national groups
- Using all of your Bronze and Silver resources
- Working with health and social care organizations
- Charity and local health or illness interest groups.



Undergraduates as Digital Health Champions



Helping care homes make use of 'smart speakers' (Alexa)

- Helping patients use apps such as
  - myCOPD for people with breathing problems
  - NHSapp or GP websites



#### NHS Click away your concerns

Get answers quickly by using self-help on our

Get answers you need in 3 easy steps.

Nursing students demonstrating apps and robopets at a GP practice in Cornwall







#### Toni Page @ToniPage9 · Nov 6

Thank you to Nadine and Emma who supported Oaktree Surgery patients in becoming aware of online gp services and supporting women to use the kiosk for their contraceptive check. Great #WPE. @EPIC\_eHealth @PuncnadineS #digitalhealthchampion @ElephantKiosks



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# **<u>Certificate of Achievement</u>**

Congratulations

### **Hillcrest House Nursing Home**

you have been shortlisted as a finalist in the category of

Best use of Technology in Care

at the

CARE AND SUPPORT AWARDS 2019

Signed Roger Judge Chair of CAHSC

Occupational Therapy student acting as Digital Health Champion for care home helped that care home become a finalist in 'Care and Support Awards'



- For example, Joy O'Gorman, while 2nd year nursing student, on placement. (Now registered nurse and part time PhD student).
- Started showing patients in pre-op waiting how to use myCOPD
- Developed a project with the company (myMhealth) to implement in practices across Cornwall

# Helping patients use apps and websites





NHS App Being tested in the NHS Category: <u>NHS services</u> Free

The NHS App lets you book GP appointments, order repeat prescriptions and access a range of other healthcare services.

# Improved design and 'joined up' systems

#### Older people are more likely to be put off using a poor interface

### A long time ago in a galaxy far far away.....



1979 When medical records looked like << this and I looked like this (:<)



Using the technology of 1980 Data collected on questionnaires and forms, data entered, computer printed records and forms



#### Nottingham Diabetes System 1980 Patients issued with a copy of their own medical summary

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### Glasgow: Mid 1990s-2001: Tailoring of information for patients using their medical record

#### **Donald Smith: Prostate Cancer**

According to your record, you are being treated for this problem.

Your prostate cancer is described in medical words as being a grade 2+3, localised, adenocarcinoma.

The cancer was sited in the left lobe of your prostate gland and had affected the capsule surrounding it. One of your seminal vesicles may also be affected by the cancer.

Your cancer was staged according to the TNM System as T3.









Filtering and tailoring health information using the medical record would help older people by avoiding information overload and the distraction of all the 'noise' on the internet

# Some countries are making better use of medical record access





Charlotte Blease, USA



Cait Des Roches, USA



Maria Hagglund, Sweden

Spain – good access to records allowing patients to be able to share.

Example my Spanish wife able to see, share, advise a family member with that shared access.

(Illustrates the importance of social support in addressing digital inequalities)

Patient consent was given to provide the information in the following slides.





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% monocitos 8.2 % (2 - 10) % segmentados 64.8 % (40 - 75) % eosinófilos 2.7 % (1 - 5) % basófilos 0.4 % (0 - 2) Linfocitos (V. Absoluto) 2.8 x 103 µl (1.2 - 5.0) Monocitos (V. Absoluto) 1.0 x 103 µl (0.1 - 1.0) Neutrofilos (V. Absoluto) 7.5 x 103 µl (1.7 - 8.0) Eosinófilos (V. Absoluto) 0.3 x 103 µl (0.0 - 0.5) Basófilos (V. Absoluto) 0.1 x 103 µl (0.0 - 0.3) Perfiles y pruebas básicas Dímero DD 222 µg/l (68 - 494) Bioquímica Glucosa \* 142 mg/dl (74 - 109)

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INFORME DE ALTA DE L'OCENCIAS	Motivo Alta: ALTA A DOMICILIO
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#### RESUMEN DE SITUACIÓN

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#### JUICIO DIAGNÓSTICO

Dolor en

#### TRATAMIENTO

Solicitar cita preferente en consultas de

Abandono tabaquico

Continuar con mismo tratamiento de momento

#### RECOMENDACIONES









# Poll

Do you have, have you used, access to your medical record online?

- I do NOT have access to my medical record online
- I have the possibility of access to my medical record online but have not used it yet
- I have accessed my medical record online

UK GP online access systems need improved design – older people are more likely to be put off using a poor interface

Home / Archive / Volume 12, Issue 3

Article Text	General practice / Family practice Original research
Article info	Use and usability of GP online services: a mixed-methods sequential study, before and during the COVID-19 pandemic, based on qualitative interviews, analysis of routine eConsult usage and feedback data, and assessment of GP websites in Devon and Cornwall, England 8
Share	🐵 Ray B Jones , 🕲 John Tredinnick-Rowe , 🕲 Rebecca Baines , 🕲 Inocencio Daniel Cortes Maramba , ២ Arunangsu Chatterjee

• 'For a second consultation in the future do you need to know if I smoke etc, You should have this on record',

• 'If the consultants need to see what meds you are on and your family history then they should look up your records, the amount of info I have to give each time is ridiculous',

GOALD project

# Universities of Stirling and Plymouth

20 Inter-generational co-production groups

What technologies can help people remain active in older life?

Funded by UKRI/ESRC



#### **GOALD (Generating Older Active Lives Digitally)**

@GOALDStirPlym Follows you

GOALD led by Unis of Stirling (@StirUni) & Plymouth (@PlymUni) is 1 of 7 UK projects funded by UKRI (@UKRI\_News) SBDRP (@Ageing\_SBDRP) Likes/RTs ≠ endorsement

Connecting people to 'heritage' sites Using digital to address 'access inequality' (Older people who can no longer physically access heritage sites)





England | Local News | Regions | Cornwall

# Virtual reality birthday party for 103-year-old

() 1 April





Joyce Penfold took a trip with virtual reality as a birthday treat

GOALD working with ROVR who provide a VR treadmill experience, to walk through a VR environment. Joyce from retirement apartments in Falmouth Cornwall



Hannah Bradwell

Leonie Cooper



# ICONIC

Intergenerational COdesign of Novel technologies In Coastal communities

- Starts November 2022
- Intergenerational groups will co-design novel technologies
  - enhanced virtual reality to move around heritage sites
  - social games connecting older people based on local history
  - underwater telepresence to explore underwater environment
  - telephone access by AI to online resources such as museums



Underlying GOALD and ICONIC projects is the EPIC project in Cornwall

- Running since 2017
- Helping > 100 small businesses in Cornwall and Isles of Scilly
- Developing the eHealth ecosystem
- Older rural population
- Focus on care homes, primary care
- @epic\_ehealth
- epic@plymouth.ac.uk

eHealth Productivity and Innovation in Cornwall and the Isles of Scilly



### (Poll)

If you had to choose just one, which do you think is likely to lead to the best improvement in digital equity of older people where you are?

Improving physical access
Reducing cost
Improving personal IT skills
Providing more support
Improving design

# **Questions and comments**

# Digital health equity for older people

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