

# 2012 Annual Review

*Towards making Ireland the best place in the world to grow old*

**tilda**

Staidéar Fadaimseartha na hÉireann um Dhul in Aois

The Irish Longitudinal Study on Ageing

## Introduction

The Irish Longitudinal Study on Ageing (TILDA) is a large-scale, nationally representative, longitudinal study on ageing in Ireland, the overarching aim of which is to make Ireland the best place in the world to grow old. TILDA collects information on all aspects of health, economic and social circumstances from people aged 50 and over in a series of data collection waves once every two years. TILDA is unique amongst longitudinal studies in the breadth of physical, mental health and cognitive measures collected. This data, together with the extensive social and economic data, makes TILDA one of the most comprehensive research studies of its kind both in Europe and internationally.

## TILDA: Providing jobs, building capacity

Since its inception in 2006 TILDA has directly employed 163 staff providing jobs across a range of disciplines including survey workers, nurses, clinician scientists, statisticians, economists, sports scientists, health researchers, psychologists, neuroscientists, project managers, financial advisors and administration officers.

TILDA is building capacity in Ageing research, training, education, and innovation in Ireland, and is now recognised as a leader in longitudinal studies. The TILDA research staff are highly skilled at large data set analyses not only that produced by TILDA but also international data sets worldwide. The breadth of activities of TILDA continues to provide collaborative opportunities nationally and internationally that deliver quality, cutting-edge research and innovations in science and technology for the older population.

### TILDA Activities

- Data Collection, Data Preparation, Data Archiving
- Research, Education, Innovation
- Knowledge Translation into Policy and Practice



## TILDA aims to determine:

- Health status and health needs of older people.
- Social and economic status and needs of older people.
- Health, economic and social needs of families and carers.
- Biological and environmental components of “successful ageing”.
- Contributions that older people are making to society and the economy.
- How health, wealth, and happiness interact so that we can ensure Ireland meets the needs and choices of its citizens in a personalised and positive environment with due dignity and respect.

## European Year of Active Ageing and Solidarity between Generations 2012

2012 was designated as the European Year of Active Ageing and Solidarity between Generations. Events were run throughout the year across Europe to raise awareness of the contribution that older people make to society with the aim of creating better opportunities for active ageing and strengthening solidarity between generations. Events held in Ireland included computer training for older people, digital technology and internet programmes, Third Age Knitting Bus Project, and an ActivAge 2012 event to showcase Technology and Successful Ageing. The yearlong series of events was formally opened by President of Ireland, Michael D. Higgins (pictured) and concluded with a conference at Croke Park. For more information see <http://europa.eu/ey2012>.



President Michael D. Higgins launches the European Year of Active Ageing 2012

[www.tilda.ie](http://www.tilda.ie)

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## Wave update

- Wave 1:** Data collection was completed 2009-2011. Over 8,504 people aged 50 and over were recruited and interviewed about many aspects of their lives including issues such as health, financial circumstances, and quality of life and the majority underwent a comprehensive health assessment.
- Wave 2:** Data collection was completed in 2012 and consisted of follow-up interviews. The response rate was excellent - 89% of the original participants.
- Wave 3:** Planning for Wave 3 data collection interviews and intensive health assessments commenced in 2012.

## TILDA launches 3 reports in 2012



### Profile of Community-dwelling Older People with Disability and their Caregivers in Ireland

In Ireland, as in most other countries, the bulk of the social care of older persons is provided by family caregivers, primarily spouses and adult children, especially daughters. This report looked at the social care received by community-dwelling older people who report difficulty with at least one activity of daily living (self-care tasks such as dressing) or one instrumental activity of daily living (tasks that allow independent living such as doing household chores) and characterised the main care givers.

#### Key findings include:

- 11% of men and 14% of women aged 50 and over have care and support needs, reporting at least one limitation with daily activity. This translates to 164,000 older people.
- Spouses are most frequently identified as the main caregiver. Only 11.7% of spouse carers receive the carer's allowance or carer's benefit.
- The majority of main caregivers are aged 50 and over. This reflects the enormous contribution that the ageing population is making to the care of older family members.
- 89.5% of care givers are unpaid.
- Of paid caregivers, 62% are contracted through the formal home care sector, 38% are not affiliated to any organisation or company.

### Supplementary Pensions and the Income of Ireland's Retirees

This report looked at the sources of incomes of retirees in Ireland, examining the extent to which retirees rely on the State pension, contributory and non-contributory. It also shows the types of retirees that have supplementary pensions, such as occupational or other private pensions, enhancing their income in retirement beyond the State pension.

#### Key findings include:

- The average pension income for retired men is €395 per week, when account is taken of state pensions, other social welfare payments, occupational pensions and private pensions. This varies between €198 among the lowest 25% of average pension earnings to €938 in the top 25%.
- The average pension income of retired women is €254, which is about 2/3 of the income of retired men.
- Having a supplementary pension makes a huge difference to the earnings of Ireland's retirees.
- For lower income retirees, earning €250 and less per week, the state pension makes up about 90% of their pension income.
- For higher income retirees, earning €750 or more per week, supplementary pensions make up about 80% of their pension income.
- Having worked in the public sector has a large impact on the likelihood of being in receipt of a supplementary pension.
- Having worked in larger firms is also an important determinant of receiving a supplementary pension, as are education and occupation.
- Any universal cut in the State pension would be regressive because the incomes of lower income groups would be disproportionately reduced compared to higher pension income groups.

## Polypharmacy in Adults over 50 in Ireland: Opportunities for Cost Saving and Improved Healthcare

Polypharmacy is most commonly defined as the concurrent use of five or more medications and excessive polypharmacy defined as 10 or more medications. Polypharmacy may be necessary to properly manage certain diseases however it can also indicate over - and inappropriate prescribing, exposing patients to risks of drug interactions and adverse drug reactions and has been highlighted as a major determinant of poor medication adherence in the elderly. This report looked at regular medication use - prescription and non-prescription medications, over-the-counter medicines, vitamins, and herbal and alternative medicines – in the TILDA cohort

### Key findings include:

- 69% of community-dwelling older people report taking medications regularly. One in five of those over 50 years regularly take five or more medications (i.e. polypharmacy).
- Polypharmacy accounts for over half of the annual costs of prescribing to the entire population aged over 50 years.
- Medications used to treat cardiovascular conditions (mainly high blood pressure and heart disease) are the most common medications contributing to polypharmacy.
- Increasing the use of generic medicines could potentially save up to €29.5 million per year.
- Irish prices for many of the generic medications are more expensive than English counterparts - the 10 most commonly prescribed medicines are on average 2.7 times more expensive.
- Using a system of reference pricing based on groups of similar drugs for the older population reporting polypharmacy could potentially save up to €152.4 million per year.

### Recommendations based on this report's findings include:

- Regular medication review for those taking five or more medications
- Substitution for a cheaper medicine where possible
- Widespread implementation of an easily accessible system for all prescribers to enable comparison of pricing for all patients

[www.tilda.ie](http://www.tilda.ie)



## Wave 2 data collection completed - a Milestone for TILDA!

A significant milestone was achieved in 2012 – completion of Wave 2 data collection. This marks the point at which TILDA dataset becomes a longitudinal dataset; the longitudinal aspects across Wave 1 and Wave 2 can now be explored.

In Wave 2, data was collected from interviews of 7458 TILDA participants. The interview consisted of a 90 minute computer-aided personal interview (CAPI) incorporating physical measures of the participant's handgrip strength and walking speed. Our response rate was over 89% of the wave 1 sample who consented to be re-contacted, an exceptional response rate for a longitudinal study.

The Wave 2 data is currently being analysed and prepared by TILDA. The data will be archived in 2013.

- Over 70 researchers are working on the TILDA Wave 1 data
- A further 20 PhD students are working on the TILDA Wave 1 data
- TILDA researchers have published/in press 21 academic papers
- TILDA findings have been presented at over 25 national and international conferences

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## What data does TILDA collect?

TILDA data is compiled from computer-aided personal interviews (CAPI) and self-completed questionnaires (SCQ) which are collected every two years, and from an intensive health assessment (HA) that is conducted every four years.

### Computer-Aided Personal Interviews & Self-Completed Questionnaire

#### Demographic data

- Schooling
- Childhood
- Migration history

#### Socioeconomic data

- Employment situation & job history
- Pensions
- Education
- Lifelong learning
- ICT
- Household composition
- Sources of income
- Health insurance cover
- Financial & other assets
- House ownership

#### General health related data

- Self-rated health status
- Disease history

- Falls history
- Incontinence
- Sensory function
- Chronic pain
- Cognitive function
- Weight change in last 12 months
- Healthcare utilisation
- Medical screening
- Current medications (including over the counter)

#### Social support & intergenerational transfers

- Transfers to children
- Transfers to parents
- Difficulties with activities of daily living
- Helpers
- Transport

#### Mood and mental situation

- Self-rated mood status
- Life events
- Depression
- Anxiety
- Worry
- Quality of Life
- Stress loneliness
- Satisfaction
- Ageing perceptions questionnaire
- Social connectedness

#### Personal health behaviours

- Alcohol
  - Smoking
  - Physical activity
  - Sleep
- \* Grip strength and walking speed physical measures are taken during interview only waves.

### Health Assessment

#### Cognition/Neuropsychological

- Mood
- Global cognition
- Attention
- Visual memory
- Processing speed
- Executive function

#### Cardiovascular

- Blood pressure
- Heart rate
- Height/Weight
- Hip and waist size
- Heart rate variability
- Pulse wave velocity
- Phasic blood pressure

#### Strength and Bone Density

- Grip strength
- Heel ultrasound

#### Gait, Balance and Sensory

- Timed up and go
- Gait assessment
- Balance
- Visual acuity
- Contract sensitivity

#### Macular Degeneration

- Macular pigment optical density
- Retinal photograph

\* A venous blood sample is collected.



# Key research findings in 2012

## Innovative tools, devices and adapted use of tests

- Atrial Fibrillation (AF), an irregular heartbeat, is significantly undertreated and underdiagnosed in older adults in Ireland. AF increases the risk of stroke and dementia. We are developing detection and education tools to increase awareness of irregular rhythms in the community: a novel algorithm for easy irregular rhythm detection has been designed and patented, and an educational app is currently in development.
- A device that allows simple and fast assessment of physical activity and sleep quality from wrist worn sensors is being developed. This device will be a useful tool for clinicians, individuals and population studies.
- We have also developed a software tool for clinicians and researchers to allow quick and easy analysis of autonomic function.
- Timed-Up-And-Go, an existing simple test of functional mobility, can be used as a simple one-dimensional objective measure of the frailty syndrome among the over 65s. The measurement of frailty is otherwise complex and to a large extent subjective so this knowledge will be helpful for clinicians and researchers.

## Frailty and cognition

- Lower cognitive functioning is known to associate with frailty. We have found that a reduced ability to maintain attention levels may account for much of this relationship.

## Novel biomarkers

- One of our PhD researchers has identified potential biomarkers of cognitive decline. Results from our Wave 1 data indicate that sensitive measures of neurocardiovascular function are independently associated with lower global cognitive performance. We are assessing the potential of these novel biomarkers longitudinally in the next data collection waves.

## Macular pigment as a marker for health

- We are exploring the relationship between macular pigment and cognitive function in older people. Initial findings suggest that lower levels of macular pigment density were associated with poorer cognitive performance. Our longitudinal data will allow us to further investigate this association and determine whether macular pigment density predicts cognitive decline.
- A novel effect of education on macular pigment optical density (MPOD) was identified in older adults. Individuals with higher levels of education had higher MPOD; this persisted after adjustment for indicators of health. As macular pigment is derived from dietary sources, and



considering the putative protection this pigment confers against age-related macular degeneration (AMD), this finding suggests that public health measures aimed at improving diet in this at risk population need to be considered.

## Depression and health

- Depression and anxiety are common among older adults in Ireland and are underdiagnosed. We found that a number of core depressive symptoms which related to low mood, sadness, amotivation, fatigue, diminished appetite and concentration difficulties were consistently associated with cardiovascular disease in a dose-related fashion. These symptoms include aspects of the depressive syndrome traditionally considered to be both cognitive and somatic in nature. Symptoms relating to interpersonal problems and positive affect were less consistently associated with cardiovascular disease. Co-morbid anxiety did not confer additive risk in participants with depression. This suggests that clinicians should give due regard to both cognitive and somatic aspects of the depressive syndrome when determining cardiovascular risk.
- Both early and later life circumstances affect late-life depressive symptoms. Ill health in childhood and in later life has a strong and direct effect on depression. Marital status is a significant independent predictor of depression in later life. Later life circumstances mediate between some marital statuses and depressive symptoms. When later life circumstances are included, marital disruption (widowhood, divorce) is associated with depression, but singlehood is not.
- Social isolation is a significant feature of the lives of both male and female return migrants, the degree of which is typically stronger for people who spent longer away and who have returned more recently. However, most return emigrants did not report feeling lonely, despite being more socially isolated.
- Men who lived abroad are more likely to have suffered from alcohol problems than men who spent their entire life in Ireland. In contrast, women who lived abroad for 10 or more years are less likely to have suffered from alcohol problems than women who stayed.

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## Developments in 2012

- Wave 1 data was fully archived in 2012 at the Irish Social Science Data Archive (ISSDA), and at the Interuniversity Consortium for Political and Social Research (ICPSR) at the University of Michigan USA. The data can be accessed through <http://www.tilda.ie>
- Wave 2 data collection was completed in 2012, marking the point at which TILDA became a longitudinal study. The full Wave 2 data set will be available in 2013.
- TILDA has been working closely with colleagues in Northern Ireland, Brazil, China and India to help develop new forthcoming longitudinal studies in these countries.
- TILDA Health Assessment Centre was busy in 2012 carrying out the health assessment component of the EU Survey of Health, Ageing and Retirement in Europe (SHARE). SHARE has completed Wave 4 of its data collection of over 85,000 people aged 50 and over across the EU. In Ireland, 1,103 people participated in SHARE. TILDA conducted health assessments on extant SHARE participants in Ireland to better understand variability, including repeated health assessment.
- Planning for TILDA Wave 3 data collection got underway in 2012. In Wave 3 participants will be interviewed and will again undergo an intensive health assessment. A pilot Wave 3 interview and health assessment study will be rolled out in 2013 with the full data collection project commencing early in 2014.

## Trinity EngAGE: Trinity Centre for Research on Ageing

Ageing and Independent Living is one of the major research themes for Trinity College, as outlined in the College's Strategic Plan 2008-2014. Through strategic investment in people, research and facilities that built upon core investments in the early 2000's, and multi-disciplinary and cross-institutional collaborations both nationally and internationally, Trinity College is now recognised as a world leader in Ageing research.

TILDA is the flagship resource for Ageing research in Trinity and will become a core part of the new Trinity EngAGE Centre for Research in Ageing. EngAGE will provide formal leadership for the coordination of Ageing research across disciplines in collaboration with the teaching hospitals, St James's and Tallaght, and other national and international research and non-governmental organisations. At present 120 Trinity researchers are actively working on age-related research across all domains in a systematic way: The Mind, Body, Social Environment and Built Environment. Multi-disciplinary research is undertaken in the areas such as brain ageing, stroke and heart disease, population health, falls and syncope, mental health, end-of-life, elder abuse, healthcare services, technology innovations, smart cities, intergenerational transfers, pensions and financial security. It involves experts from the fields of biology, public health, medicine, informatics, macroeconomics, finance, urban planning, engineering, technologies, globalisation and migration, the law, sociology, business and philosophy.

A key goal of the EngAGE Centre is to support dissemination and application, in imaginative ways, to stakeholders of the evidence that will allow Trinity to meet challenges associated with population ageing and to unlock the longevity dividend. The EngAGE Centre will function as an interactive facility linking all stakeholders: researchers, national and international collaborators, the general public, Government, charities and patient groups. EngAGE will launch as a virtual centre in 2013.

## TILDA in Innovation Europe

Population ageing is not unique to Ireland but is a global phenomenon and one of the most distinctive demographic events of the 21st century. Countries are at different stages of the process, with more developed countries experiencing the phenomenon first, however the process is also apparent in much of the developing world as well.

Europe faces a number of challenges of demographic ageing centred on how to meet the needs of its ageing citizens and maintain competitiveness in a global market with a decreasing workforce. To meet the challenges of population ageing head-on, the EU has made population ageing a focus of research investment targeting key areas such as technology, services, research, and innovation to adapt to this demographic change.

**European Innovation Partnership (EIP) on Active and Healthy Ageing** is a part of the Innovation Union, created to pool resources and efforts to increase the average healthy lifespan by two years by 2020. TILDA is an active member of the EIP. TILDA is coordinating the development of recommendations for collection of relevant clinically based datasets in Europe and contributing knowledge, for example from studies to detect modifiable risk factors for falls in older people.

The European Institute of Innovation and Technology (EIT) is proposing to develop a Knowledge and Innovation Community (KIC) in the area of Ageing, the **EIT KIC in Healthy Living and Active Ageing**. TILDA and TCD Professor of Bioengineering Richard Reilly secured funding from Enterprise Ireland to develop a proposal from Ireland to participate in the call, which is expected to be released early 2014. The funding from Enterprise Ireland is to seek opportunities for collaboration across Europe while developing Ireland's unique selling points in Ageing research, education, training, innovation, entrepreneurship and business.

## Funding success! TILDA secures over €1million in new funding in 2012

TILDA was successful in three funding calls in 2012, securing €1.02 million in new funding through a Health Research Board (HRB) Interdisciplinary Capacity Enhancement (ICE) Award, a HRB Health Research Award, and an Enterprise Ireland (EI) grant to support development of an EIT KIC in Healthy Living and Active Ageing.

TILDA researchers have received €589,000 over 3 years through a HRB ICE award to study the role of autonomic function in the development of cardiovascular disease in adults thereby creating new biomarkers and opportunities for intervention. Cardiovascular disease is the leading cause of mortality in western cultures and a significant cause of major disabilities such as stroke and dementia. The HRB funding will enable applied health research and implementation science to rapidly translate policy relevant findings from the cardiovascular domain into policy and practice. Insights gained from the study may open new avenues of cardiovascular risk assessment and treatment.

The HRB has also awarded TILDA a Health Research Award with funding of €330,000 for a 3 year project to study type 2 diabetes and its relation to cardiovascular function, cognitive function, mental health and socioeconomic factors. The burden of type 2 diabetes mellitus and its complications are immense and disproportionately affect the older population and socioeconomically disadvantaged communities. Depression and anxiety often occur together and are more common in people with diabetes. By 2030 diabetes will have increased by 135% in the over 65 years and older worldwide. The study will advance the science of population health by using biological and demographic data from TILDA to address several limitations in the current knowledge of diabetes and cardiovascular brain health in Ireland.

EI awarded TILDA and Professor of Bioengineering Richard Reilly a grant of €100,000 over 12 months to develop an Irish bid as part of the upcoming EU call for an EIT KIC in Healthy Living and Active Ageing.

## A selection of events in 2012

### Centre for Longitudinal Studies in Ireland (CLSI) launched by President Higgins

A joint initiative between the ESRI and Trinity College Dublin, CLSI was officially launched by the President of Ireland, Michael D. Higgins in April. The Centre was launched to promote evidence-based public policy-making in Ireland, drawing particularly on longitudinal data; and to help Irish researchers develop the conceptual and methodological skills necessary to analyse these important data.

### Professor Walter Bortz visits TILDA

Professor Walter Bortz, a Clinical Associate Professor of Medicine at Stanford University School of Medicine and recognised as one of America's most distinguished scientific experts on ageing and longevity, gave a guest lecture at Trinity College entitled "The Plasticity of Human Ageing" in front of a capacity audience. A video of the lecture is available at [www.tilda.ie](http://www.tilda.ie).

### Dublin City of Science DublinTalks.ie "6 speakers, 6 minutes, 6 BIG ideas!"

As part of the Dublin City of Science, Professor Rose Anne Kenny gave a talk at the DublinTalks.ie event in October. Listen

to her tell you in 6 minutes "How healthy communities will help you live longer" at <http://www.innovationdublin.ie/festival/2012/dublintalks/>

### Report of TILDA presentation to Seanad Éireann

Seanad Éireann's Public Consultation Committee invited submissions from relevant stakeholders on The Rights of Older People. Public hearings with senators on the floor of the Senate followed comprehensive written submissions. Professor Rose Anne Kenny gave an expert briefing to the Committee, and with TILDA Project Director Professor Alan Barrett answered questions from the Senate. Recommendations from the Committee were released in their report in March 2012. The report can be found at [www.tilda.ie](http://www.tilda.ie).



Prof. Walter Bortz and Prof. Rose Anne Kenny

### TILDA on an international stage: Belfast – Rio de Janeiro – New Delhi – Beijing

In addition to working closely with our colleagues in Northern Ireland as they prepare for the Northern Ireland Cohort for the Longitudinal Study of Ageing (NICOLA), Professor Rose Anne Kenny also travelled to Brazil, New Delhi and Beijing to attend conferences and workshops to work with our international colleagues to establish their longitudinal studies.



# Media coverage

TILDA received extensive media coverage in 2012 which reflects the interest of the media and the general public in the work we do. The full version of each article is available in the news section at [www.tilda.ie](http://www.tilda.ie).

## Hands up if you want to help out

Irish Times/Society/eeyea 2012

## Catering for the needs of an ageing population

Irish Times/Society/eeyea 2012

## Exodus of senior staff will prove costly in long run

Irish Times, March 20th, 2012

## Look after your sight for peace of mind

Irish Independent, June 18th, 2012

## Third-level sector biggest beneficiary of Atlantic's funds

Irish Times, July 10th, 2012

## Professor to speak on key to long life

Irish Times, July 17th, 2012

Further coverage, Irish Times, July 18th 2012

## Homecoming isn't all happy news for migrants

Irish Independent, July 30th, 2012

## Fear of falling of greater concern than money woes

Irish Independent, Aug 13th, 2012

## How change in education policy has paved way for health

Irish Independent, Aug 27th, 2012

## Unhealthy ageing a cause for concern

Irish Times, Oct 23rd, 2012

## Retired women have much lower income than men

Irish Independent, Nov 30th, 2012

## How losing control can cost you years of happiness

Irish Independent, Dec 1st, 2012

## TILDA team

The TILDA team has grown over ten fold since 2006 to 33 staff



## Plans for 2013

- Wave 2 interviewer debriefing to learn from fieldwork experiences
- Completion of Wave 3 planning
- Wave 3 pilot study initiation
- Launch of Trinity EngAGE Centre for Research on Ageing – initially as a virtual centre
- Knowledge translation engagements and conferences with policy makers and other stakeholders
- Continue to position TILDA on an international platform
- Further develop EU collaborative opportunities

TILDA is being carried out by Trinity College Dublin in collaboration with an inter-disciplinary panel of scientific researchers, with expertise in various fields of ageing across nine research institutions.

- **Dundalk Inst. of Technology**
- **Economic and Social Research Institute**
- **National University of Ireland, Galway**
- **Queen's University Belfast**
- **Royal College of Surgeons in Ireland**
- **University College Dublin**
- **University College Cork**
- **Waterford Institute of Technology**

### TILDA Management

Professor Rose Anne Kenny  
Prof. Alan Barrett/Ms. Una Murphy  
Dr. Ann Hever  
Ms. Liana D'Emidio  
Ms. Jacinta O'Grady  
Ms. Jo McNamara

### TILDA Survey Managers

Mr. Ian Clifford  
Mr. Conor Moody

### TILDA Research Nurses

Ms. Lorna Green  
Ms. Laura Dunne

### TILDA Researchers

Dr. Ciarán Finucane  
Dr. Hugh Nolan  
Dr. Joanne Feeney  
Dr. Irene Mosca  
Dr. Vincent O'Sullivan  
Dr. Matthew O'Connell  
Dr. Aisling O'Halloran  
Dr. Orna Donoghue  
Dr. Siobhan Leahy  
Dr. Hilary Cronin  
Ms. Claire O'Regan  
Dr. Eibhlin Hudson  
Dr. Celia O'Hare  
Dr. Cathal McCrory  
Dr. Annalisa Setti  
Dr. Christine McGarrigle  
Dr. Bellinda King-Kallimanis  
Dr. George Savva  
Mr. John Frewen  
Ms. Kathryn Richardson  
Ms. Deirdre Robertson  
Ms. Sanna Nivakoski

Principal Investigator  
Project Directors  
R&D Programme Manager  
Finance Officer  
Executive Officer  
Executive Officer

Survey Manager  
Data Manager

Research Nurse  
Research Nurse

**Main Area of Research**  
Biomedical Engineering  
Biomedical Engineering  
Cognitive Neuroscience  
Economics  
Economics  
Frailty  
Frailty, Biomarkers  
Gait and Falls  
Health  
Health  
Health and Mental Health  
Health Economics  
Psychiatry  
Psychology  
Psychology  
Social Epidemiology  
Statistician  
Statistician  
PhD Student  
PhD Student  
PhD Student

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Staidéar Fadaimseartha na hÉireann um Dhul in Aois

The Irish Longitudinal Study on Ageing

The Irish Longitudinal Study on Ageing (TILDA)  
Lincoln Gate, Trinity College,  
Dublin 2, Republic of Ireland

Website: [www.tilda.ie](http://www.tilda.ie)

Email: [tilda@tcd.ie](mailto:tilda@tcd.ie)

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*The*  
**ATLANTIC**  
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