



International approaches to population ageing and decline



It is projected that there will be around 77,000 more deaths than births in Wales between mid-2020 and mid-2030. Almost all of the growth in the Welsh population will be among the over 65s, with the number of under-18s predicted to start falling from the mid-2020s (Welsh Government, 2022a). This poses significant risks to the economic and fiscal wellbeing of Wales, including the size of the block grant that Wales receives from the UK Treasury via the Barnett Formula. As such the Welsh Government commissioned WCPP to review international policy approaches to ageing and declining populations.

This work sits within the context of the commitments made in the Welsh Government's Programme for Government 2021-2026; namely to address any future funding gaps, grow the Welsh tax base and consider the funding implications of any recommendations from the Constitutional Commission (Welsh Government, 2021). This research focuses on three key drivers of population size:

- Fertility;
- Population retention; and
- Attraction of inward migrants.

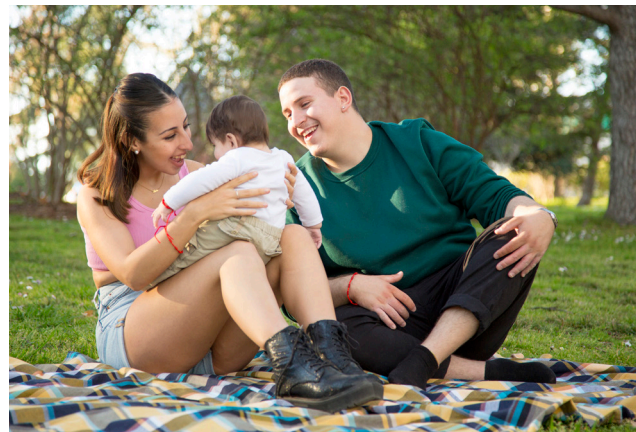
Fertility

Policies to encourage and boost fertility follow two main approaches: socio-economic measures, which encourage parents to make the choice to have children, such as baby bonuses, parental leave, and childcare provision; and medical interventions designed to ensure that parents are physically able to have children once they have made the choice, such as Assisted Reproductive Therapy. In either case, policy should focus on enabling people to have the number of children they desire.

Socio-economic interventions

For many people, it is socio-economic factors which determine whether they want to attempt to have children or not, and, if so, how many. Key policies include parental leave, childcare and financial incentives.

For many people, it is socio-economic factors that determine whether they want to have children or not, and, if so, how many.



Parental leave

A significant consideration relating to the logistical, financial and quality of life factors that affect people's decisions around fertility is parental leave: the pay people can expect to receive while on parental leave and the accompanying conditions, such as the length of leave and the right to return to work. Overall there is strong evidence that expanded and generous parental leave increases fertility.

In a 2021 systematic review by Bergsvik et al., large increases in parental leave were found to positively impact fertility. For example, an Austrian reform doubling the leave period from 12 to 24 months led to a 5.7% higher likelihood of another birth. Studies conducted in Anglo-Saxon contexts such as the United States and Quebec support this finding (ibid.).

Entitlement to maternity leave is generous in the UK (including in Wales¹) in terms of how much time women are entitled to take off work compared to other OECD countries, with mothers being able to take up to nine months of maternity leave. However, compared to other OECD countries, payment rates are lowest in the UK and Ireland, with only one-third of gross average earning being replaced by maternity benefits. As such there is potential to increase fertility by enhancing the generosity of parental leave payments in Wales and the UK.

¹ Parental leave is not devolved as it falls within employment law which is reserved to the UK government.

Childcare

The availability and affordability of childcare is one of the key factors determining how easy it is for women to combine family and work. Evidence from across countries in the global North shows that public spending on early childhood education and care (ECEC) is closely related to both fertility rates and women's employment (Doepke et al., 2022). In Germany, a study examining the staggered local implementation of a new federal childcare policy ensuring any child under the age of three years has access to free childcare slots led to a de facto randomised control trial (RCT). The study found 'consistent and robust evidence of a substantial positive effect of public childcare expansion on fertility', and specifically that a 10% increase in childcare coverage led to an increase in the number of births per 1,000 woman of 1.2 (Bauernschuster et al., 2014). That would be equivalent to roughly 1,256 more children being born in Wales². The 10% increase in childcare coverage could include a mix of availability of nursery spaces, greater time slot availability (e.g., before and after work), widening availability of nursery spaces to more parents and improving affordability.

In the UK, childcare costs are some of the highest among OECD countries. The UK, including Wales, faces particular challenges regarding childcare: this is traditionally a low-pay sector, with people being paid the minimum wage or below, leading to difficulties in both hiring and retention.

Research by the Bevan Foundation shows that full-time childcare in Wales costs 52% of a lowest-quartile earner's salary (Bevan Foundation, 2005). More recent analysis by Business in the Community (BITC) using Coram Family and Childcare survey results also found that across the UK, full-time nursery for children under the age of two is costing some parents more than half of one parent's weekly take-home pay (Business in the Community, 2022).

This evidence and the situation in Wales strongly suggest that there is scope for the Welsh and UK Governments to invest more heavily in ECEC as a way of making the prospect of having children more financially feasible, and thereby potentially boosting fertility (Social Market Foundation, 2021). It is also worth considering the additional positive outcomes, which evidence shows are supported by affordable high-quality ECEC provision, such as reduced poverty and enhanced childhood development (Bucelli & Mcknight, 2022).

Financial incentives

Some countries and sub-national governments have opted for cash transfers from the state to parents, such as baby bonuses, to encourage fertility (among other intended outcomes, such as reduced child poverty). Other countries opt for tax deductions for people having children, with some offering greater tax deductions for every extra child born in a family.

The effects of these incentives, especially the cash payments, are often transitory rather than long-term. This suggests that pro-family policies that support child and parent wellbeing in the longer term, such as childcare, are likely to be more effective than pro-natal policies, which aim to incentivise more births. This is not least because pro-family policies are also likely to support child development and women's participation in the labour force.

² This calculation is a very rough estimate based on two thirds of the Welsh female population being aged between 15 and 64 (even though fertility in the higher age groups will be much decreased). Here, two thirds of the Welsh female population (1,586,600) is equal to 1,047,156. Increasing childcare provision by 10% could lead to 1.2 more children per 1000 women, or for 1,047,156, 1256 more children.

Medical and health interventions

Assisted reproductive technology (ART)

There are a range of medical and health interventions that can be provided for those who would like to have children but are currently unable to because of fertility problems. The most common medical intervention is assisted reproductive technology (ART), which includes in-vitro fertilisation (IVF) (which represents 99% of ART), and other procedures working with eggs or embryos.

A European atlas of fertility policies ranked the UK tenth among 44 countries in Europe in terms of how far people are supported and enabled to access fertility treatment (Fincham, 2021). This suggests that there are ways in which the provision of IVF could be enhanced in Wales. For example, the atlas uses the benchmark of six fully funded IVF cycles to judge levels of provision across Europe but in Wales, the state funds up to two cycles to all women that meet the criteria (Senedd Wales, 2021).

The Economist conducted research (including a literature review and interviews with experts) into the relationship between ART and fertility rates. It found that after Taiwan passed a law improving support of ART, the rate of ART-enabled new-borns increased by 50%. (EIU, 2018).

There have been a number of initiatives in different countries or at sub-national levels, where ART has been partly or fully publicly funded. Two Canadian provinces – Quebec and Ontario – have been offering publicly funded ART since the mid-2010s. In Ontario, anyone under the age of 43 years, regardless of gender, sexual orientation or family situation, is eligible for one cycle of IVF, with a maximum of 5,000 cycles being funded per year across the province. An expert panel convened by the Ontario government stressed that publicly funded IVF would address the main barrier to IVF access, which is its cost. Since the policy was implemented, the use of IVF by women between the ages of 40 and 43 years has doubled, with a cumulative live birth rate (meaning births resulting from fresh and frozen embryo transfer) of over 10% (Healthy Debate, 2019). In the case of Quebec, the overall birthrate decreased during the funded period, arguably because people decided to delay having children because of improved access to IVF (Bissonnette et al., 2019).

A European atlas of fertility policies ranked the UK tenth among 44 countries in Europe in terms of how far people are supported and enabled to access fertility treatment (Fincham, 2021). This suggests that there are ways in which the provision of IVF could be enhanced in Wales. For example, the atlas uses the benchmark of six fully funded IVF cycles to judge levels of provision across Europe but in Wales, the state funds up to two cycles to all women that meet the criteria (Senedd Wales, 2021).





Longer-term environmental factors

There is growing evidence globally that male sperm counts are rapidly declining: a recent meta-analysis of sperm counts from 1973 to 2018 found a 51.5% average decrease (Levine et al., 2022). While the causes of this decline are not fully understood, researchers are increasingly pointing towards environmental factors, including pollutants and “forever chemicals” (Hærvig et al., 2022).

The Welsh Government may therefore wish to consider policies to reduce the Welsh population’s exposure to air pollution and “forever chemicals” as a way of protecting the long-term reproductive health of the population and ultimately as a way of tackling population decline. This approach could achieve longer-term savings due to improved health, fertility and reduced demand for health services in the future.

Policy mixes for boosting fertility

The evidence suggests that a combination of policies is likely to be most effective in increasing fertility. It is important to note that the implementation of a combination of policies does not in and of itself lead to the desired outcome. What matters is which policies are implemented and how they interact with the local context.

Overall, evaluations of family policies across France, Japan, Singapore and South Korea suggest that “individual family policies generally have small effects on fertility rates” and that “packages of complementary interventions” such as on childcare, IVF, work-life balance and flexible work have more impact (EIU, 2018). The recommendations in the EIU report are to make the country’s society more family-friendly, think “fertility in all policies”, improve access to fertility treatments, and for policies to be appropriately funded and implemented.

Whichever policies or policy mixes are pursued to promote fertility, they will only have the desired impact on the Welsh tax base if those babies remain in Wales as they enter and progress in their working lives.



Population retention

People choose to stay and live and work in a country or region for a range of different reasons. Understanding those reasons is fundamental to retaining people. Policies to encourage people to stay in Wales can focus on different groups of people, such as young people, graduates and working people. Policies may also focus on the different factors that may influence a person to stay, such as work or training opportunities or housing availability. Many of the factors that determine retention – though not all – are the same factors that determine people’s decision to migrate to another area.



Graduates

Graduates are mostly highly skilled, often young, of prime employment age, and because they can move into high-skilled employment, they have the potential to contribute to the regional economy and its productivity. However, in recent years Wales has been experiencing negative net migration of graduates with around 20,000 more graduates leaving than moving to Wales between 2013-16 (Resolution Foundation, 2017). More recent data from the Higher Education Statistics Agency (HESA) gathered using a new geographical graduate mobility marker shows that 31% of graduates based in Wales prior to beginning their higher education course are found to have left the country for study or work and did not return (HESA, 2022). This is in comparison with lower figures across parts of the UK: 21% leaving and not returning to Northern Ireland and 13% leaving and not returning to Scotland.

Examining in more depth why graduates stay or leave after graduating, a 2016 UK Government Office for Science report on the future of cities found that even though student numbers have risen in Cardiff since 2000 – by 60% for undergraduates and trebling for postgraduates, the majority of students who graduate tend to leave Cardiff, even though Cardiff is listed among the top liveable cities in the UK (Cardiff Public Service Board, 2017). It states that:



Employment available in Cardiff and its surrounding labour market is also often of a lower quality as measured by pay or anticipated career pathways, than that on offer in other parts of the UK.

(UK Government Office for Science, Future of Cities, 2016: 42)

Beyond job opportunities, opportunities for progression, or the “escalator effect” appear to determine graduate decisions to remain or leave their city of study (Gordon, 2015). The Great British Brain Drain report suggests that a focus on the job market more broadly should be prioritised, rather than on the narrower focus of the retention of graduates. The report asserts that to retain graduates and attract other highly skilled workers, the local economy needs to have some basic conditions in place. These include a reliable and efficient transport system, an affordable housing market with a variety of available properties, and a planning system that can respond to changing employment patterns and residential demands. Cities and their partners could also focus on boosting the demand for high-skilled jobs and improving the educational attainment and workforce development of local residents.

The Welsh Government’s powers to determine graduate retention, especially in terms of permitting graduates’ residency or visas, are limited.

However, as Scotland does with the ScotGrad scheme by encouraging and supporting employers to sponsor international students when applying for visas to the UK Home Office, the Welsh Government could also enable international students to access and participate in postgraduate placement schemes in Wales.

Above all and looking at student retention in the UK and internationally, there are two crucial factors to consider.

- The provision of appropriate jobs in the local area or country, both in terms of specific skills area and skills level, with opportunity for career progression.
- Cooperation between all actors involved in the retention of graduates – mainly universities, employers and government – is of paramount importance for helping students navigate a complex system and ensuring that their skills are easily matched to the local or national labour market.



Retaining people in rural areas

Retaining people in rural areas, especially young people and working people, is key to maintaining a balance in age groups and economically active/non-active people as these are often areas that are at risk of depopulation. A particular factor concerning Wales is that when people leave rural areas, they often also leave the country (Woods, 2023). Addressing rural depopulation is thus a crucial issue for Wales.

Many of the policies under review stress the need for a holistic and localised approach to the issue of rural depopulation. For instance, the Horizon 2020 project 'Social Innovation in Marginalised Rural Areas' (SIMRA) has examined policies implemented by different European states in addressing depopulation of rural areas. Crucially, all successful initiatives were said to be built on **'a realistic analysis of the existing situation'** (SIMRA, 2019). A database of good practices is available on the [SIMRA website](#).

Young people (commonly defined as between the ages of 15 and 25 years) are particularly likely to relocate, for study or work. A Welsh survey of 1,056 people between the ages of 14 and 25 years old, found that while 75% of young people enjoy living in rural Wales, 40% (equivalent to 40,000 individuals in Wales) believe that they will have to leave Wales within the next five years, even though they would prefer to stay (Woods and Utz, 2022). When asked about what policy changes would make them stay, the young people surveyed responded similarly to the findings outlined in the graduate retention section. They emphasised access to more appropriate types of jobs, followed by more affordable housing, wage levels and better paid jobs, and transport.

Forty percent of young people believe that they will have to leave Wales within the next five years even though they would prefer to stay.

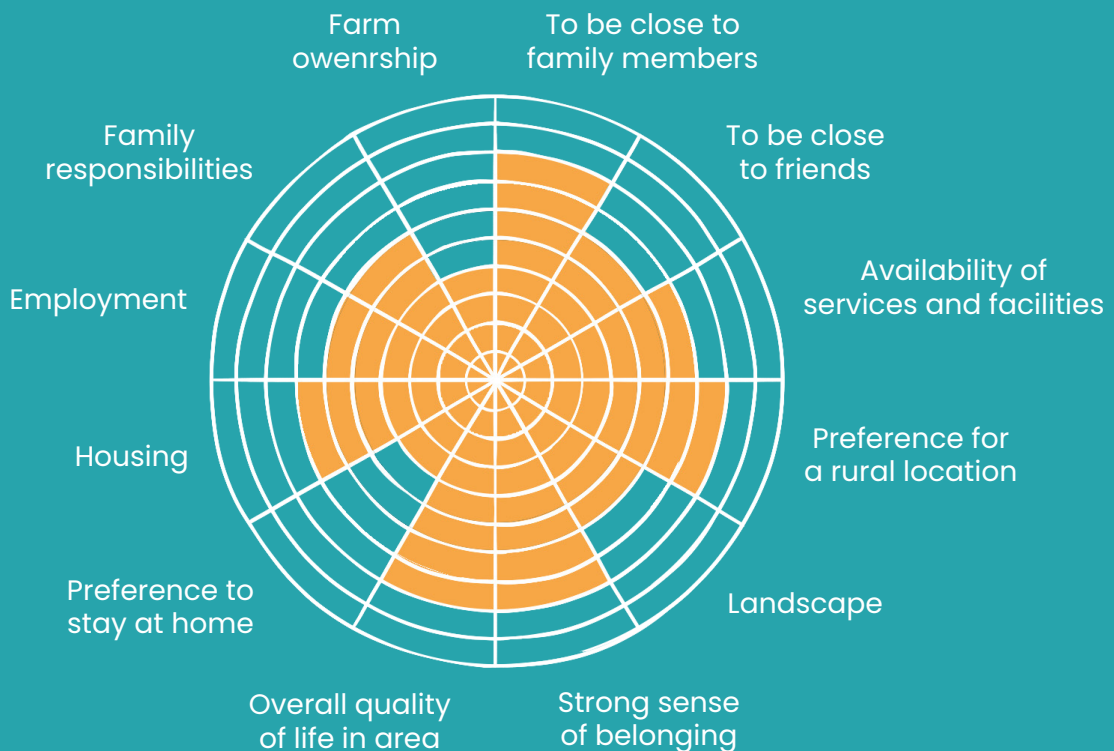
There are several key factors which evidence suggests are worth considering in relation to retaining workers in rural areas. As well as facilitating remote working, access to broadband is crucial to people living in rural areas being able to connect with others and for businesses located in rural areas to be productive and competitive, all contributing to rural economic growth and population retention.



A 2018 Ofcom-commissioned report found a positive relationship between broadband investment and economic growth (Ofcom, 2018). An OECD analysis of several countries, including the UK, also found that the Covid-19 pandemic provided an opportunity for remote working for people living in rural areas, especially for female workers whose work tends to be more conducive to remote working. However, for this to happen, the analysis stresses the need for quality and equal access to broadband (OECD, 2021). Because of Wales's topography and sparse population distribution, the cost of establishing broadband coverage is significantly higher than the UK average. Although important progress in connectivity has been made, full fibre broadband is only available to 27% of premises and 15,000 people are still without access to at least 10Mbit/s upload and download speed (Ofcom, 2021).

Another key factor determining people's choice to remain in or leave rural areas is the availability, affordability and suitability of local housing supply. There are particular challenges related to rural housing in Wales, such as the difficulty of obtaining appropriate land and site supply (for example, the lack of alignment between local earnings and house prices, notably because of in-migration driving prices up), planning policies and practices that are unresponsive to changing needs in local communities, and the availability of financing for affordable rural housing (Welsh Government, 2014).

A European research project called 'STAY(ing)Rural' examines why people stay in rural areas in countries such as Germany, the Netherlands, and the United Kingdom. An evidence briefing produced for one of their case studies, County Tyrone in Northern Ireland, uses household surveys, focus groups and interviews to elicit why people make the decision to stay in that rural area, as demonstrated by the figure below.



Infographic showing how important factors are in determining people's decision to stay or leave the rural area of County Tyrone, Northern Ireland. Source: Evidence briefing, Queen's University Belfast

Attracting people

Attracting people via inward migration is another key way in which the Welsh Government can try to boost the Welsh population and possibly to shift its skills composition. Although immigration policy is a function of the UK government, the Welsh Government plays an important role in the delivery of immigration policy and the shaping of places, communities and other public services, in ways that can affect whether people choose to move to Wales and for how long.

Between April 2011 and March 2021, the only reason that the population of Wales grew was due to positive net migration of around 55,000 usual residents. These migrants come from within as well as from beyond the UK (Welsh Government, 2022b). Every year, on average one million people choose to make a significant geographic move from one part of England and Wales to another (Swinney and Williams, 2016). There is no legal limit to movement within the UK so Wales can potentially attract more of these people.

In 2019, 6,921 people left London for Wales, whereas 7,196 people moved from Wales to London. This represents the highest number of people moving to London from Wales based on the years of available data (ONS, 2022).

While the number of residents in Wales born outside of the UK has increased by 28.3% since the 2011 census, in England the number of residents born outside the UK has increased by 33.6% (Welsh Government, 2022c). This suggests that there is scope for Wales to attract more immigrants to the UK to settle in Wales, as well as immigrants from elsewhere in the UK.

In devising policies to attract people to Wales, it is also important to consider the ways in which the policy goals of a thriving Welsh language may interact with immigration dynamics. Rural areas most at risk of depopulation are often the areas with a high proportion of Welsh speakers, so policies to support and enable Welsh language learning are necessary.

Some countries and regions have been particularly successful in attracting people to come and live and work. Since 2020, a number of countries have put in place financial incentives for individuals and businesses to relocate to depopulated (often rural) areas, such as Italy, Australia and the United States (World Economic Forum, 2022). Different policies have been adopted to attract people, which focus on different groups of people, such as workers, refugees, families, and graduates and students.



Repopulation projects

Scotland

Scotland's Expert Advisory Group on Migration and Population has released a report examining these internal flows and their relevance to Scotland (Scottish Government, 2020). It notably examines the measures taken by Scottish local authorities for impacting within-UK migration, such as policies addressing the issue of empty homes, or encouraging new families or businesses to move to their local area. The report finds that, in the last 20 years, Scotland has benefited from a positive inflow of about 20,000 migrants per year from the rest of UK. Most are between the ages of 18 and 29 years and tend to have higher qualifications than those already living in Scotland. Three main strategies for attracting people to areas facing depopulation are: financial grants, empty properties, and crofting, which is a system of landholding that is unique to the Highlands and the Islands.

European regions

A multi-faceted approach to rural repopulation is explored in several other communities in Europe. It is widely agreed that citizens require both support to relocate to rural areas as well as strong infrastructure – such as affordable housing, good transport links, access to schools and hospitals, and the digital infrastructure to support remote working or entrepreneurship. For example, in Denmark, the community of Friederikshavn was revitalised by the establishment of the 'experience economy,' with offerings such as festivals, cultural events, and tourist attractions. This was followed by a Settlement Service that offered housing and job opportunities to people moving to the area, including language-learning opportunities for non-naturalised citizens. An academic review of the initial experience economy scheme found it to be a positive way of supplementing a largely service-based economy (Therkildsen et al., 2009).



Japan

A review of Japan's approach to island depopulation by the Scottish Government (2022a) identified several key policy approaches, highlighting the following learning points for Scotland, many of which are likely to be relevant to the Welsh context:

- Ensuring clarity about the goals of demographic-focused policy interventions;
- Designing a flexible policy framework to allow for locally tailored solutions;
- Taking a holistic approach that combines "hard" solutions such as infrastructure and digital connectivity with "softer" initiatives, such as community-led medical care projects;
- Engaging with local communities to co-produce initiatives;
- Recognising and building on the resources and positive benefits of depopulated/depopulating areas;
- Providing a range of support for in-migrants, such as stipends to encourage newcomers to participate in activities linked to the local history, culture and nature; and
- Incorporating renewable energy and digital investment considerations into demographic initiatives.

Visas

Making visas easy to apply for and obtain, and implementing visa schemes targeted at particular groups of people, is another tool that countries and regions have deployed to attracting people to relocate. Immigration and the issuing of visas are reserved matters for the UK Government, so the Welsh Government cannot make decisions at this level but there is potential for the Welsh Government to lobby the UK government for policy change or for expanded powers.

Scotland has devised its Rural Visa Pilot Scheme, which was announced in 2022 and is being considered by the UK Government. The scheme would represent a new community-driven approach to local migration, based on a range of characteristics, including allowing rural and remote communities to attract migrants in line with their distinct needs; participating employer-sponsors within designated geographic areas (referred to as community pilot areas) would advertise vacancies via a bespoke entry criteria and; once a decision is approved, community partners – including employers, local statutory, and third-sector services – would offer a package of integrated settlement support services for newcomers (Scottish Government, 2022b). An advantage of this community-driven approach is that it is intended to take into account the full range of assets and needs of a particular community.



Attraction programmes

Other countries and regions have sought to attract people through marketing campaigns and attraction programmes. These initiatives might be of interest to the Welsh Government as they do not require control over immigration but rely instead on building a 'brand' for the country or region that acts as the attraction point for potential migrants.

Some programmes have sought to attract skilled workers, including for within-country migration, through talent attraction programmes such as Scotland's 'Fresh Talent' initiative (Houston et al., 2008).

Jonathan Portes (n.d.) also points out that while focusing on *attracting* skilled workers seems like a logical option, there is also the need to focus on retaining those that have been attracted by improving connectivity (transport and digital) to allow those people to remain and often work remotely.

Conclusion

Population ageing and decline present a range of risks to the Welsh economy by potentially leading to a shrinking workforce and tax base, and a reduced block grant from the UK government, ultimately reducing the resources that the Welsh Government has available to invest in public policy and public services. At the same time, the ageing population pushes up demand for health and social care services. Wales also has specific pre-existing challenges, such as a low-productivity, low-growth and low-skill economy compared to most other areas in the UK.

The evidence base is growing across the three policy areas we focus on within the report (fertility, population retention and attraction of inward migrants), with some strong evidence of 'what works' to draw on in relation to fertility, but less so in relation to retention and attraction.

Evidence reviewed in relation to all three areas also emphasised the importance of considering policy mixes, both because single policies are unlikely to achieve the desired overarching change, but also because policies need to be designed and implemented in ways which are mutually reinforcing and supportive, rather than undermining.

While some interventions reviewed in this report, such as granting visas or citizenship to international immigrants, are beyond the scope of what the Welsh Government has power to do, the vast majority of the interventions are within the competence of the Welsh Government. The evidence reviewed here has shown that there are concrete steps which the Welsh Government can take to enhance the extent to which Welsh communities are places in which people want and are able to have children, remain in, and are attractive destinations for migration.



References

- Bauernschuster, S., Hener, T. and Rainer, H. (2014) **Children of a (policy) revolution: The introduction of universal child care and its effect on fertility**. CESifo Working Paper, No. 4776, Center for Economic Studies and ifo Institute (CESifo). Munich. Available at: www.cesifo.org/en/publications/2014/working-paper/children-policy-revolution-introduction-universal-child-care-and
- Bergsvik, J., Fauske, A. and Kaldager Hart, R. (2021) **'Can policies stall the fertility fall? A systematic review of the (quasi-) experimental literature'**, Population and Development Review, 47(4): 913–964. doi: doi.org/10.1111/padr.12431
- Bevan Foundation. (2005). **A childcare revolution in Wales**. Available at: www.bevanfoundation.org/resources/a-childcare-revolution-in-wales/
- Bucelli, I. and Mcknight, A. (2022). **Poverty and social exclusion: review of international evidence on early childhood education and care**. Available at: www.wcpp.org.uk/wp-content/uploads/2022/09/211021-WCPP-Poverty-Review-Early-childhood-education-and-care.pdf.
- Business in the Community (BITC). (2022). **Weekly childcare costing some parents more than half of their take-home pay, new analysis shows**. Available at: www.bitc.org.uk/news/weekly-childcare-costing-some-parents-more-than-half-of-their-take-home-pay-new-analysis-shows/
- Clean Air Fund (2022). **The pathway to healthy air in the UK**. Available at: s40026.pcdn.co/wp-content/uploads/The-Pathway-to-Healthy-Air-in-the-UK.pdf.
- Doepke, M, Hannusch, F., Kindermann, F. and Tertilt, M. (2022). **The economics of fertility: A new era**. National Bureau of Economic Research Working Paper No. 29948, Cambridge, MA: NBER. Available at: www.nber.org/system/files/working_papers/w29948/w29948.pdf
- EIU (2018) **Fertile ground. How can Japan raise its fertility rate?** Available at: www.eiu.com/graphics/marketing/pdf/Fertility-in-Japan-EIU.pdf
- Gordon, I. R. (2015). **'Ambition, human capital acquisition and the metropolitan escalator'**. Regional Studies, 49 (6). pp. 1042–1055.
- Hærvig, K.K., Petersen, K.U., Hougaard, K.S., Lindh, C., Ramlau-Hansen, C.H., Toft, G., Giwercman, A., Høyer, B.B., Flachs, E.M., Bonde, J.P. and Tøttenborg, S.S. (2022). **'Maternal exposure to per- and polyfluoroalkyl substances (pfas) and male reproductive function in young adulthood: combined exposure to seven PFAS.'** Environmental Health Perspectives, 130(10). doi: doi.org/10.1289/ehp10285
- Hoorens, S., Gallo, F., Cave, J. and Grant, J. (2007). **'Can assisted reproductive technologies help to offset population ageing?: An assessment of the demographic and economic impact of ART in Denmark and UK.'** Human Reproduction. Available at: www.rand.org/pubs/external_publications/EP20070917.html
- Houston, D., Findlay, A., Harrison, R. and Mason, C. (2008). **'Will attracting the "creative class" boost economic growth in old industrial regions? A case study of Scotland'**, Geografiska Annaler: Series B, Human Geography, 90(2): 133–149. doi: doi.org/10.1111/j.1468-0467.2008.00283.x.
- Milligan, K. (2005). **'Subsidizing the stork: new evidence on tax incentives and fertility'**, The Review of Economics and Statistics, 87(3): 539–555. Available at: www.jstor.org/stable/40042947
- OECD (2021). **Teleworking in the COVID-19 pandemic: Trends and prospects**. Available at: www.oecd.org/coronavirus/policy-responses/teleworking-in-the-covid-19-pandemic-trends-and-prospects-72a416b6/
- Ofcom. (2021). **Connected nations 2021. Wales report**. (2021). Available at: www.ofcom.org.uk/_data/assets/pdf_file/0025/229723/connected-nations-2021-wales.pdf.
- Parent, D. and Wang, L. (2007). **'Tax incentives and fertility in Canada: Quantum vs tempo effects'**, The Canadian Journal of Economics / Revue Canadienne Economique, 40(2): 371–400. Available at: www.jstor.org/stable/4620612

Portes, J. (n.d.). **Wales's economic resilience and reconstruction mission**, unpublished report commissioned by the Welsh Government.

Scottish Government. (2020). **Executive summary. Internal migration in Scotland and the UK: trends and policy lessons**. Available at: www.gov.scot/publications/internal-migration-scotland-uk-trends-policy-lessons/pages/2/

Scottish Government (2021a). **A Scotland for the future: opportunities and challenges of Scotland's changing population**. Available at: www.gov.scot/publications/scotland-future-opportunities-challenges-scotlands-changing-population/

Scottish Government (2021b) **Designing a pilot remote and rural migration scheme: analysis and policy options**. Available at: www.gov.scot/publications/designing-pilot-remote-rural-migration-scheme-scotland-analysis-policy-options/

Scottish Government (2022a) **Approaches to island depopulation in Japan and lessons for Scotland**. Available at: www.gov.scot/publications/approaches-island-depopulation-japan-lessons-scotland/documents/

Scottish Government (2022b). **Rural visa pilot proposed**. Available at: www.gov.scot/news/rural-visa-pilot-proposed/

SIMRA (2019). **Database: Social innovations in marginalised rural areas – SIMRA Social Innovation in Marginalised Rural Areas**. Available at: www.simra-h2020.eu/index.php/simradatabase/

Smajdor, A. (2007). **'State-funded IVF will make us rich... or will it?'** *Journal of Medical Ethics*, 33(8), pp.468–469. doi: doi.org/10.1136/jme.2006.018309.

Sobotka, T, Matysiak, A., and Brzozowska, Z. (2020). **Policy responses to low fertility: How effective are they?**, Working paper No 1, United Nations Population Fund (UNFPA), Technical division, Population and Development Branch, New York: UNFPA. Available at: www.unfpa.org/publications/policy-responses-low-fertility-how-effective-are-they

Social Market Foundation (2021). **Baby bust and baby boom: Examining the liberal case for pronatalism**. Available at: www.smf.co.uk/publications/baby-bust-and-baby-boom/

Swinney, P. and Williams, M (2016). **The Great British Brain Drain: Where graduates move and why**. London: Centre for Cities.

Therkildsen, H. P., Hansen, C. J. & Lorentzen, A. (2009) **'The experience economy and the transformation of urban governance and planning'**, *European Planning Studies*, 17:6, 925–941, DOI: 10.1080/09654310902794059

UK Government Office of Science (2016), **Future of Cities: Foresight for Cities**, Available at: assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/516443/gs-16-5-future-cities-foresight-for-cities.pdf

Welsh Government (2014). **An evaluation of rural housing enablers in Wales**. Available at: www.gov.wales/sites/default/files/statistics-and-research/2018-12/140117-evaluation-rural-housing-enablers-literature-review-en.pdf

Welsh Government (2021). **Programme for Government – Update**. Available at: www.gov.wales/sites/default/files/publications/2022-01/programme-for-government-update-december-2021.pdf

Welsh Government (2022a) **National population projections (interim data): 2020-based**. Available at: www.gov.wales/national-population-projections-interim-data-2020-based#:~:text=Main%20points

Welsh Government (2022b). **Demography and migration in Wales (Census 2021)**. Available at: [www.gov.wales/demography-and-migration-wales-census-2021-html#:~:text=There%20were%20more%20deaths%20than,\(approximately%2055%2C000%20usual%20residents\)](http://www.gov.wales/demography-and-migration-wales-census-2021-html#:~:text=There%20were%20more%20deaths%20than,(approximately%2055%2C000%20usual%20residents))

Woods, M., & Utz, P. (2022). **Young People in Rural Wales: Survey Report**, Aberystwyth: Aberystwyth University.

Woods, M, (2023). **Rural Youth Out-Migration and Population Change in Wales**. Wales Centre for Public Policy.

World Economic Forum (2022), **These countries are paying people to move to the countryside**. Available at: www.weforum.org/agenda/2022/04/countries-paying-you-to-move-to-countryside/



About the Wales Centre for Public Policy

Here at the Centre, we collaborate with leading policy experts to provide ministers, the civil service and Welsh public services with high quality evidence and independent advice that helps them to improve policy decisions and outcomes.

Funded by the Economic and Social Research Council, Welsh Government, and Cardiff University, the Centre is based at Cardiff University and a member of the UK's What Works Network.

For further information:

Amanda Hill-Dixon, Senior Research Fellow

+44 (0)29 2087 5345

Amanda.hill-dixon@wcpp.org.uk

Find out more

For the full report see: MacKillop, E., Hill-Dixon, A., Hopkins, C. and Morgan, C. (2023). **International approaches to population ageing and decline.** Cardiff: WCPP.

Wales Centre for Public Policy

Cardiff University, Sbarc | Spark,
Maindy Road, Cardiff CF24 4HQ

 www.wcpp.org.uk  029 2087 5345

 info@wcpp.org.uk  @WCfPP

