2.0 Phase 1: Evidence generation

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2.1 Purpose and context

The purpose of the evidence generation phase was to produce administrative data evidence on ADHD that could be meaningfully engaged with by stakeholders across multiple sectors. Given that administrative data has enormous potential in informing the who, what, where, and when of important societal issues, research team members opted to generate evidence on the who, what, where, and when of ADHD among young people in NI.

2.2 The data

We linked data from the Northern Ireland Longitudinal Study (NILS) and the Northern Ireland Enhanced Prescribing Data (EPD). The NILS is a 28% sample of the Northern Ireland population and includes individuals within the NI Health Card registration system who were born on one of 104 pre-designated dates of birth (O'Reilly et al., 2012).

For these analyses, we focused on NILS members aged 6 to 20 years who were enumerated at the 2011 Census.

These individuals were linked to Census 2021 data, the Northern Ireland Enhanced Prescribing Data (EPD), Land and Property Services valuation data, and General Register Office (GRO) data.

The EPD contains information on all medications dispensed in community pharmacies across Northern Ireland and referred to the Business Services Organisation (BSO) for reimbursement (Bradley et al., 2012). Land and Property Services valuation data provide information on property values, while GRO data contain information on deaths and emigrations in NI.

Figure 2.0: An example of providing the same WHEN results in different formats

2.3 Ethics

Data linkage was performed by the Northern Ireland Statistics and Research Agency (NISRA) Research Support Unit (RSU) and data were de-identified and pseudonymised prior to release to the research team. Participant consent was not required for this study. The data is classed as confidential: it is accessed from within a secure setting; by accredited researchers working under stringent protocols to avoid disclosure problems.

2.4 Measures

Prescription records from 2011 to 2025 were used to identify medication use. ADHD medication receipt was defined as any recorded prescription for drugs used in the treatment of ADHD (BNF 4.4), with individuals classified as either receiving or not receiving ADHD medication during the study period. Other psychotropics use included antidepressants, anxiolytics or hypnotics, antipsychotics, and drugs used in substance dependence, with individuals classified as receiving or not receiving each drug category.

Demographic variables included age at baseline, grouped into 6-10, 11-15, and 16-20 years, and sex (male, female).

Household characteristics were derived from Census 2011 and captured indicators of household composition and socioeconomic circumstances, including car availability, employment within the household, housing tenure, number of carers, and property value. The latter variable was derived from Land and Property Service Valuation data.

Health outcomes were derived from the Census 2021 and included health conditions lasting, or expected to last, at least 12 months, such as autism/Asperger syndrome, learning difficulty, and long-term pain or discomfort. Limitations to day-to-day activities due to health and disability were also assessed, and a composite indicator was created to identify individuals with one or more long-term conditions.

Employment outcomes were derived from Census 2021 and included economic activity (employee, self-employed, unemployed (incl. full-time student) and inactive)) and hours worked per week (0-15, 16-30, 31-48, 49 or more).

Education outcomes were derived from Census 2021 and included qualification level (level 1, level 2, level 3, level 4+, apprenticeship, no qualifications).

2.5 Analytic approach

Analyses were structured using a ***WHO, WHAT, WHERE,*** and ***WHEN*** framework to support clear communication and sector-relevant interpretation of findings.

Given that one of the objectives of the WG is to understand the most effective dissemination strategies, formats, and mediums for our stakeholders needs, the same evidence was presented in numerous ways.

Results are presented here at a high level to illustrate the types of evidence generated and the ways in which the same findings were presented in different formats for stakeholder engagement.

Table 1: Analytic procedure

WHO	Participants were classified according to whether they had received at least one ADHD medication between 2011 and 2020. This classification was used to distinguish individuals with and without evidence of ADHD medication receipt. Demographic and household characteristics were derived from the 2011 Census.
WHAT	ADHD medication receipt between 2011 and 2020 was treated as the primary exposure variable. Outcome variables included employment, education, and health outcomes derived from the 2021 Census, as well as psychotropic medication receipt between 2021 and 2025. Crosstabulations were conducted to describe differences between groups, and binary logistic regression analyses were used to examine associations between ADHD medication receipt and subsequent outcomes.
WHERE	The annual number of ADHD medications dispensed was reported across Local Government Districts (LGDs) and further disaggregated by Health and Social Care Trust region in Northern Ireland.
WHEN	Prevalence and incidence rates of ADHD medication receipt were calculated for each year between 2011 and 2025 and were stratified by age and sex.

3.5 Results

3.5.1. WHEN: Key results

- There are approximately 1 in 1,000 new cases of ADHD medication per year.
- Increasing prevalence and incidence of ADHD among females in later years.
- Those aged 6-10 years at baseline are the largest group receiving ADHD medication throughout study period.

Year	Total *N*	*N* prescribed	% of sample
2011	91,663	880	1.0%
2012	91,022	882	1.0%
2013	90,378	885	1.0%
2014	89,842	898	1.0%
2015	89,169	861	1.0%
2016	88,518	862	1.0%
2017	87,774	818	0.9%
2018	87,163	772	0.9%
2019	86,195	723	0.8%
2020	85,348	652	0.8%
2021	83,951	632	0.8%
2022	82,604	684	0.8%
2023	81,385	669	0.8%
2024	80,389	659	0.8%
2025	91,899	613	0.7%

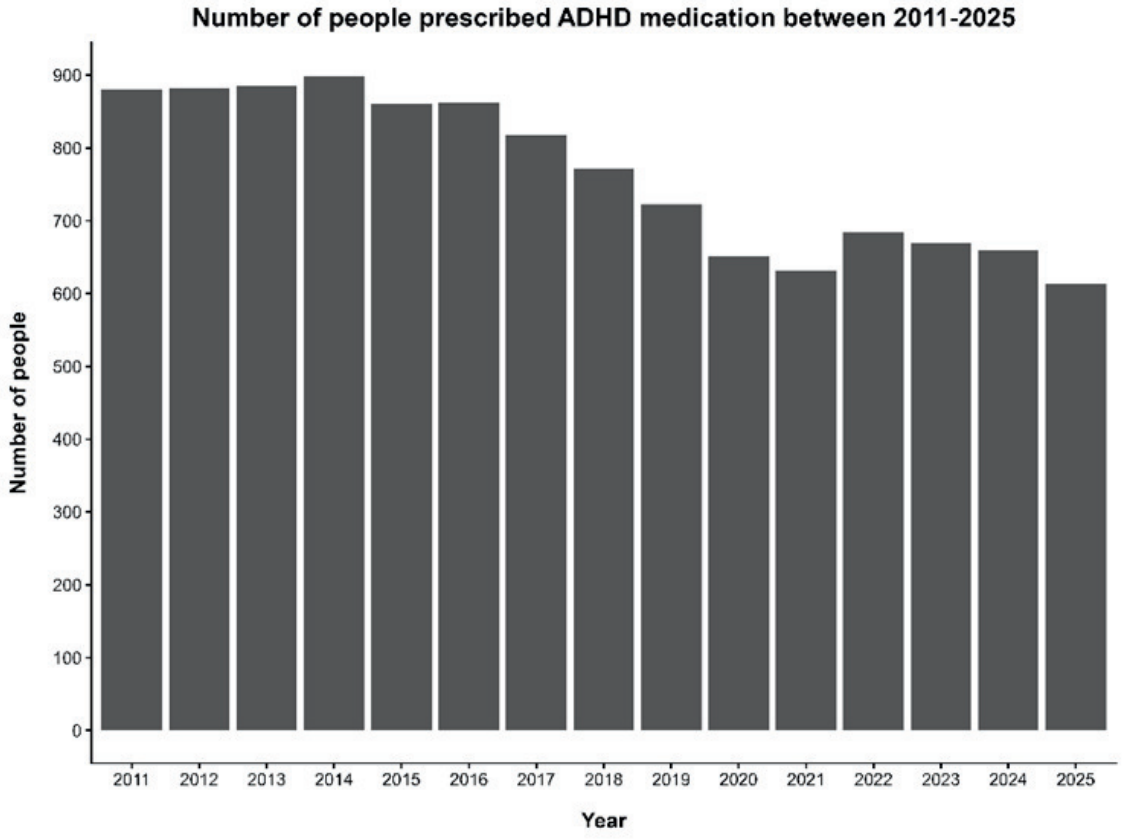


Figure 2.1: An example of providing the same WHEN results in different formats

3.5.2 WHO: Key results

- Higher likelihood of ADHD medication among boys
- Higher likelihood of ADHD medication among 6 to 10 year olds at baseline
- Higher likelihood of ADHD medication among families with fewer material resources
- Higher likelihood of ADHD medication in households with greater health burden

		ADHD 2011 – 2020		No ADHD 2011 – 2020			
		%	n	%	n	X^2	p
Sex	Male	76.0	1,231	51.2	46,154	395.19	<.001
	Female	24.0	388	48.9	44,126		
Age at baseline	6 – 10 years	46.2	748	31.6	28554		
	11 – 15 years	36.6	592	33.7	30405	250.88	<.001
	16 – 20 years	17.2	279	34.7	31321		
N cars in household	No cars	20.8	335	13.3	11894	76.89	<.001
	1 or more cars	79.2	1278	86.7	28865		
Carers in household	No Carers	52.1	840	69.4	62226	222.76	<.001
	Carers	47.9	773	30.6	27433		
N people with a health condition	0	22.8	367	46.8	41497		
	1	28.3	456	31.1	27851		
	2	24.9	402	14.7	13190	906.91	<.001
	3	15.6	252	5.4	4821		
	4	8.4	136	2.1	1850		
N adults in employment	0	31.6	509	16.3	14567		
	1	34.2	551	28.6	25674	367.27	<.001
	2 or more	34.3	553	55.1	49418		
Household tenure	Owns	55.7	899	72.6	65132		
	Part-rents, rents, or lives rent free	44.3	714	27.4	24532	226.32	<.001
Capital value of property	Lowest quintile	18.9	297	11.3	10297		
	Second quintile	24.2	381	18.3	15812		
	Middle quintile	18.4	290	18.7	16093	139.59	<.001
	Fourth quintile	16.1	253	22.2	19121		
	Highest quintile	22.4	352	28.9	24927		

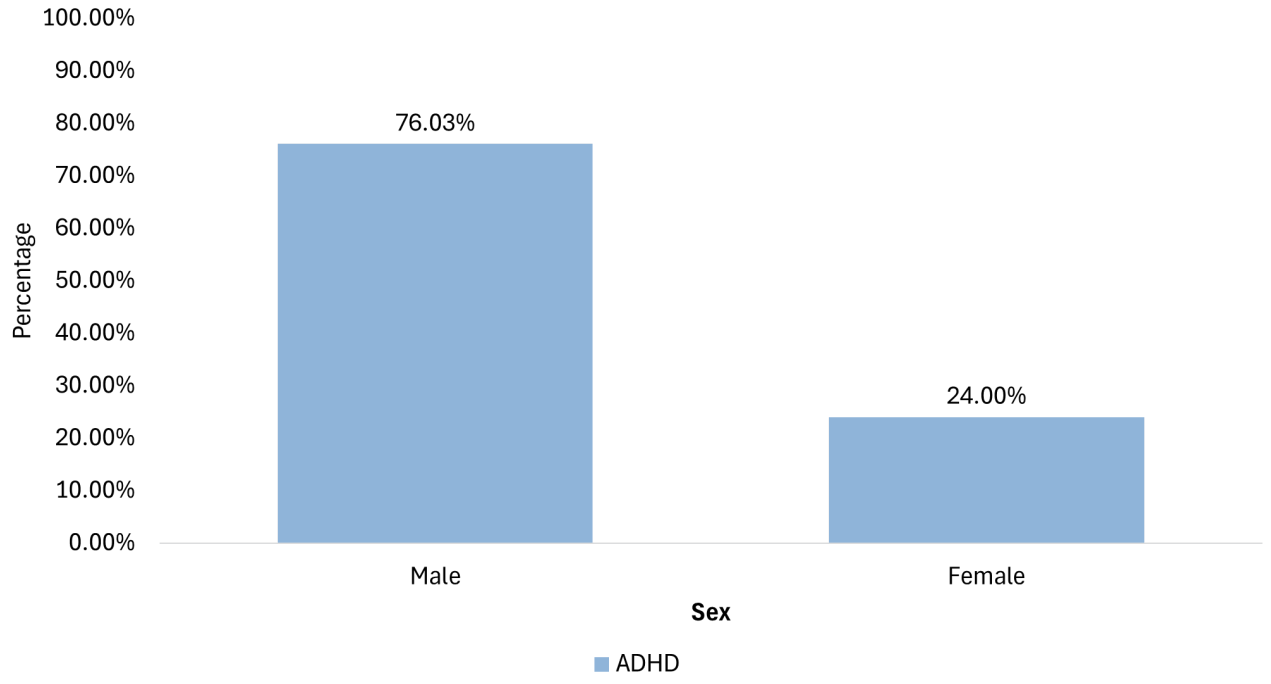


Figure 2.2: An example of providing the same WHO descriptive results in different formats using NILS data

			ADHD group		ADHD group	
		N	OR (SE)	95% CI	AOR (SE)	95% CI
Sex	Male	91,899	-	-	-	-
	Female		**0.33** (0.02)	(0.29, 0.37)	**0.33** (0.02)	(0.29, 0.37)
Age group	6-10 years	91,899	**2.94** (0.21)	(2.56, 3.38)	**2.96** (0.21)	(2.58, 3.40)
	11-15 years		**2.19** (0.16)	(1.89, 2.52)	**2.18** (0.16)	(1.89, 2.52)
	16-20 years		-	-	-	-
Number of cars in household	0	91,277	-	-	-	-
	1 or more		**0.58** (0.04)	(0.52, 0.65)	**0.55** (0.03)	(0.49, 0.62)
Number of carers in household	0	91,272	-	-	-	-
	1 or more		**2.09** (0.12)	(1.89, 2.31)	**2.29** (0.11)	(1.99, 2.44)
Number of people with a health condition	0	91,272	-	-	-	-
	1		**1.87** (0.13)	(1.63, 2.15)	**1.97** (0.14)	(1.72, 2.27)
	2		**3.48** (0.26)	(3.02, 4.02)	**3.73** (0.27)	(3.23, 4.30)
	3		**5.97** (0.51)	(5.05, 7.07)	**6.40** (0.55)	(5.40, 7.59)
	4 or more		**8.40** (0.91)	(6.80, 10.38)	**8.95** (0.99)	(7.21, 11.12)
Adults in employment	0	91,272	**3.12** (0.20)	(2.76, 3.53)	**3.04** (0.19)	(2.68, 3.44)
	1		**1.92** (0.12)	(1.70, 2.17)	**1.80** (0.11)	(1.59, 2.03)
	2 or more		-	-	-	-
Household tenure	Owns	91,277	-	-	-	-
	Part owns/rents/lives rent free				**2.11** (0.11)	(1.91, 2.33)
Capital value of property	Lowest quintile				**2.14** (0.18)	(1.83, 2.52)
	Second quintile				**1.79** (0.14)	(1.54, 2.08)
	Middle quintile				**1.30** (0.11)	(1.11, 1.52)
	Fourth quintile				**0.96** (0.08)	(0.81, 1.13)
	Highest quintile		-	-	-	-

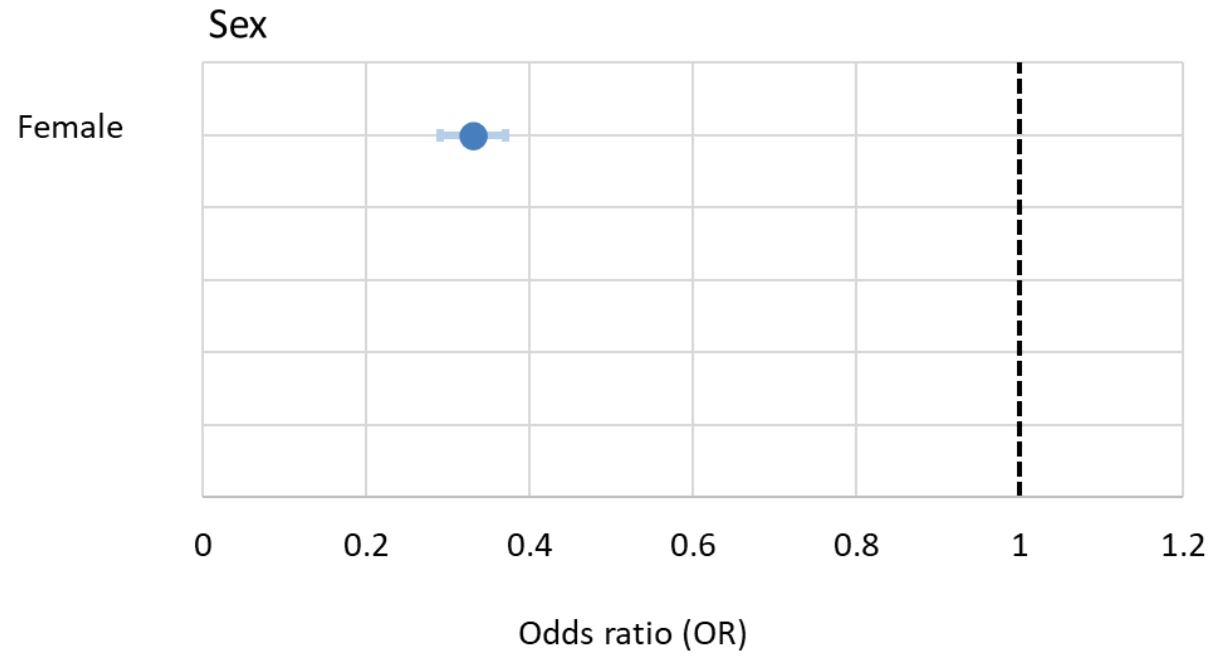


Figure 2.3: An example of providing the same WHO inferential results in different formats using NILS data

3.5.3 WHAT: Key results

- Higher likelihood of a range of health conditions and psychotropic medication among those who received ADHD medication
- Higher likelihood of economic inactivity and fewer work hours among those who received ADHD medication
- Higher likelihood of lower or alternative educational qualifications among those who received ADHD medication

2021 health variables	Autism/ Asperger		Intellectual /learning disability		Learning difficulty		Breathing difficulty		Long-term pain		Mental health problems		Other health problems		One or more conditions	
	Yes		Yes		Yes		Yes		Yes		Yes		Yes		>1	
	%	n	%	n	%	n	%	n	%	n	%	n	%	n	%	n
ADHD	28.7	392	10.2	139	33.9	464	12.4	169	7.0	96	32.1	439	7.7	106	71.8	982
No ADHD	3.1	2232	1.2	886	5.7	4171	7.4	5445	3.1	2256	8.9	6499	3.0	2189	24.9	18182
X2	2589.811		792.403		1831.746		46.392		67.894		855.814		101.569		1546.823	
p	<.001		<.001		<.001		<.001		<.001		<.001		<.001		<.001	

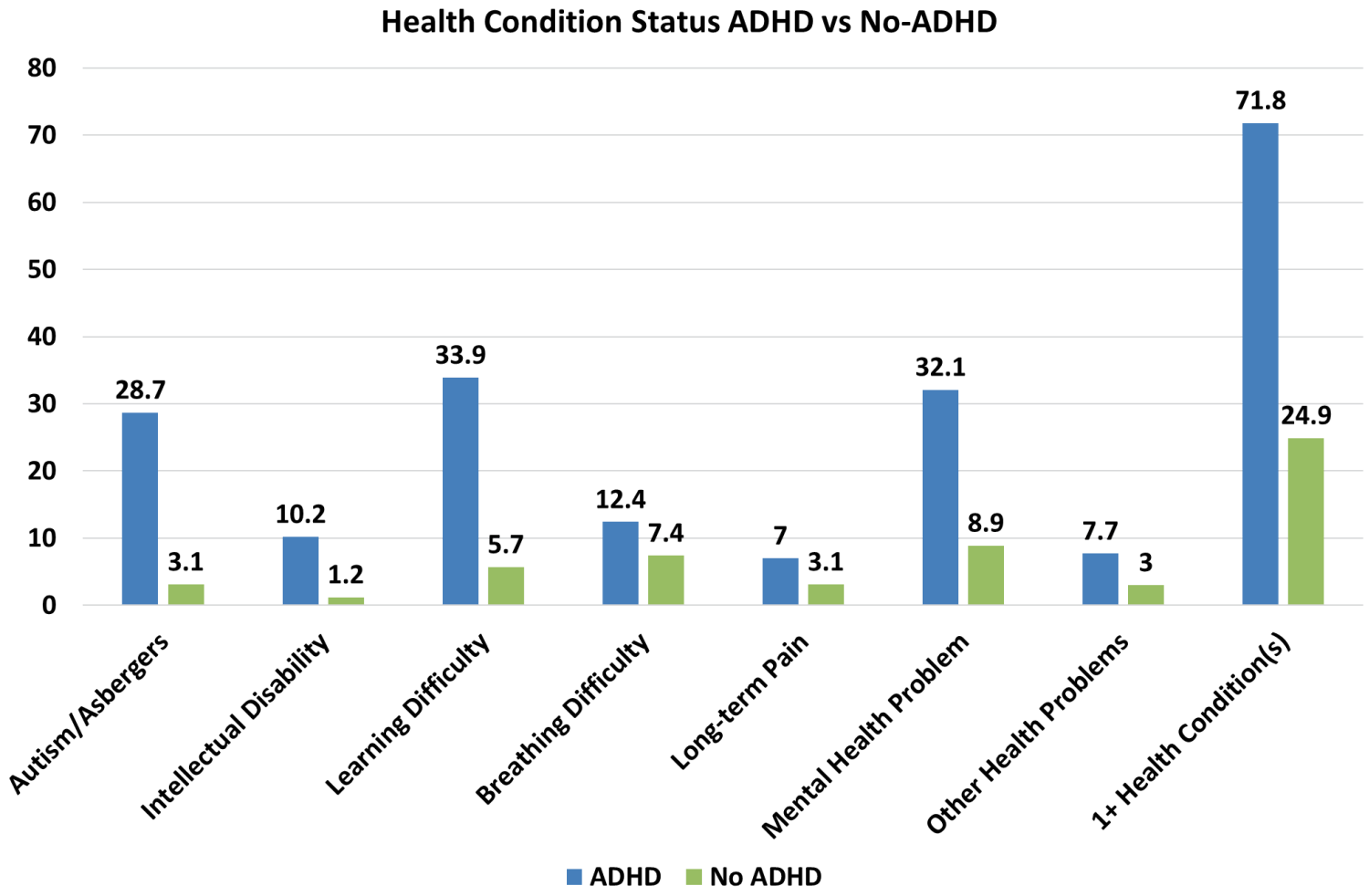


Figure 2.4: An example of providing the same WHAT descriptive results in different formats using NILS data

Health outcomes in 2021	N	OR	95% CI	AOR	95% CI
Autism or Asperger Syndrome	74484	**12.76**	(11.25, 14.46)	**9.58**	(8.40, 10.92)
Mental health	74484	**4.84**	(4.31, 5.45)	**6.28**	(5.56, 7.08)
An intellectual or learning disability	74484	**9.22**	(7.64, 11.12)	**8.25**	(6.80, 10.01)
A learning difficulty	74484	**8.48**	(7.55, 9.54)	**7.64**	(6.78, 8.60)
Shortness of breath or difficulty breathing	74484	**1.75**	(1.49, 2.06)	**1.82**	(1.55, 2.15)
Long-term pain or discomfort	74484	**2.37**	(1.91, 2.94)	**3.28**	(2.64, 4.08)
Other	74484	**2.72**	(2.22, 3.34)	**2.97**	(2.42, 3.65)
One or more	74484	**7.69**	(6.82, 8.66)	**8.04**	(7.13, 9.07)
Disability	74484				
No		**-**	-	**-**	-
Limited a little		**6.26**	(5.48, 7.15)	**6.82**	(5.97, 7.81)
Limited a lot		**9.42**	(8.21, 10.80)	**9.83**	(8.55, 11.30)
General health	74484				
Very good		**-**	-	**-**	-
Good		**2.13**	(1.87, 2.42)	**2.54**	(2.23, 2.90)
Fair		**5.20**	(4.48, 6.05)	**6.42**	(5.51, 7.48)
Bad		**7.54**	(6.10, 9.31)	**10.03**	(8.07, 12.46)
Very bad		**6.84**	(4.59, 10.18)	**8.48**	5.64, 12.74

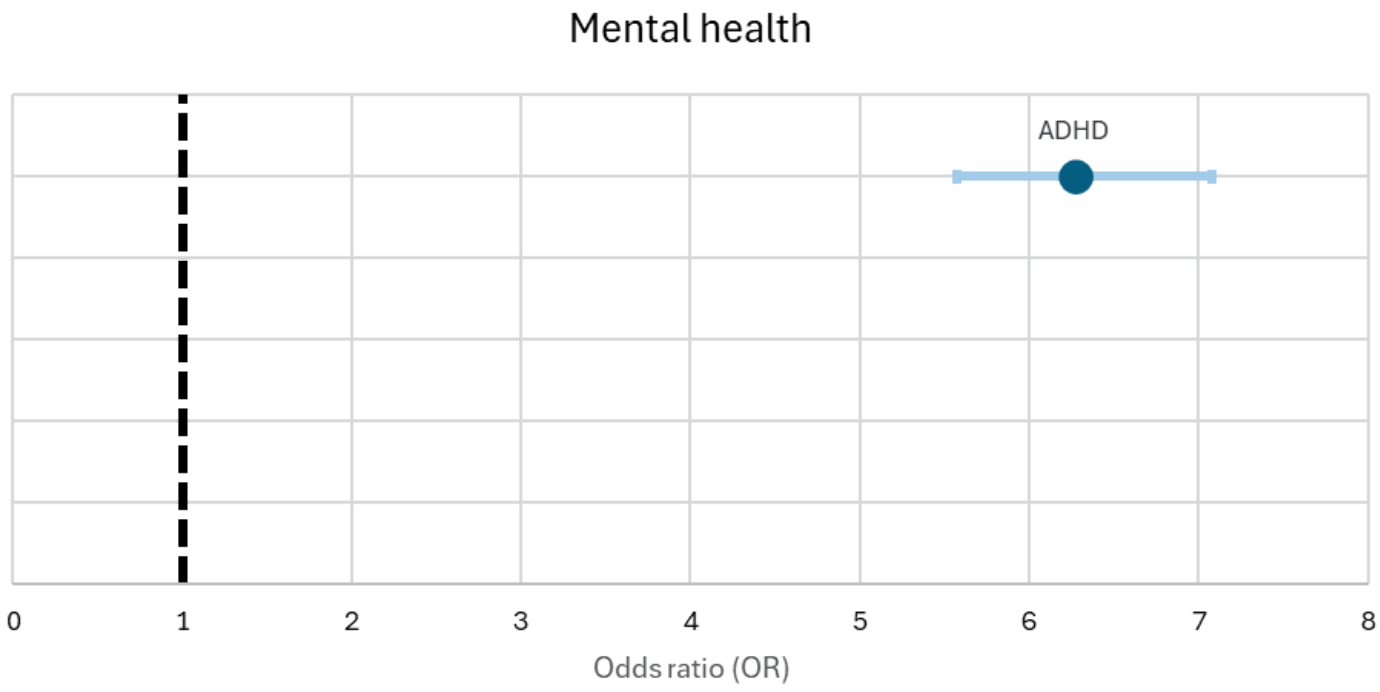


Figure 2.5: An example of providing the same WHAT inferential results in different formats using NILS data

3.5.4 WHERE: Key results

- Highest prescribing counts in Belfast & lowest in Causeway Coast and Glens
- Highest average prescribing counts between 2011 and 2023 in Belfast Trust, followed by South Eastern Health and Social Care Trust, Southern Health and Social Care Trust, Northern Health and Social Care Trust, and Western Health and Social Care Trust.

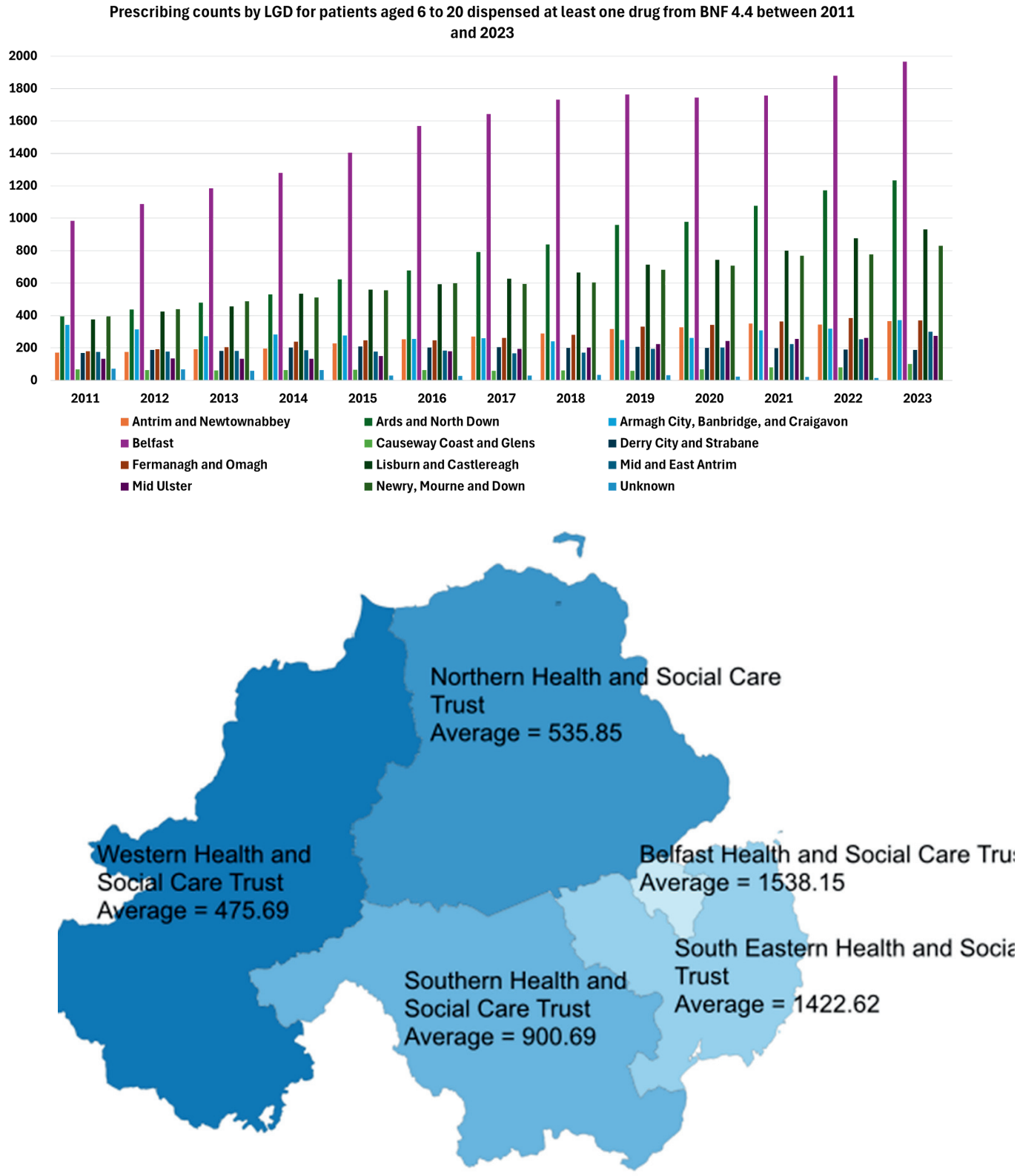
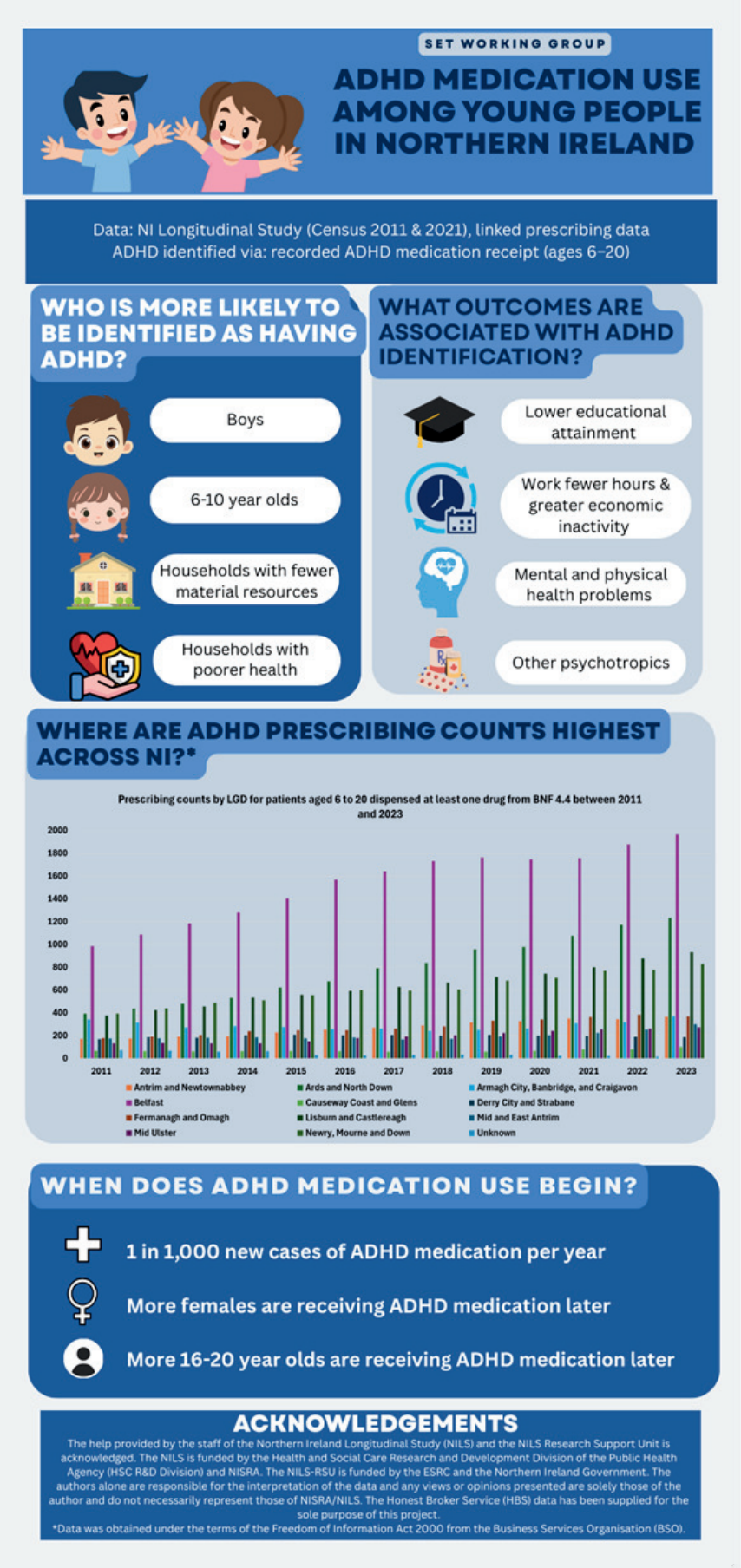


Figure 2.6: An example of providing the same WHERE results in different formats using BSO data

3.5.5. Overall summary of results

We also created an infographic mock-up to tie all of the evidence together.



2.4 Limitations

- The NILS covers approximately 28% of the Northern Ireland population and is therefore not a complete population dataset. While broadly representative, findings may not fully reflect prescribing patterns across the entire population.

- Receipt of any ADHD medication between 2011 and 2020 was treated as a binary indicator of medication exposure. This crude measure does not capture dosage, duration, adherence, or changes in treatment over time, and therefore provides limited insight into patterns of medication use.

- Some stratification was not possible due to low cell counts.

- 2025 prevalence rates do not include the full calendar year.

- Sample for 'Where' analyses is different than for the WHO, WHAT, and WHEN.

2.5 Next steps

This evidence will be presented to our stakeholder members at the first WG meeting to be held at Ulster University, Belfast Campus on 2 February 2026.

2.6 Acknowledgements

The help provided by the staff of the Northern Ireland Longitudinal Study (NILS/NIMS) and the NILS Research Support Unit is acknowledged. The NILS is funded by the Health and Social Care Research and Development Division of the Public Health Agency (HSC R&D Division) and NISRA. The NILS-RSU is funded by the ESRC and the Northern Ireland Government. The authors alone are responsible for the interpretation of the data and any views or opinions presented are solely those of the author and do not necessarily represent those of NISRA/NILS.

The Honest Broker Service data has been supplied for the sole purpose of this project.

2.7 References

O'Reilly, D., Rosato, M., Catney, G., Johnston, F., & Brolly, M. (2012). Cohort description: the Northern Ireland longitudinal study (NILS). International Journal of Epidemiology, 41(3), 634-641.