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**AWARE**  
OVERCOMING DEPRESSION.  
CHANGING LIVES.

# PREVALENCE AND VARIATION IN ANTIDEPRESSANT PRESCRIBING ACROSS NORTHERN IRELAND: A LONGITUDINAL ADMINISTRATIVE DATA LINKAGE STUDY FOR TARGETED SUPPORT.

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IN COLLABORATION WITH AWARE NI

# OVERVIEW TO THE PROJECT

- PROJECT BACKGROUND
- DATA LINKAGE
- DATA ANALYSIS
- INITIAL RESULTS
- ACKNOWLEDGEMENTS
- OUTCOMES



# PROJECT BACKGROUND

RATIONALE AND AIM

# PROJECT BACKGROUND

- Evidence indicates an increase in antidepressant prescription rates across the United Kingdom (UK), however rates of depression are not changing substantially. There was a 165% increase in the prescribing of antidepressant drugs in England between 1998 and 2012 (an average of 7.2% a year).
- There are significant geographic variations.

# PROJECT BACKGROUND

## The Script Report

- Based on a freedom of information request on UK prescribing practices, The Script Report gained access to 36 million prescription records from across the UK, including 3.5 million prescriptions from General Practitioners (GPs) in Northern Ireland (NI) for the period April to September 2013.
- NI are prescribed proportionately more antidepressants than 23 other countries, and that NI consumed more than two-and-a half times the antidepressants per head than in similarly wealthy economic areas in England.
- Overall, GPs in NI prescribed enough antidepressants to give every member of the population a 27-day supply; the same statistics for England and Wales were 10 days and 19 days respectively.

# PROJECT BACKGROUND

## Nuffield Trust and Health Foundation Quality Watch

- Longitudinal analysis demonstrated that higher unemployment was associated with significant increases in the number of anti-depressant tablets that were distributed. A 1% rise in unemployment typically meant that one and a half more tablets were prescribed per person, per year.
- There are sizable geographical variations in prescription rates across the UK. During the period between October and December 2012/13, rates varied from 71 items per 1,000 people in National Health Service (NHS) Brent, to 331 items per 1,000 people in NHS Blackpool. Generally, there were lower levels of prescribing in London, and higher rates in the North East.

# PROJECT BACKGROUND

- Research by the Mental Health Foundation found that 78% of GPs had prescribed an antidepressant in the previous three years, despite believing that an alternative treatment might have been more appropriate.
- It also found that 66% had done so because a suitable alternative was not available, 62% because there was a waiting list for the suitable alternative, and 33% because the patient requested antidepressants.
- Of the GPs surveyed, 60% said they would prescribe antidepressants less frequently if other options were available to them.

# PROJECT BACKGROUND

In summary:

- (a) the prevalence of antidepressant prescribing can be explained by personal, social and economic factors
- (b) the supply-demand association for antidepressant prescribing is moderated by personal, social and economic factors
- (c) the relative importance of these moderating factors vary geographically (rural-urban).

# PROJECT BACKGROUND

- Social prescribing is a mechanism for linking patients with non-medical sources of support within the community.
- Aware NI, the only charity working exclusively for those with depression in NI. Aware NI has an established network of 24 support groups in rural and urban areas across the country. Aware has been delivering intensive education and training programmes to thousands of adolescents and adults across NI since 1996 and has been awarded the GSK IMPACT Award in 2014. A primary focus of these programmes is to educate individuals about positive strategies that can be used in the recovery from depression.

# PROJECT AIM

'The project team aims to develop a set of NI-wide indicators detailing the socio-economic context of antidepressant prescribing in NI. This will support Aware NI in their efforts to develop and implement effective and coordinated intervention programs by (i) generating 'risk' profiles specific to identified hotspots using personal and household socio-demographic and socio-economic data and (ii) identifying 'vulnerability' at a personal, social and economic level through longitudinal change modelling.'



# DATA LINKAGE AND ANALYSIS

LINKAGE AND ANALYSIS OF DE-IDENTIFIED CENSUS AND ANTIDEPRESSANT  
PRESCRIPTION DATA

# ADMINISTRATIVE DATA RESEARCH NETWORK

## Acknowledgement

'The Administrative Data Research Network takes privacy protection very seriously. All information that directly identifies individuals will be removed from the datasets by trusted third parties, before researchers get to see it. All researchers using the Network are trained and accredited to use sensitive data safely and ethically, they will only access the data via a secure environment, and all of their findings will be vetted to ensure they adhere to the strictest confidentiality standards.'

# DATA LINKAGE

## Data and Providers

- NI Census (Northern Ireland Statistics and Research Agency; NISRA)
- Enhanced Prescribing Database (Business Services Organisation)

## Trusted Third-Party

- NISRA Census branch

# DATA ANALYSIS

## **Phase 1. Detailed breakdown of prevalence and variation of antidepressant prescribing.**

- Prescription data obtained from the Enhanced Prescribing Database. This holds information on all prescriptions that have been prescribed by a GP, or have been dispensed by a community pharmacy or dispensing doctor, and submitted to the Business Services Organisation for payment. Data is available on or before the last working day of each quarter and covers dispensing information from the previous quarter.
- Prescribing data includes generic name, quantity, prescription date, and British National Formulary (BNF). The BNF code will be used to identify the four main antidepressant drug types (BNF 4.3.1 (Tricyclics), BNF 4.3.2 (MAOIs), BNF 4.3.3 (SSRIs).

# DATA ANALYSIS

## **Phase 2. Personal, social and economic predictors of prevalence and variation in antidepressant prescribing.**

- The estimates derived from Phase 1 will be used as dependent variables for a series of fixed and random effects regression models using predictors from the 2011 census. Variables that represent personal (e.g. age, gender, health status), social (e.g. marital status), and economic status (e.g. employment status, deprivation) will be extracted from the 2011 Census.

# DATA ANALYSIS

**Phase 3. Modelling longitudinal changes in personal, social and economic predictors of prevalence and variation in antidepressant prescribing.**

- Using predictor variables from the 2011 census provides information on their temporally proximal effect. However, longitudinal changes in these variables may provide additional important information, for example changes in family structure (e.g. marriage dissolution) or deprivation (e.g. moving from a rural to an urban area). Such longitudinal changes will be modelled and used as predictors by linking Census-based records from 2001 and 2011.

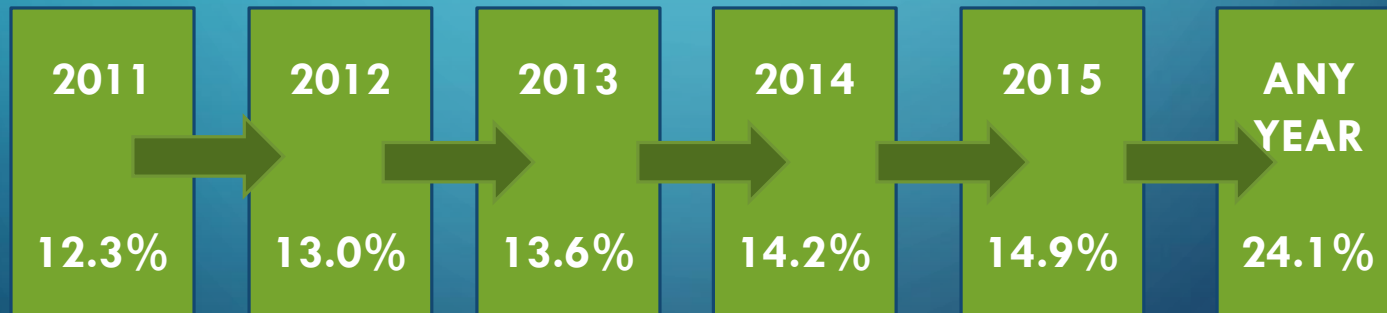


# INITIAL RESULTS

PRESCRIBING RATES AND ASSOCIATED SOCIODEMOGRAPHIC,  
ECONOMIC, AND HEALTH FACTORS

# PRESCRIBING RATES 2011-2015

- Antidepressant prescriptions to all residents of private households enumerated at the 2011 NI Census
- Adjustments made for deaths (2011-2015)
- $N = 1,572,870$ ; Age 0-95 years; Deaths (2.6% over 5 years)



# ANTIDEPRESSANT PRESCRIBING AND GENDER

AGE 15-24

REFERENCE (MALE)

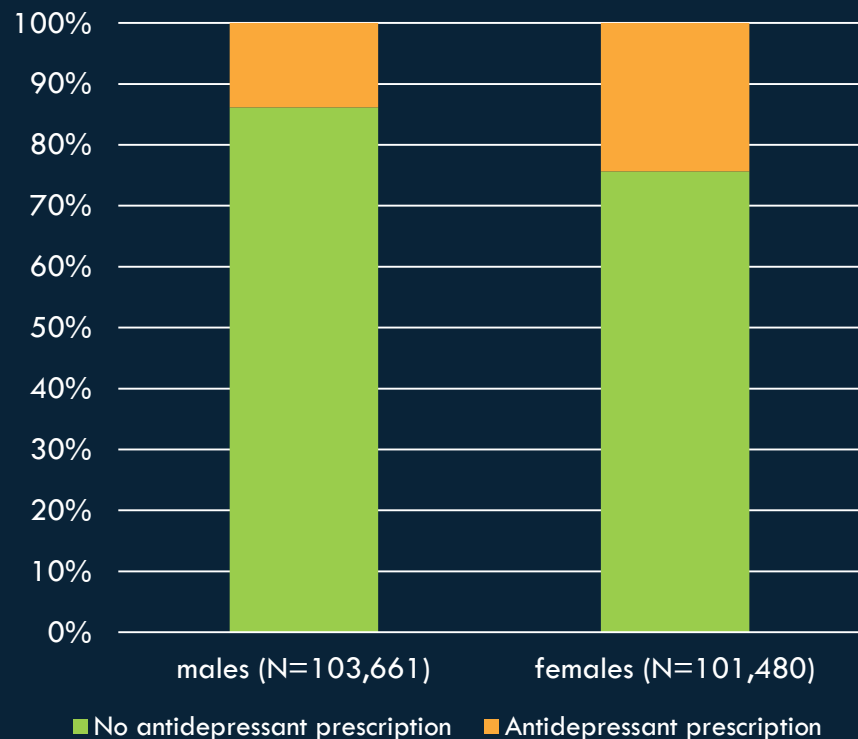
OR = 2.00 (1.95-2.04), P = <.05

AGE 25-74

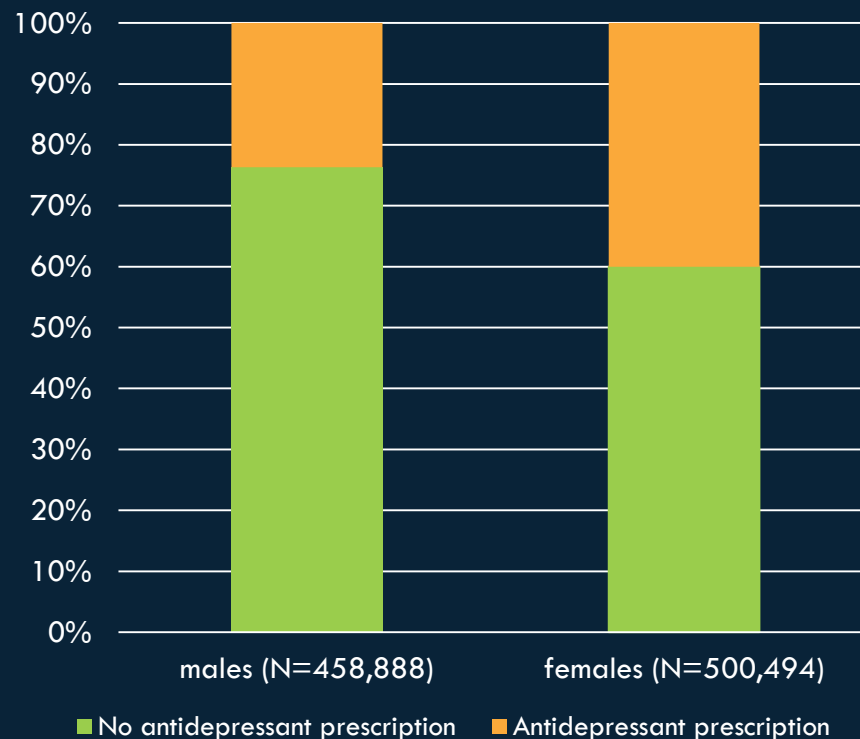
REFERENCE (MALE)

OR = 2.15 (2.13-2.17), P = <.05

Antidepressant prescription in the NI population aged 15-24 between 2011-2015 stratified by gender

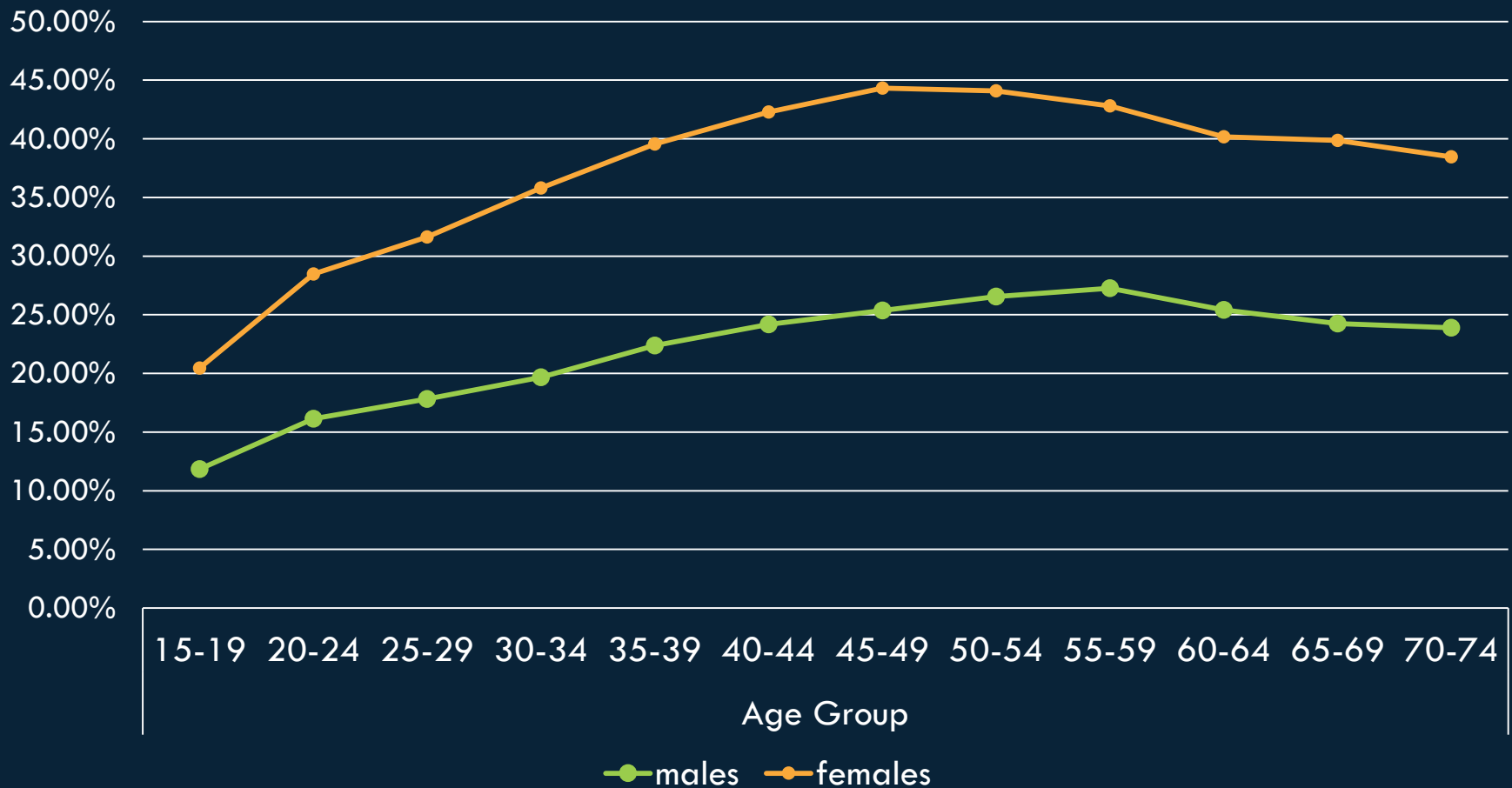


Antidepressant prescription in the NI population aged 25-74 between 2011-2015 stratified by gender



# ANTIDEPRESSANT PRESCRIBING AND AGE GROUP

Antidepressant prescription in the NI population aged 15-74 between 2011-2015 stratified by gender and age group



# ANTIDEPRESSANT PRESCRIBING AND AGE GROUP

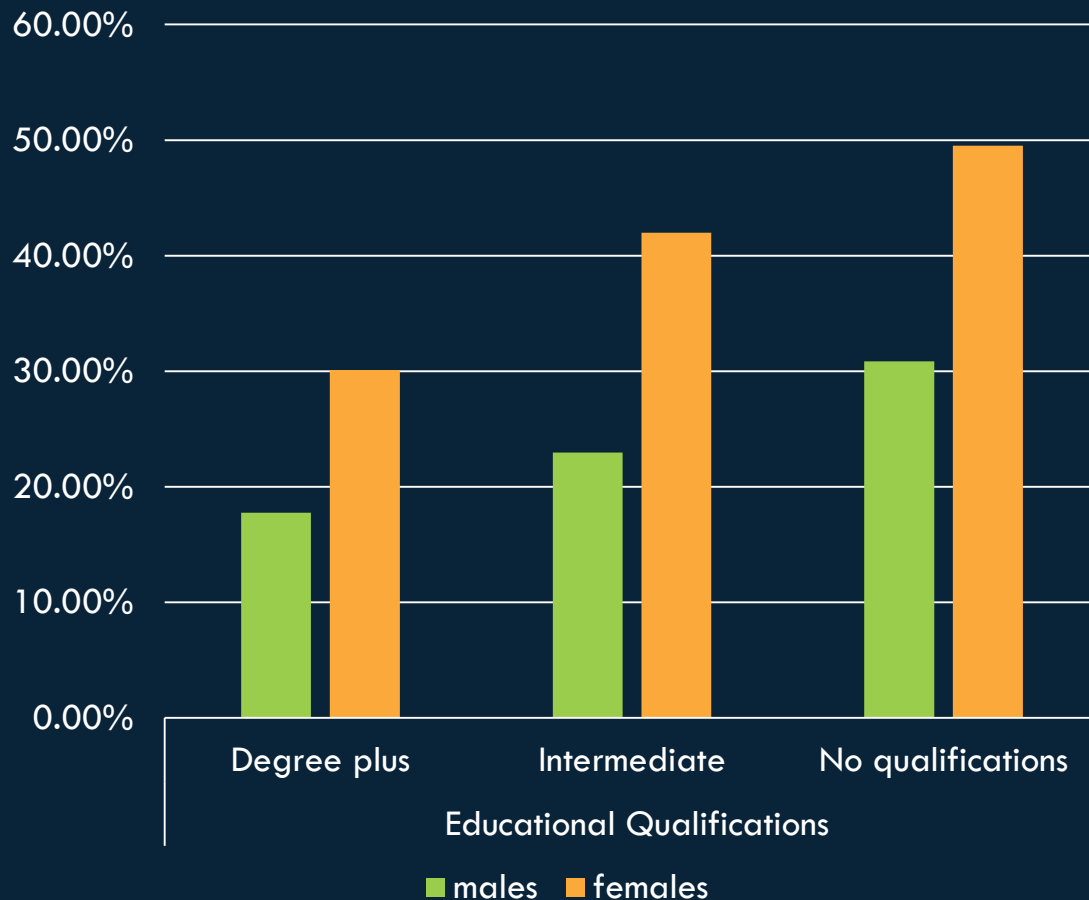
**Univariate Odds Ratios from Binary Logistic Regression analyses of antidepressant prescription to 15-24 year olds in NI (2011-2015) and age group.**

AGE 15-24		AGE 25-74	
	OR (95% CI)		OR (95% CI)
15-19	Reference	25-29	Reference
20-24	1.51(1.47-1.54)*	30-34	1.17(1.15-1.20)*
		35-39	1.36(1.34-1.39)*
		40-44	1.51(1.49-1.54)*
		45-49	1.62(1.59-1.65)*
		50-54	1.65(1.61-1.68)*
		55-59	1.61(1.58-1.64)*
		60-64	1.46(1.44-1.49)*
		65-69	1.42(1.39-1.45)*
		70-74	1.38(1.35-1.41)*

\*  $p = <0.05$

# ANTIDEPRESSANT PRESCRIPTION AND EDUCATIONAL QUALIFICATIONS

Antidepressant prescription in the NI population aged 25-74 between 2011-2015 stratified by gender and educational qualifications



## AGE 25-74

Degree plus

Reference

Intermediate

OR = 1.49 (1.47-1.50),  
p = <0.05

No qualifications

OR = 2.07 (2.05-2.10),  
p = <0.05

Degree plus

Foundation degree or equivalent and higher

Intermediate

GCSE, A Level, or equivalent

No qualifications

No secondary educational qualifications

# ANTIDEPRESSANT PRESCRIBING AND OCCUPATIONAL SOCIAL CLASS

Antidepressant prescription in the NI population aged 16-24 between 2011-2015 stratified by gender and occupational social class



# ANTIDEPRESSANT PRESCRIBING AND OCCUPATIONAL SOCIAL CLASS

Antidepressant prescription in the NI population aged 25-74 between 2011-2015 stratified by gender and occupational social class



# ANTIDEPRESSANT PRESCRIBING AND OCCUPATIONAL SOCIAL CLASS

**Univariate Odds Ratios from Binary Logistic Regression analyses of antidepressant prescription to 15-24 year olds in NI (2011-2015) and occupational social class.**

	Age 15-24	Age 25-74
Occupational Social Class	OR (95% CI)	OR (95% CI)
Higher professional	Reference	Reference
Lower professional	1.62(1.44-1.82)*	1.60(1.57-1.64)*
Intermediate	2.31(2.06-2.58)*	2.20(2.15-2.25)*
Self-employed	1.08(.94-1.25)*	1.37(1.34-1.40)*
Semi-routine	2.11(1.89-2.35)*	2.40(2.35-2.45)*
Routine	1.83(1.63-2.04)*	2.47(2.42-2.52)*
Other	1.44(1.29-1.60)*	3.07(3.00-3.14)*
* p = <0.05		

# ANTIDEPRESSANT PRESCRIBING AND RATABLE VALUE OF PROPERTY

Antidepressant prescription in the NI population aged 15-24 between 2011-2015 stratified by gender and ratable value of property



# ANTIDEPRESSANT PRESCRIBING AND RATABLE VALUE OF PROPERTY

Antidepressant prescription in the NI population aged 25-74 between 2011-2015 stratified by gender and ratable value of property



# ANTIDEPRESSANT PRESCRIBING AND RATABLE VALUE OF PROPERTY

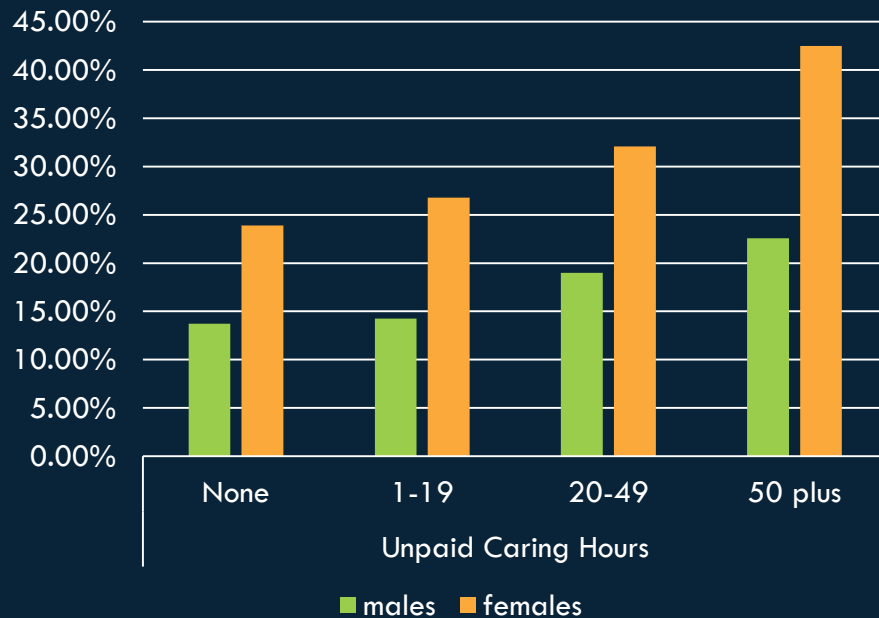
**Univariate Odds Ratios from Binary Logistic Regression analyses of antidepressant prescription to 15-24 year olds in NI (2011-2015) and ratable value of property.**

	Age 15-24	Age 25-74
Ratable Value of Property	OR (95% CI)	OR (95% CI)
Owner-Occupier: =>£160,000	Reference	Reference
Owner-Occupier: =>£115,000	1.10(1.00-1.21)	1.19(1.15-1.23)*
Owner-Occupier: =>£90,000	1.24(1.13-1.36)*	1.37(1.33-1.42)*
Owner-Occupier: =>£70,000	1.48(1.35-1.61)*	1.59(1.54-1.65)*
Owner-Occupier: <£70,000	1.96(1.80-2.13)*	1.96(1.90-2.02)*
Owner-Occupier: Value not assigned	1.03(0.92-1.16)	1.27(1.22-1.33)*
Private rent	2.78(2.55-3.03)*	2.15(2.08-2.23)*
Social rent	3.59(3.29-3.92)*	3.56(3.45-3.68)*
* p = <0.05		

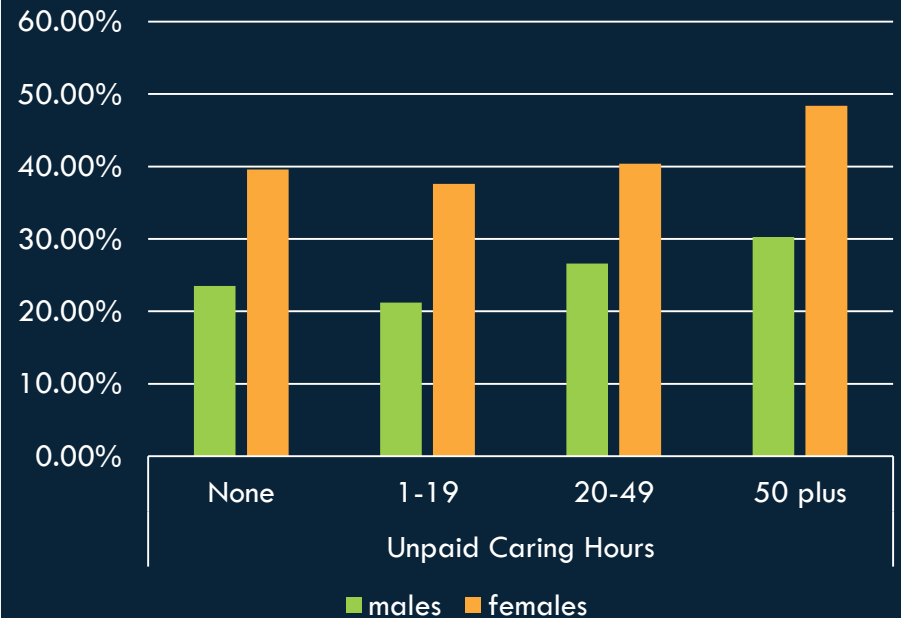
# ANTIDEPRESSANT PRESCRIBING AND UNPAID CARING

AGE 15-24		AGE 25-74	
None (No hours)	Reference	None (No hours)	Reference
1-19 Hours	OR = 1.17 (1.12-1.23), $p = <0.05$	1-19 Hours	OR = 0.97 (0.96-0.99), $p = <0.05$
20-49 Hours	OR = 1.53 (1.40-1.66), $p = <0.05$	20-49 Hours	OR = 1.28 (1.25-1.31), $p = <0.05$
50 plus Hours	OR = 2.31 (2.09-2.56), $p = <0.05$	50 plus Hours	OR = 1.53 (1.50-1.56), $p = <0.05$

Antidepressant prescription in the NI population aged 15-24 between 2011-2015 stratified by gender and unpaid caring hours



Antidepressant prescription in the NI population aged 25-74 between 2011-2015 stratified by gender and unpaid caring hours

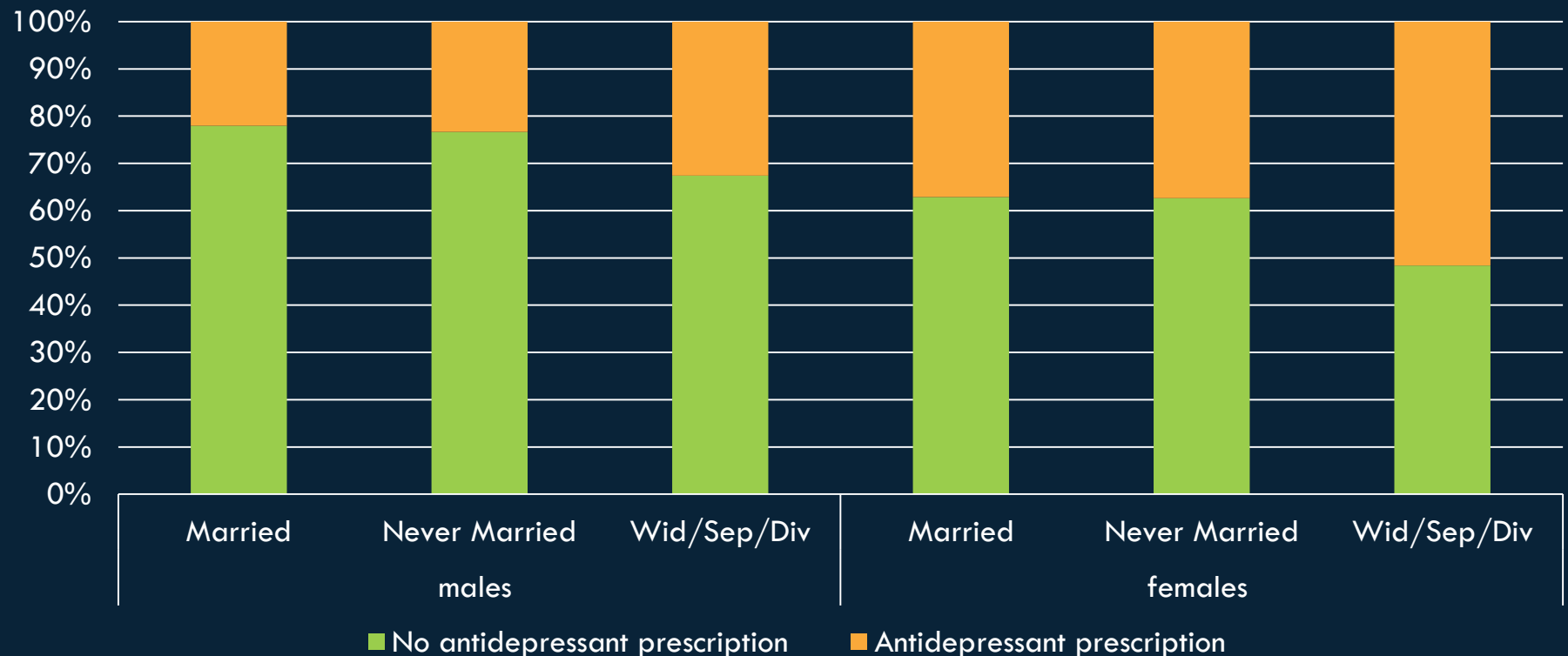


# ANTIDEPRESSANT PRESCRIPTION AND MARITAL STATUS

**AGE 25-74**

Married	Reference
Never Married	1.02 (1.01-1.03), $P < 0.05$
Widowed/Separated/Divorced	1.92 (1.90-1.94), $P < 0.05$

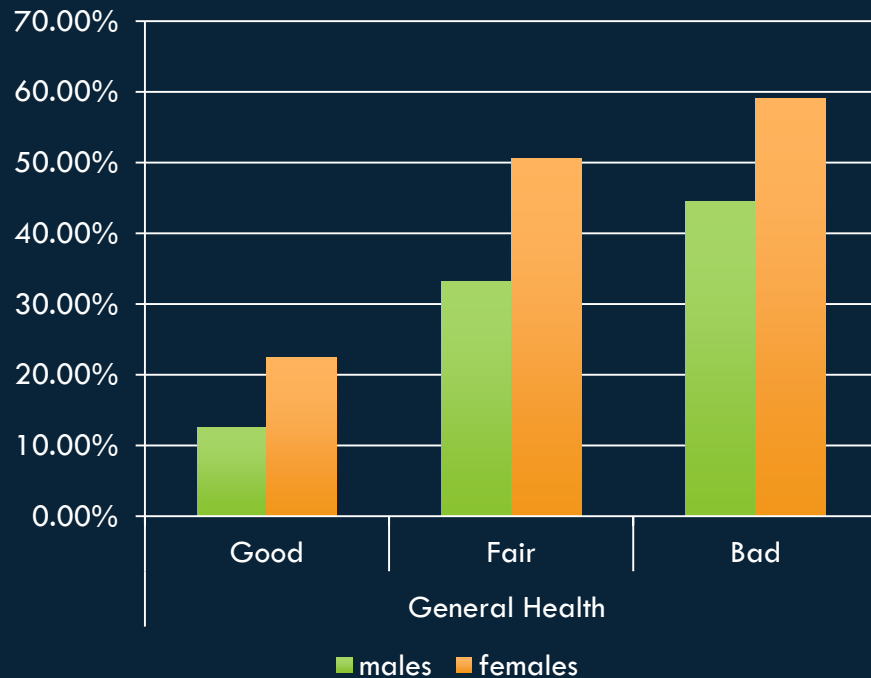
Antidepressant prescription in the NI population aged 25-74 between 2011-2015 stratified by gender and marital status



# ANTIDEPRESSANT PRESCRIBING AND GENERAL HEALTH

AGE 15-24		AGE 25-74	
Good	reference	Good	reference
Fair	OR = 3.49 (3.35-3.63), p = <0.05	Fair	OR = 2.69 (2.67-2.71), p = <0.05
Bad	OR = 5.11 (4.69-5.58), p = <0.05	Bad	OR = 4.98 (4.90-5.06), p = <0.05

Antidepressant prescription in the NI population aged 15-24 between 2011-2015 stratified by gender and general health

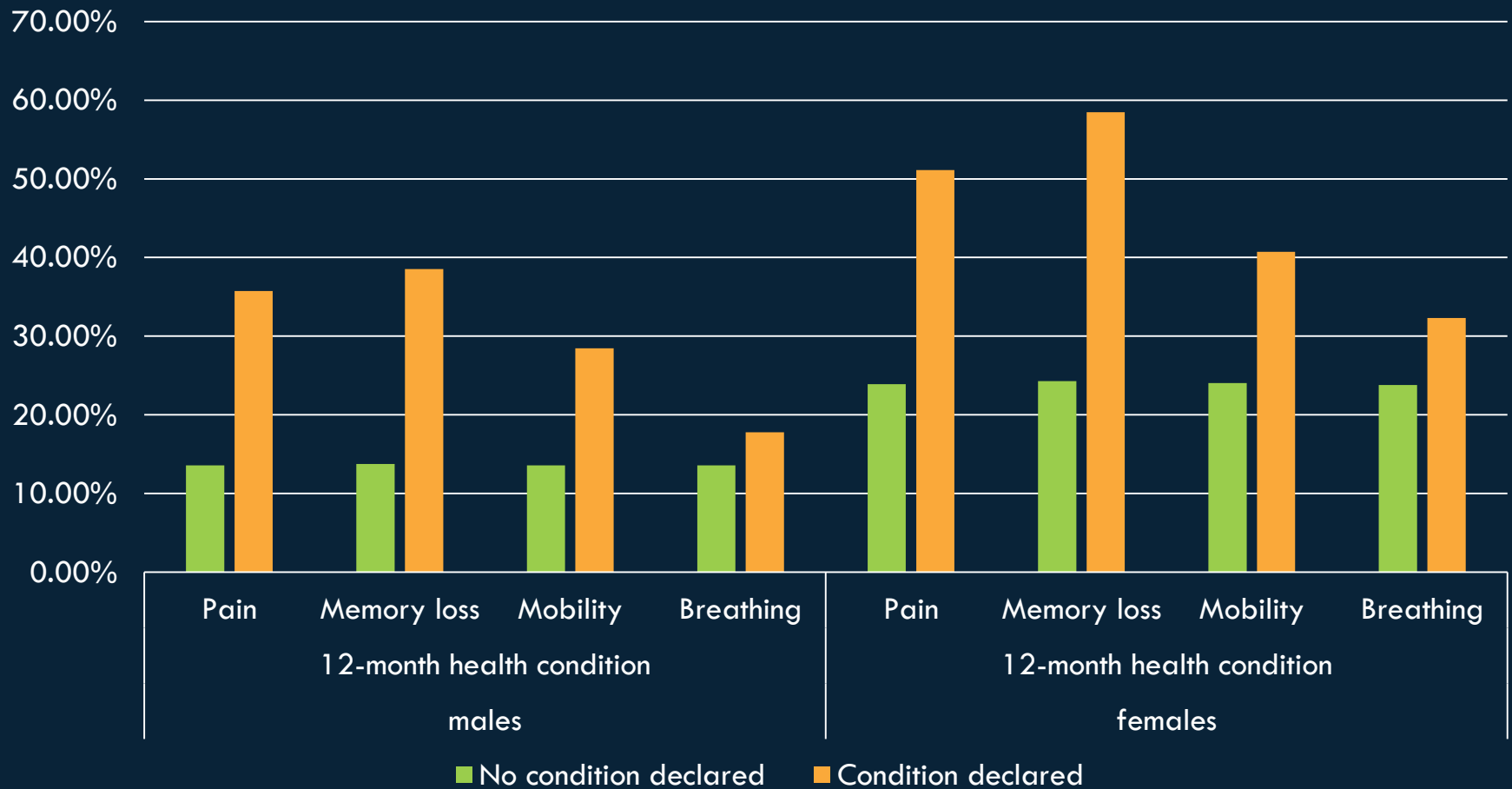


Antidepressant prescription in the NI population aged 25-74 between 2011-2015 stratified by gender and general health



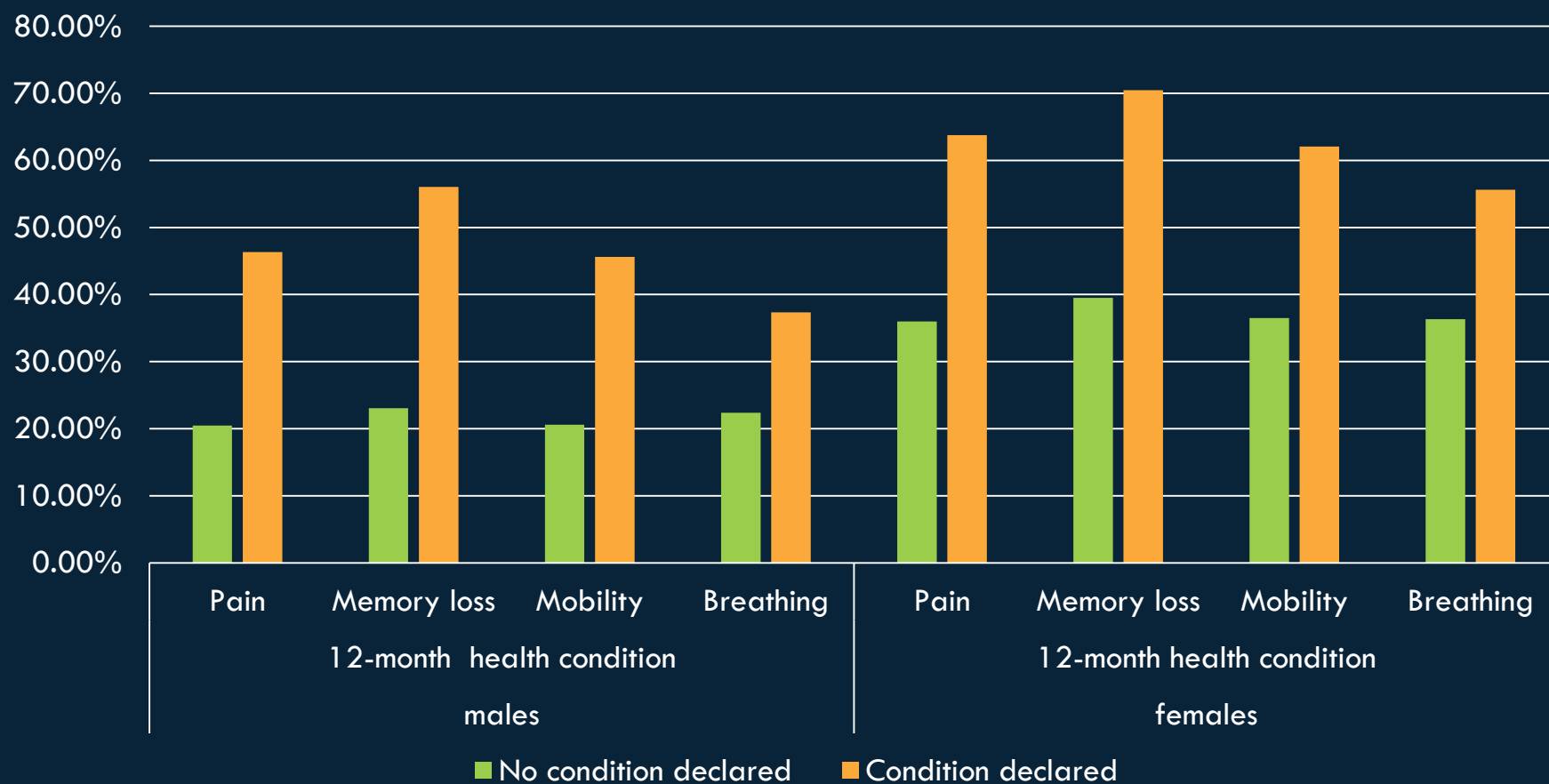
# ANTIDEPRESSANT PRESCRIBING AND LONG-TERM HEALTH CONDITIONS

Antidepressant prescription in the NI population aged 15-24 between 2011-2015 stratified by gender and 12-month health condition



# ANTIDEPRESSANT PRESCRIBING AND LONG-TERM HEALTH CONDITIONS

Antidepressant prescription in the NI population aged 25-74 between 2011-2015 stratified by gender and 12-month health condition



# ANTIDEPRESSANT PRESCRIBING AND LONG-TERM HEALTH CONDITIONS

**Univariate Odds Ratios from Binary Logistic Regression analyses of antidepressant prescription to 15-24 year olds in NI (2011-2015) and 12-month health condition.**

	Age 15-24	Age 25-74
12-month Health Condition	OR (95% CI)	OR (95% CI)
Pain condition (ref: no condition declared)	3.49(3.24-3.75)*	3.21(3.17-3.25)*
Memory loss condition (ref: no condition declared)	3.61(3.08-4.23)*	3.65(3.53-3.77)*
Mobility condition (ref: no condition declared)	2.27(2.12-2.43)*	2.98(2.94-3.02)*
Breathing condition (ref: no condition declared)	1.44(1.38-1.50)*	2.04(2.01-2.07)*

\*  $p = <0.05$

# ANTIDEPRESSANT PRESCRIBING AND 12-MONTH MENTAL HEALTH CONDITION

AGE 15-24

REFERENCE (NO MENTAL HEALTH CONDITION DECLARED)

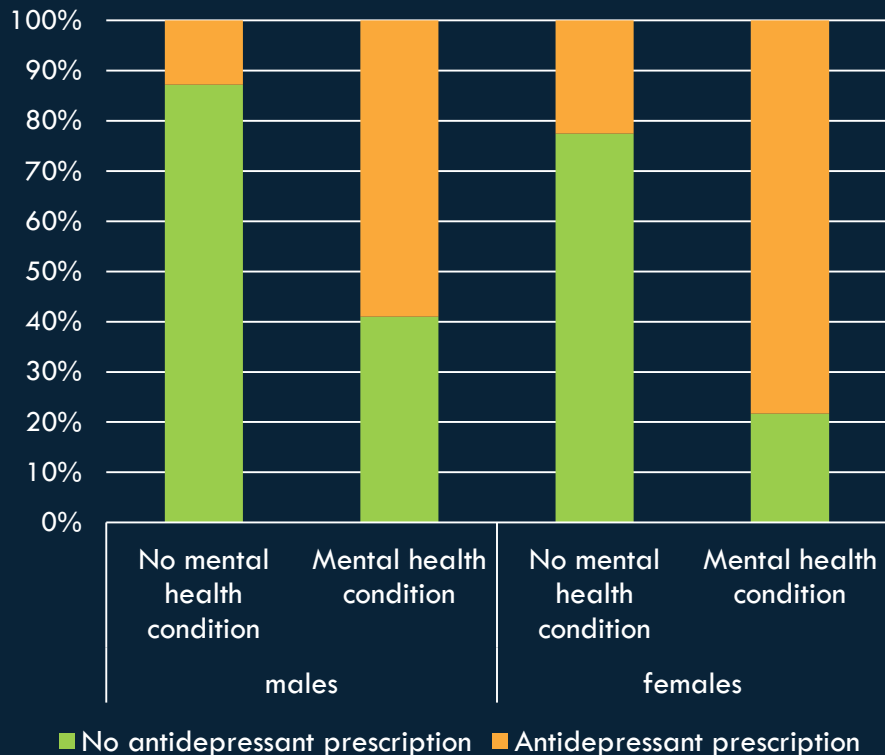
OR = 11.00 (10.37-11.66),  $P = <.05$

AGE 25-74

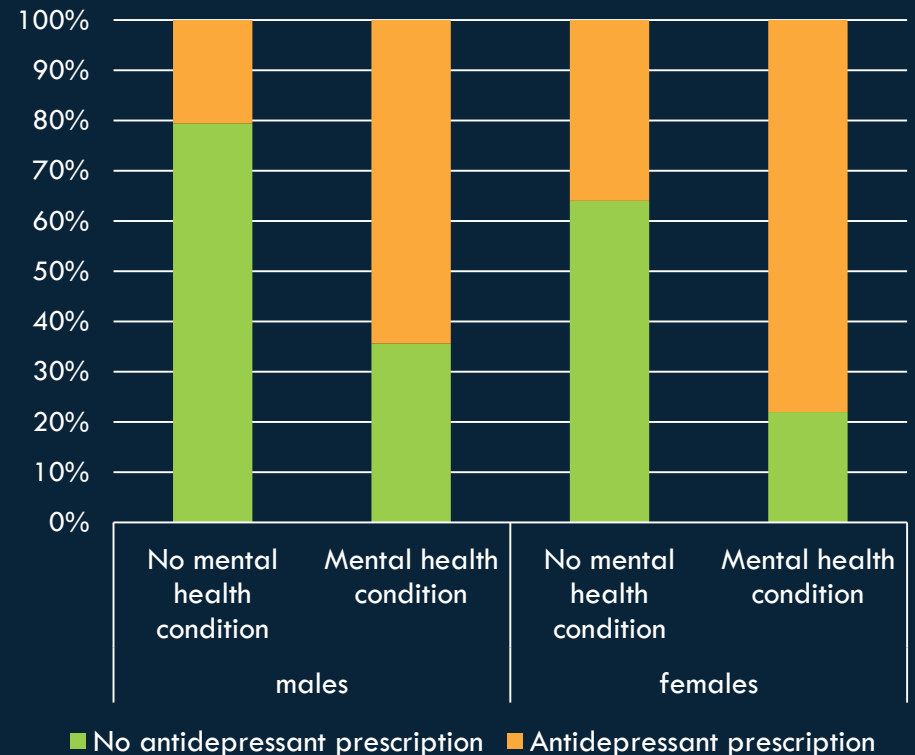
REFERENCE (NO MENTAL HEALTH CONDITION DECLARED)

OR = 6.62 (6.52-6.73),  $P = <.05$

Antidepressant prescription in the NI population aged 15-24 between 2011-2015 stratified by gender and 12-month mental health condition

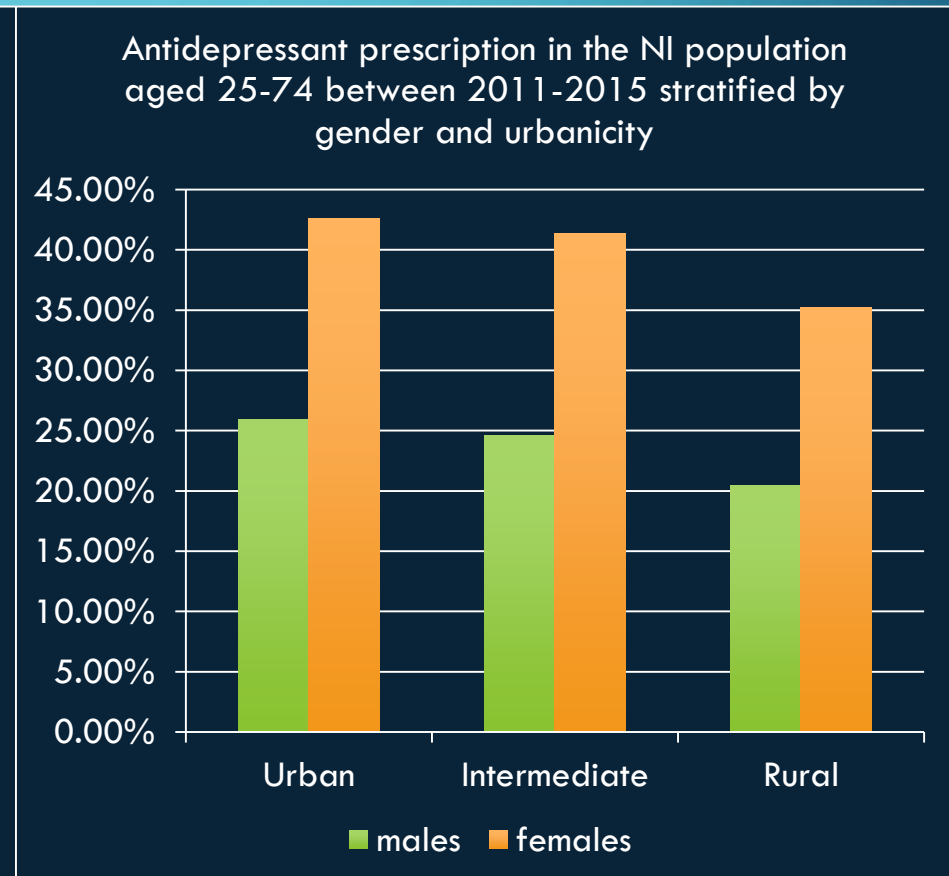
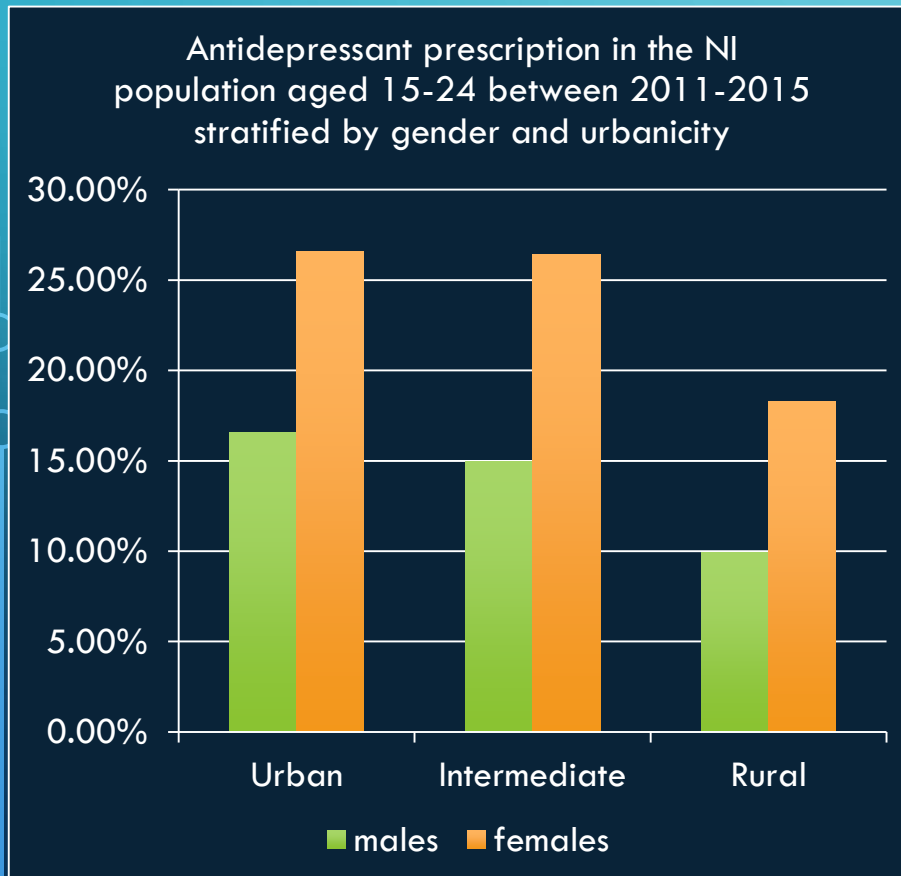


Antidepressant prescription in the NI population aged 25-74 between 2011-2015 stratified by gender and 12-month mental health condition



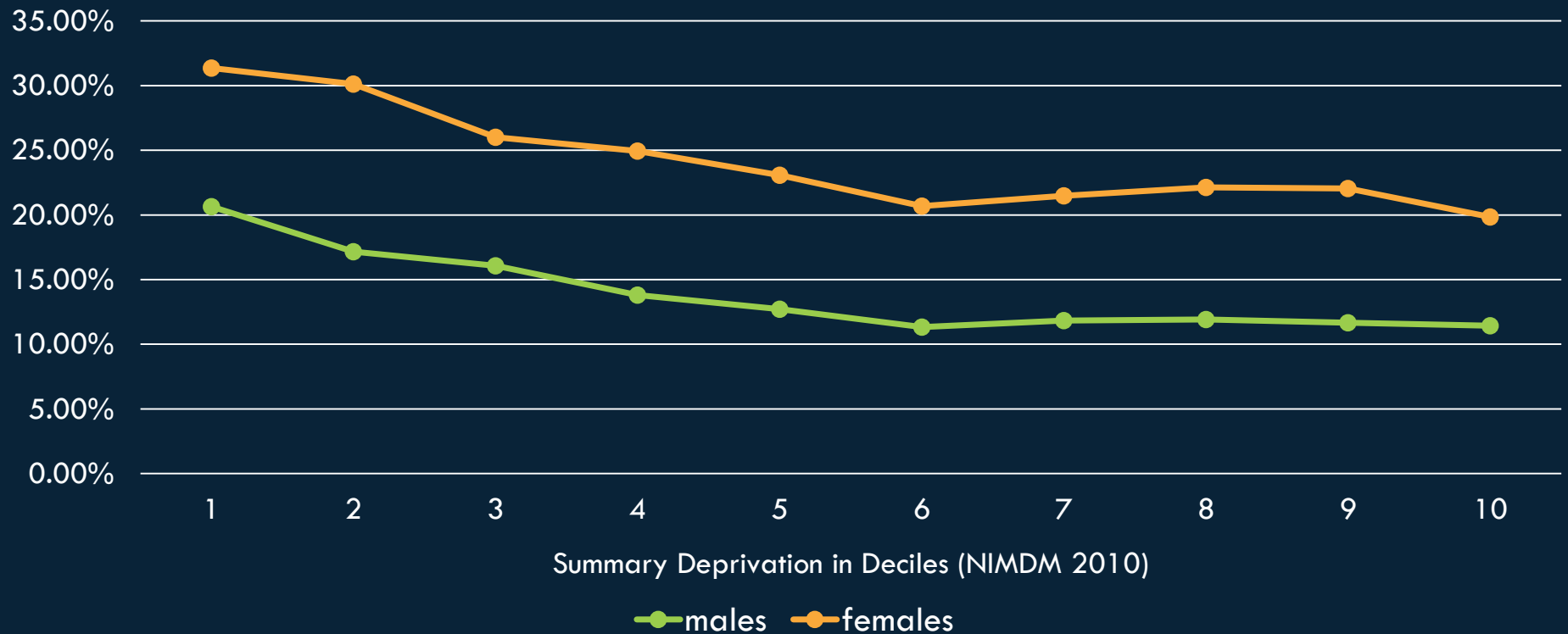
# ANTIDEPRESSANT PRESCRIBING AND URBANICITY

AGE 15-24		AGE 25-74	
Urban	OR = 1.72 (1.67-1.78), $p = <0.05$	Urban	OR = 1.39 (1.37-1.41), $p = <0.05$
Intermediate	OR = 1.62 (1.58-1.68), $p = <0.05$	Intermediate	OR = 1.31 (1.29-1.32), $p = <0.05$
Rural	reference	Rural	reference



# ANTIDEPRESSANT PRESCRIBING AND DEPRIVATION

Antidepressant prescription in the NI population aged 15-24 between 2011-2015 stratified by gender and summary deprivation (Northern Ireland Multiple Deprivation Measure 2010; NIMDM 2010)

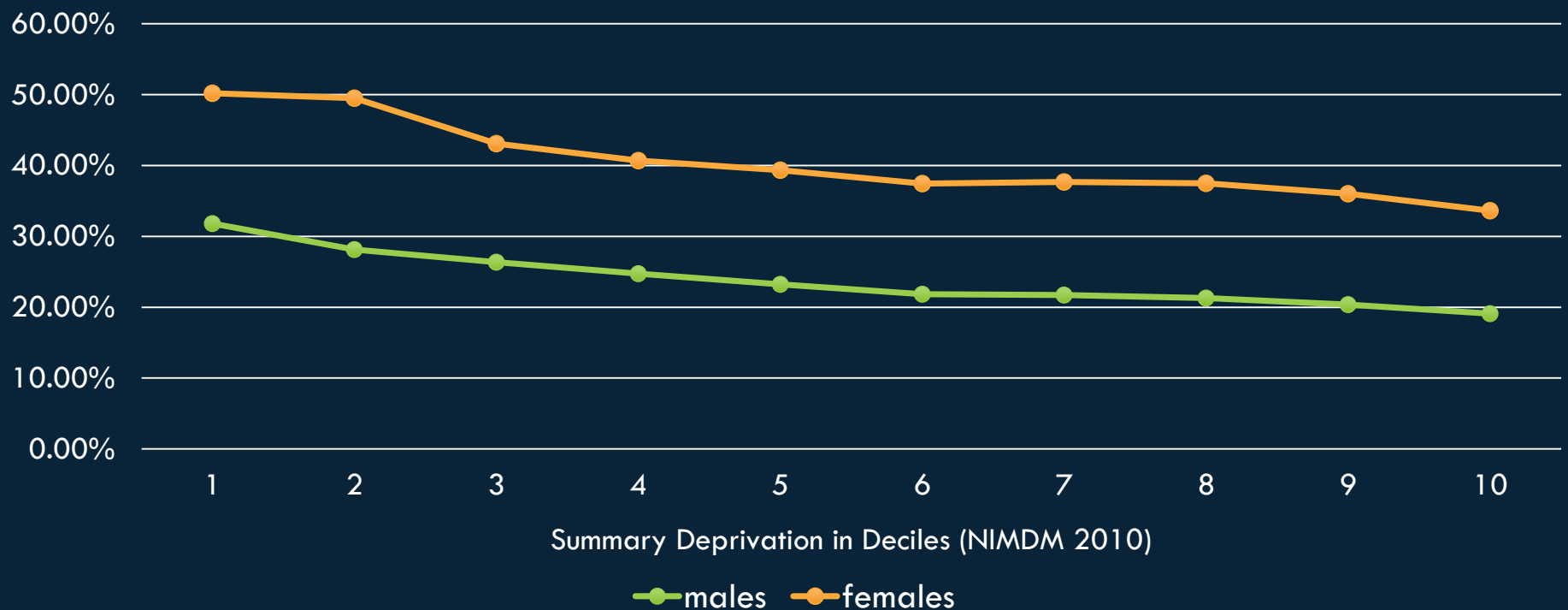


AGE 15-24

OR = 0.934 (0.932-0.936),  $p = <0.05$

# ANTIDEPRESSANT PRESCRIBING AND DEPRIVATION

Antidepressant prescription in the NI population aged 25-74 between 2011-2015 stratified by gender and summary deprivation (Northern Ireland Multiple Deprivation Measure 2010; NIMDM 2010)



AGE 25-74

OR = 0.937 (0.935-0.938),  $p = <0.05$

## Multivariate Odds Ratios from Binary Logistic Regression analyses of antidepressant prescription to 15-24 year olds in NI (2011-2015) and risk factors.

<b>Gender (Ref: male)</b>	1.94(1.89-1.98)*	<b>Unpaid Caring Hours (Ref: None)</b>	
<b>Age Group (Ref: 15-19)</b>		1-19	1.11(1.05-1.17)*
20-24	1.08(1.05-1.12)*	20-49	1.21(1.10-1.32)*
<b>Social Class (Ref: Higher professional)</b>		50+	1.50(1.34-1.68)*
Lower professional	1.33(1.18-1.50)*	<b>General Health (Ref: Good)</b>	
Intermediate	1.70(1.51-1.90)*	Fair	2.06(1.96-2.16)*
Self-employed	1.20(1.04-1.40)*	Poor	2.06(1.85-2.28)*
Semi-routine	1.61(1.45-1.81)*	<b>Mental health condition (Ref: No condition declared)</b>	6.35(5.94-6.79)*
Routine	1.49(1.33-1.68)*	<b>Urbanicity (Ref: Rural)</b>	
Other	1.23(1.10-1.38)*	Urban	1.18(1.13-1.22)*
<b>Ratable Value of Property (Ref: OO: =&gt;£160,000)</b>		Intermediate	1.28(1.24-1.32)*
OO: => £115,000	1.05(.95-1.16)	<b>Summary Deprivation (NIMDM 2010)</b>	0.977(0.972-0.982)*
OO: => £90,000	1.13(1.02-1.25)*		
OO: => £70,000	1.27(1.15-1.39)*		
OO: <7£70,000	1.50(1.36-1.65)*		
OO: value not assigned	1.01(0.89-1.14)		
Private rent	1.83(1.67-2.02)*		
Social rent	2.33(2.18-2.57)*		

Control variables: Religion, Ethnicity.

\* p = <0.05, CI = 95%

## Multivariate Odds Ratios from Binary Logistic Regression analyses of antidepressant prescription to 25-74 year olds in NI (2011-2015) and risk factors.

<b>Gender (Ref: male)</b>	2.17(2.15-2.19)*	<b>Ratable Value of Property (Ref: OO: =&gt;£160,000)</b>	
<b>Age Group (Ref: 25-29)</b>		OO: => £115,000	1.09(1.05-1.13)*
30-34	1.13(1.11-1.16)*	OO: => £90,000	1.16(1.12-1.20)*
35-39	1.25(1.22-1.28)*	OO: => £70,000	1.22(1.19-1.27)*
40-44	1.27(1.25-1.30)*	OO: <£70,000	1.34(1.29-1.38)*
45-49	1.28(1.25-1.30)*	OO: value not assigned	1.10(1.06-1.15)*
50-54	1.20(1.18-1.23)*	Private rent	1.42(1.37-1.48)*
55-59	1.11(1.09-1.14)*	Social rent	1.59(1.54-1.65)*
60-64	0.94(0.92-0.97)*	<b>Unpaid Caring Hours (Ref: None)</b>	
65-69	0.89(0.87-0.91)*	1-19	1.07(1.05-1.09)*
70-74	0.81(0.79-0.84)*	20-49	1.16(1.13-1.20)*
<b>Educational Qualifications (Ref: Degree plus)</b>		50+	1.24(1.22-1.27)*
Intermediate	1.24(1.22-1.26)*	<b>Marital Status (Ref: Married)</b>	
No qualifications	1.29(1.27-1.31)*	Never married	0.90(0.89-0.91)*
<b>Social Class (Ref: Higher professional)</b>		Separated/Widowed/Divorced	1.19(1.18-1.21)*
Lower professional	1.18(1.16-1.21)*	<b>General Health (Ref: Good)</b>	
Intermediate	1.25(1.22-1.28)*	Fair	2.11(2.08-2.13)*
Self-employed	1.15(1.12-1.17)*	Poor	2.97(2.91-3.03)*
Semi-routine	1.29(1.26-1.32)*	<b>Mental health condition (Ref: No condition declared)</b>	3.54(3.48-3.61)*
Routine	1.23(1.21-1.26)*	<b>Urbanicity (Ref: Rural)</b>	
Other	1.27(1.24-1.31)*	Urban	1.08(1.06-1.09)*
		Intermediate	1.14(1.13-1.15)*
		<b>Summary Deprivation (NIMDM 2010)</b>	0.997(0.995-0.998)*

Control variables: Religion, Ethnicity.

\* p = <0.05, CI = 95%



# ACKNOWLEDGEMENTS

# ACKNOWLEDGEMENTS

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<https://www.kingsfund.org.uk/publications/social-prescribing>

# OUTCOMES

# OUTCOMES

We hope that Aware NI will

- Gain a better understanding of degree and location of unmet need
- Tailor promotion to match high risk profiles

# OUTCOMES

- We also hope that for other interested academics, public servants, VCSE sector representatives and the public, we can:
  - Promote open dialogue on mental health research
  - Generate interest in administrative data research
- To interact with the team, please follow us on social media

BLOG: <https://adsopp.wordpress.com>

TWITTER: ADSoPP\_NI

EMAIL: [s.boyle@ulster.ac.uk](mailto:s.boyle@ulster.ac.uk)