The forgotten form of stratification: Sexual Orientation in large social survey research

Dr Scott Oatley

scott.oatley@manchester.ac.uk

University of Manchester

SUMMER SESSIONS

Social Stratification

- Typically dominated by discussions of social class, gender, and ethnicity (Big Three)
- Sexual Orientation is often left out of models of social stratification

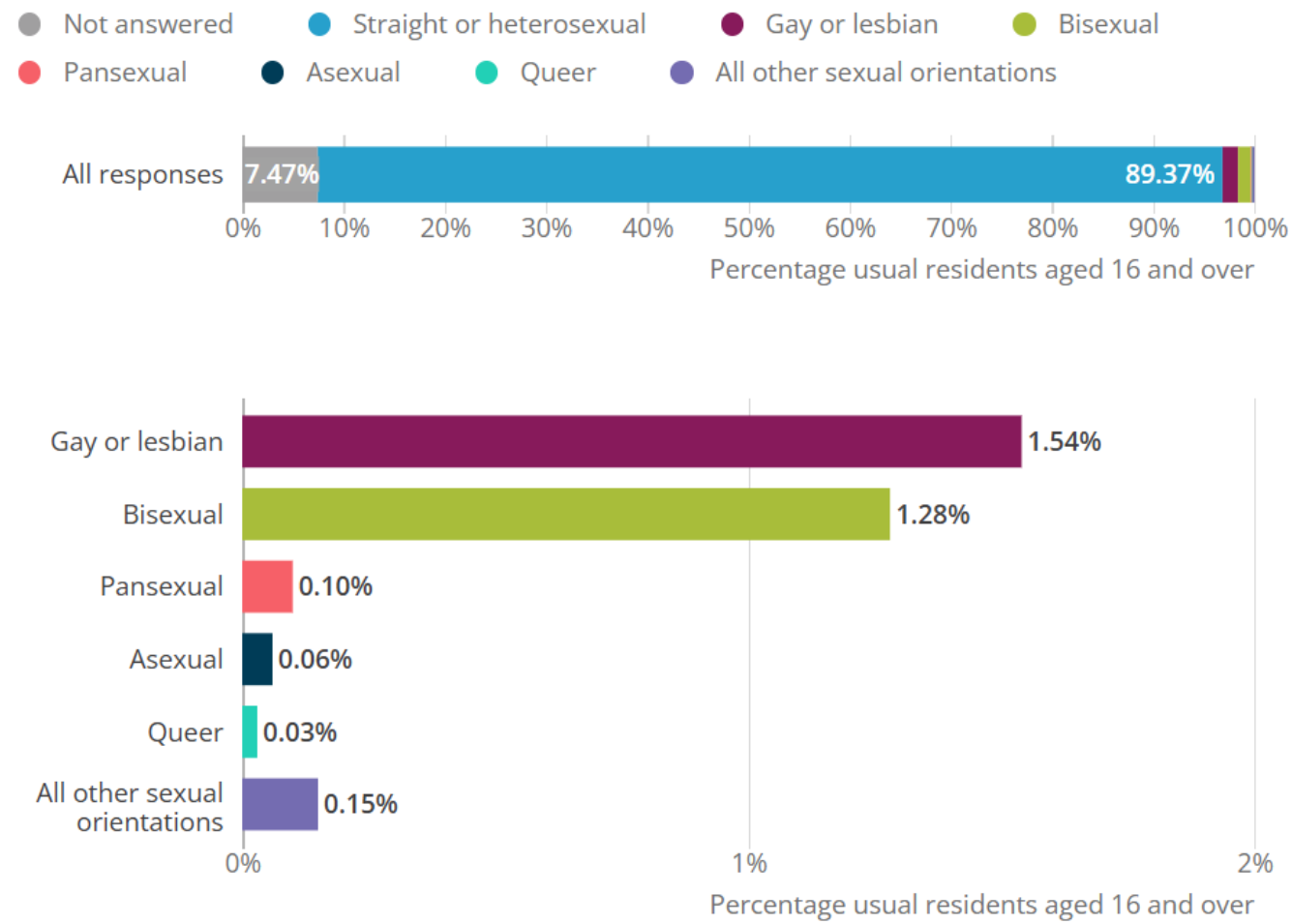
Forgotten?

- Left out or forgotten entirely?
- There are a limited number of large social surveys in the UK that collect sexual orientation data
  - Even fewer that collect it well

Issues

- Data Collection strategies
  - Pretty hard to ask
  - Pretty obvious candidate for high levels of missingness
  - ‘Moral panic’ over asking young people
- Real world issues
  - The ‘Queer’ population is small

Figure 1: Sexual orientation, 2021, England and Wales



Source: Office for National Statistics – Census 2021

Issues

- Real world issues
  - The ‘Queer’ population is small
- Very small sample size
- To my knowledge NO large social surveys in UK that collect sexual orientation construct appropriate weights for this population

Issues

- Bad Collection and Recording
  - Couple data
  - Adults only
  - Only asking binary questions
  - Special License Locked

Making the most out of what is left

- Enter the UKHLS
  - Contemporary large social survey in the UK
  - Has a robust question on sexual orientation that is collected from wave 3 and asked every other wave since then

  - Small, but nationally representative sub-populations
  - Unfortunately, no weights include sexual orientation – this was indicated on UKHLS forums at some point but seems to be forgotten
    - (Wouldn’t that be a lovely postdoc…)

Sexuality Pay Gap

Working Paper

Sexuality Pay Gap

- Using UKHLS data to study the Sexuality Pay Gap
  - Very few papers on this topic worldwide
  - Almost exclusively US led
  - A few papers from the UK
  - Consensus is far from settled

- UKHLS also allows us to go beyond Pay gap analysis and look at growth curves
  - This has never been done for the study of sexual orientation pay gaps before

UK Sexuality Pay Gap

- Aksoy (2018)
- Arabsheibani (2005)
- Arabsheibani (2007)
- Booth and Frank (2008)
- Bridges and Mann (2019)
- Bryson (2017)
- Frank (2008)

UK Sexuality Pay Gap

- 7 studies
- 2 not nationally representative (Teacher survey + Academic survey)
- 5 nationally representative studies between 2005-2018 (13 years)
- Seminal research on this topic began in 1995 (Badgett 1995)
- If we add (Klawitter 2015; Drydakis 2022) 22% of the papers written on UK sexuality pay gaps are meta-analyses on the topic…

Meta-analysis (Klawitter, 2015)

- From the earliest paper on sexuality income gaps (Badgett 1995) to 2015
- Consistently shows gay men earn less than straight men
- Lesbian women are sometimes more likely to outearn straight women
- Non-US studies report smaller earnings gaps
- Sexual orientation measured through self-identity rather than couple status or sexual behaviour reports smaller gaps
- Annual earnings rather than hourly reports larger earnings gap %
- Limiting to full-time workers increases earnings gap

Meta-analysis (Klawitter, 2015)

- Earnings penalty of 11% for gay men
- Earnings premium of 9% for lesbian women
- No information for bisexuals…

Working Data

- Sample consists of Waves 3-14 of UKHLS
- Sample includes those aged 16-66 AND those in some form of employment AND not in full time training or education
- Leaves us with a N=294,377 over 11 waves of data

Non-starter Analysis?

Sexuality	Frequency (%)
Heterosexual	42,258 (14.36%)
Homosexual	738 (0.25%)
Bisexual	676 (0.23%)
Don’t Know	29 (0.01%)
Inapplicable	75,041 (25.49%)
Missing	174,579 (59.30%)
Refused	1,056 (0.36%)

Across Waves

	UKHLS wave														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
N	27,340 (9.3%)	27,244 (9.3%)	24,783 (8.4%)	23,108 (7.8%)	22,284 (7.6%)	22,728 (7.7%)	21,670 (7.4%)	20,732 (7.0%)	19,197 (6.5%)	18,262 (6.2%)	17,100 (5.8%)	15,594 (5.3%)	15,196 (5.2%)	19,139 (6.5%)	294,377 (100.0%)
Sexuality															
Heterosexual	0 (.%)	0 (.%)	21,546 (97.5%)	0 (.%)	1,034 (94.8%)	0 (.%)	998 (94.3%)	0 (.%)	17,414 (96.7%)	0 (.%)	719 (91.2%)	0 (.%)	547 (88.1%)	0 (.%)	42,258 (96.8%)
Homosexual	0 (.%)	0 (.%)	341 (1.5%)	0 (.%)	31 (2.8%)	0 (.%)	25 (2.4%)	0 (.%)	318 (1.8%)	0 (.%)	10 (1.3%)	0 (.%)	13 (2.1%)	0 (.%)	738 (1.7%)
Bisexual	0 (.%)	0 (.%)	215 (1.0%)	0 (.%)	26 (2.4%)	0 (.%)	35 (3.3%)	0 (.%)	280 (1.6%)	0 (.%)	59 (7.5%)	0 (.%)	61 (9.8%)	0 (.%)	676 (1.5%)

Non-starter Analysis?

- From base data sexuality is collected every other wave from wave 3
- Not a whole lot to work with
- Using Last Observation Carried Forward can fill in a lot of blanks here
- Last Observation Carried Backwards to get to wave 1-2 data is dangerous when dealing with sexual orientation data
  - We have no way of knowing when someone has ‘come out’

	Male	Female	Total
Sexuality	Frequency (%)	Frequency (%)	Frequency (%)
Heterosexual	82,312 (59.51%)	96,547 (61.87%)	178,859 (60.76%)
Homosexual	1,831 (1.32%)	1,395 (0.89%)	3,226 (1.10%)
Bisexual	865 (0.63%)	1,527 (0.98%)	2,392 (0.81%)
Missing	53,310 (38.54%)	56,580 (36.62%)	109,890 (37.33%)
Total	138,318 (100%)	156,049 (100%)	294,367 (100%)

	Male	Female	Total
Sexuality	Frequency (%)	Frequency (%)	Frequency (%)
Heterosexual	82,312 (96.83%)	96,547 (97.06%)	178,859 (96.95%)
Homosexual	1,831 (2.15%)	1,395 (1.40%)	3,226 (1.75%)
Bisexual	865 (1.02%)	1,527 (1.54%)	2,392 (1.30%)
Total	85,008 (100%)	99,469 (100%)	184,477 (100%)

- Getting close to 2021 census data
- Still large amounts of missingness
- Could derive orientation from couple data
  - Bad idea
  - Erasure of bisexuality often occurs

	UKHLS wave														
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total
N	27,340 (9.3%)	27,244 (9.3%)	24,783 (8.4%)	23,108 (7.8%)	22,284 (7.6%)	22,728 (7.7%)	21,670 (7.4%)	20,732 (7.0%)	19,197 (6.5%)	18,262 (6.2%)	17,100 (5.8%)	15,594 (5.3%)	15,196 (5.2%)	19,139 (6.5%)	294,377 (100.0%)
Sexuality															
Heterosexual	0 (.%)	0 (.%)	21,546 (97.5%)	17,035 (97.7%)	16,325 (97.4%)	13,974 (97.5%)	13,697 (97.3%)	12,444 (97.3%)	17,802 (96.6%)	15,345 (96.6%)	14,345 (96.4%)	12,633 (96.4%)	12,239 (96.0%)	11,475 (96.0%)	178,860 (97.0%)
Homosexual	0 (.%)	0 (.%)	341 (1.5%)	265 (1.5%)	270 (1.6%)	231 (1.6%)	231 (1.6%)	211 (1.7%)	332 (1.8%)	298 (1.9%)	277 (1.9%)	259 (2.0%)	261 (2.0%)	250 (2.1%)	3,226 (1.7%)
Bisexual	0 (.%)	0 (.%)	215 (1.0%)	144 (0.8%)	160 (1.0%)	126 (0.9%)	152 (1.1%)	128 (1.0%)	294 (1.6%)	234 (1.5%)	256 (1.7%)	206 (1.6%)	250 (2.0%)	227 (1.9%)	2,392 (1.3%)

- Pretty healthy numbers from wave 3-14
- Remember the longitudinal context
  - Is sexual orientation fixed?
    - Common question that props its head every so often with supposedly ‘fixed’ variables such as ethnicity as well
- IFF orientation is not fixed it would be inappropriate to use LOCF to fill in item missingness across waves for individual pidp units

	MALE	FEMALE	TOTAL
Total Sexuality Switchers	Frequency (%)	Frequency (%)	Frequency (%)
Bisexual -> Homosexual	-	-	-
Bisexual -> Heterosexual	26 (38.24%)	31 (27.68%)	57 (31.67%)
Homosexual -> Bisexual	-	-	-
Homosexual -> Heterosexual	-	-	-
Heterosexual -> Bisexual	24 (35.29%)	58 (51.79%)	82 (45.56%)
Heterosexual -> Homosexual	10 (14.71%)	10 (8.93%)	20 (11.11%)
Total	68 (100%)	112 (100%)	180 (100%)

- Out of 184,477 cases of sexual orientation only 180 people across 11 waves of UKHLS data have ‘switched’ their sexual orientation
- Out of these 180 people 178 of them have only switched once
  - This is capturing people ‘coming out’
    - The lower mean age of switchers at 35.5 compared to sample average of 42 seems to corroborate this
  - There are a handful of sexual minority -> heterosexuality switchers however
    - These people appear to have ‘dipped their toes’
    - This is dominated by the bisexual -> heterosexual and vice versa categories, which are themselves dominated by women

Switchers

- Given the very low number of people that appear to switch sexual orientations over the life course it is fair in my view to consider sexuality as ‘fixed’

Occupational Sorting

- The occupations that individuals sort into has a knock on impact when assessing wages
- Beyond wages, occupational sorting is a clear indicator of societal and cultural expectations, norms, and influences on individual behaviours that are constituted via larger unit groups
    - Using SOC 2000 codes

Occupational Sorting

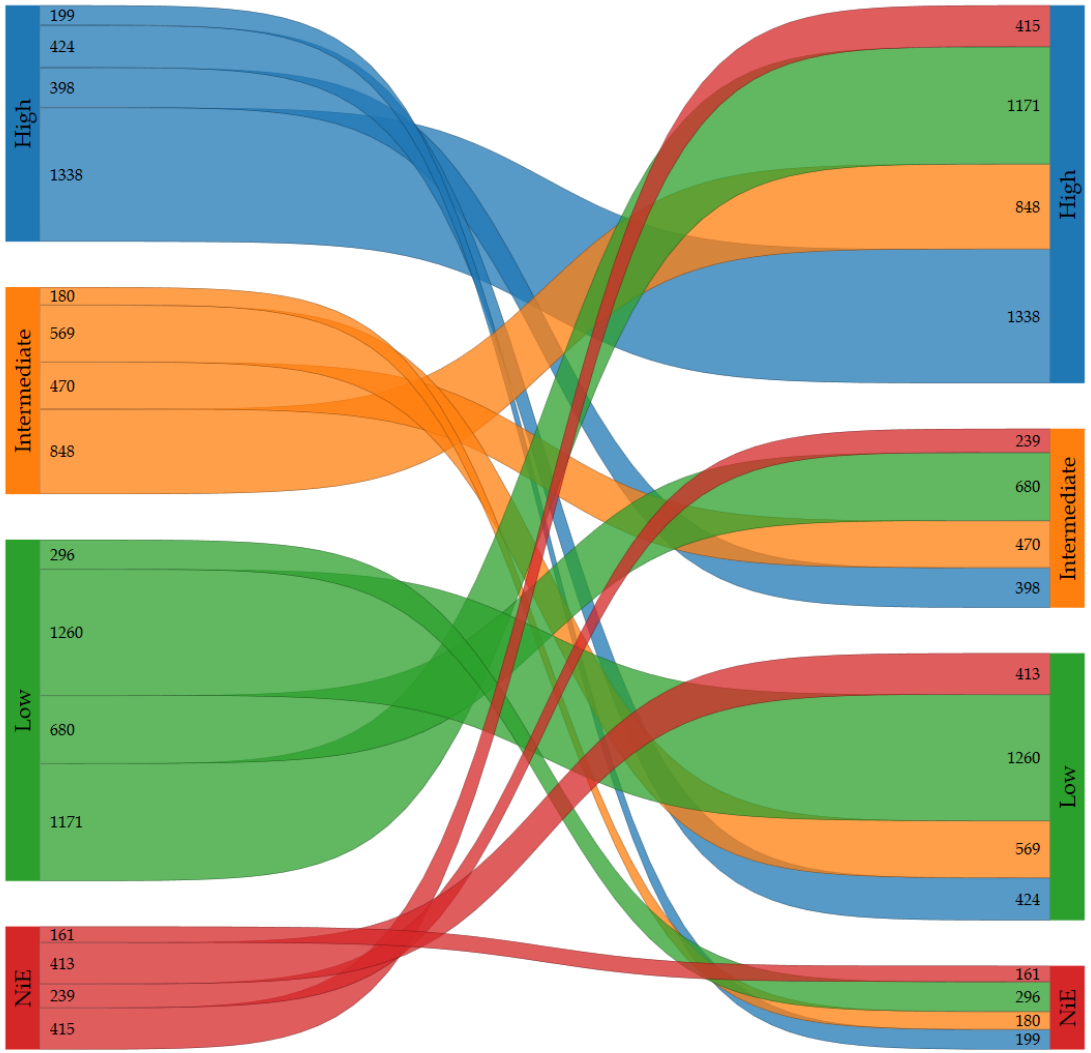
- Women from all sexual orientations and bi men appear to be more heavily concentrated in a few occupational titles compared to straight and gay men
- Bi men are concentrated in <4000 occupations. Possible driver of a wage gap?
  - 7% of bi men are software professionals…
- Women across sexuality appear to focus on soft-skilled labour
  - Though gay and bi women appear to concentrate in authority-related occupations. Possible driver of a pay premium?
- Gay men concentrate in similarly soft-skilled labour positions (teachers)
  - Possible driver of a pay penalty?

Social Mobility

- Prior to modelling some introspection on the lives of sexual minorities is called for
- Social Mobility is a good starting point here
- How much do origins actually matter for current destinations

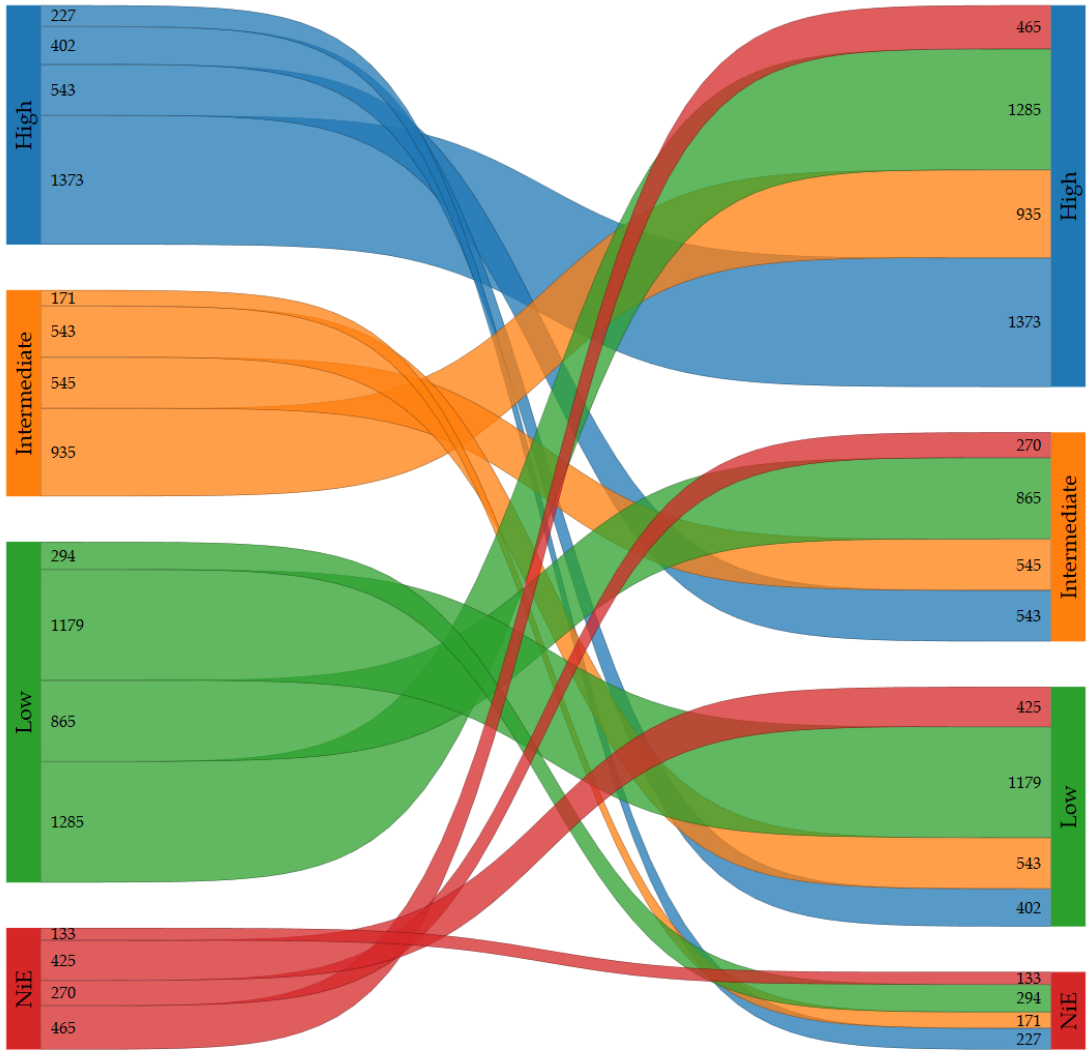
Social Mobility: Origin to Latest Destination

Heterosexual Men



n = 9,061

Heterosexual Women

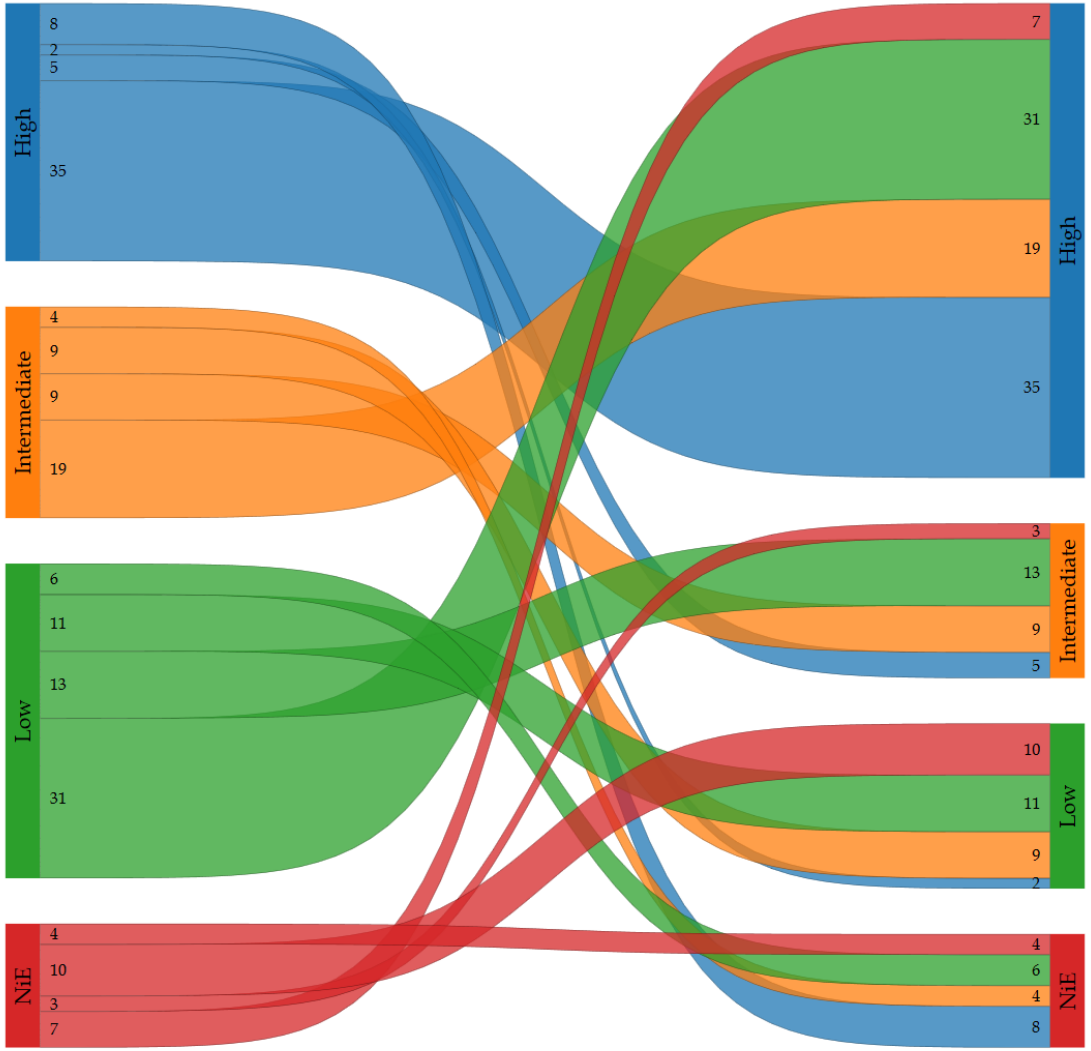


n = 9,655

Data Source: UKHLS Waves 3-14

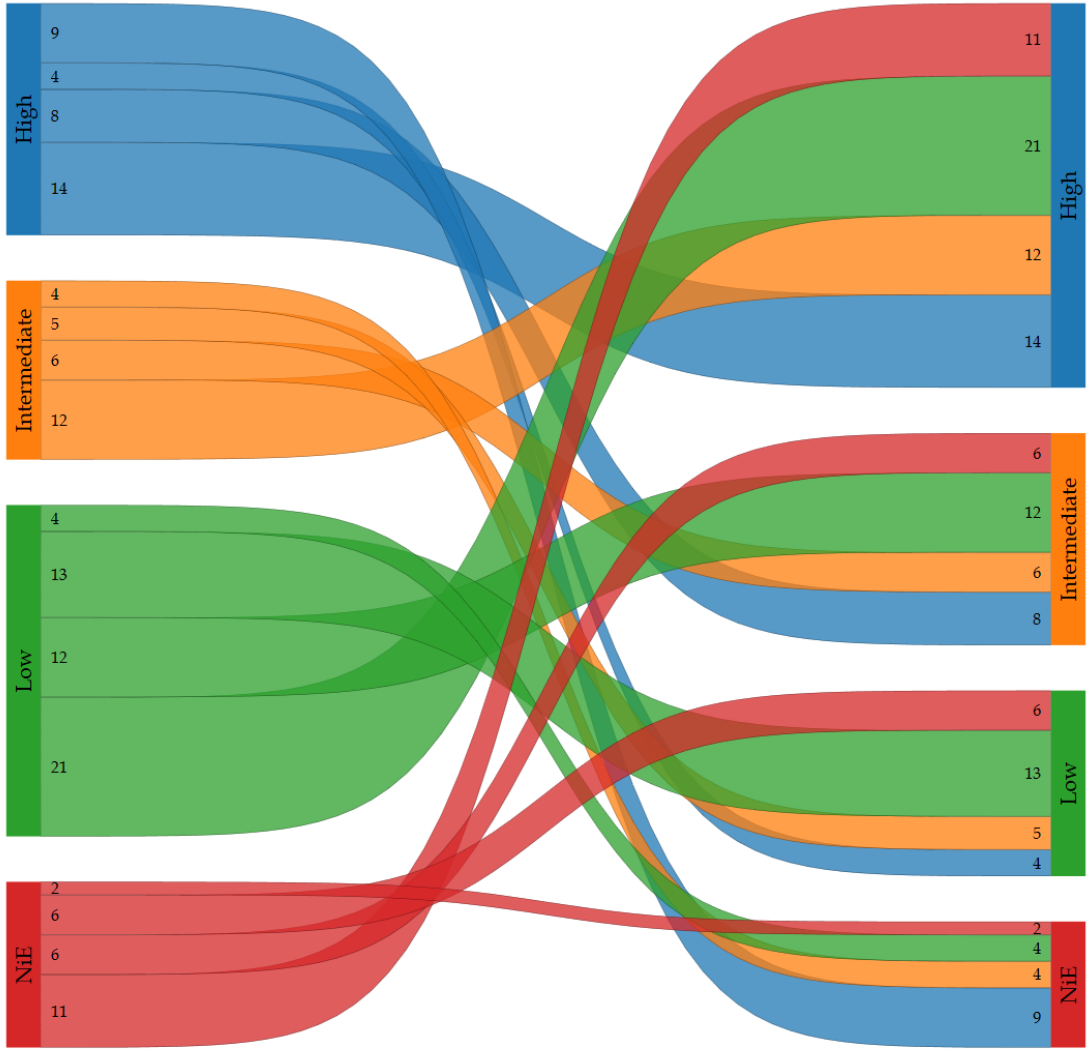
Social Mobility: Origin to Latest Destination

Homosexual Men



n = 176

Homosexual Women

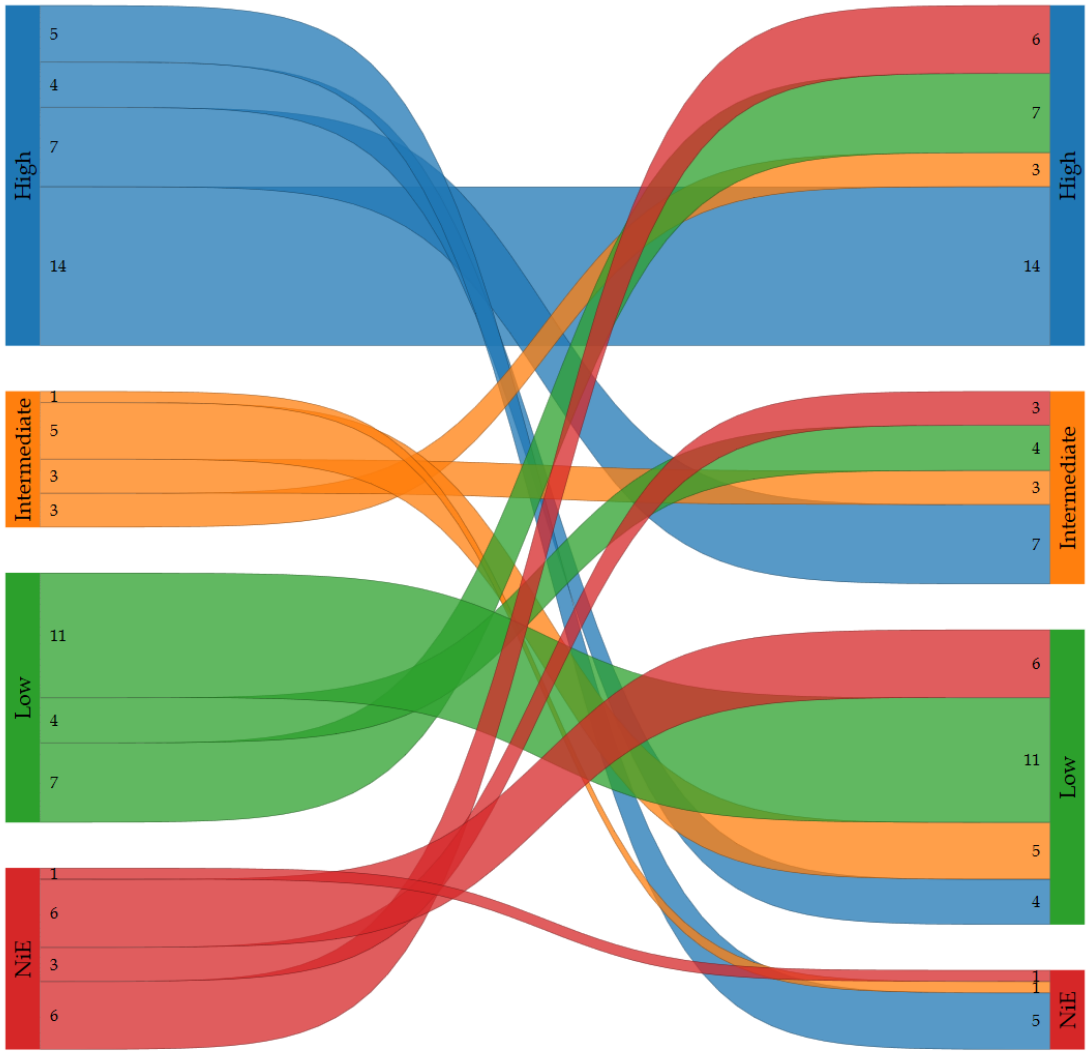


n = 137

Data Source: UKHLS Waves 3-14

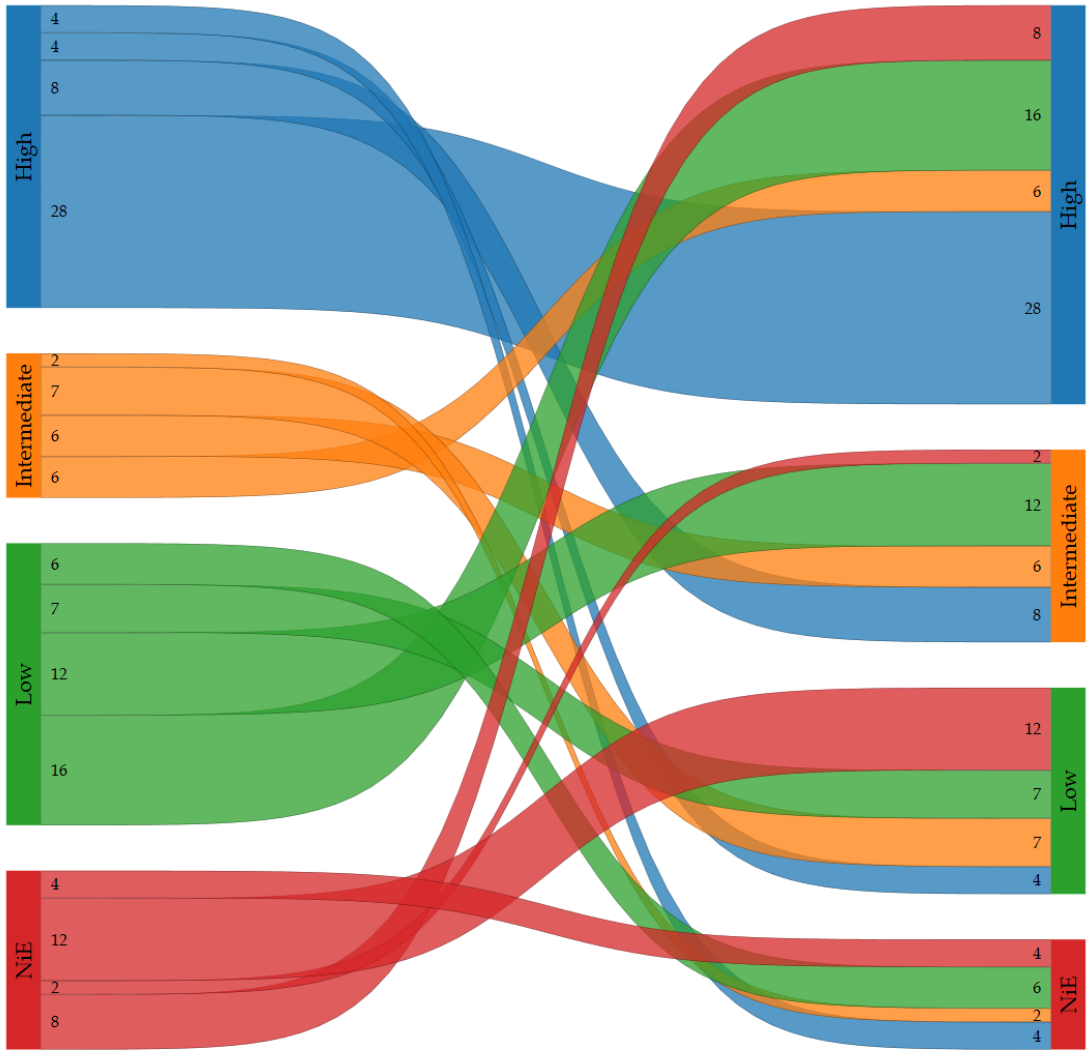
Social Mobility: Origin to Latest Destination

Bisexual Men



n = 80

Bisexual Women



n = 132

Data Source: UKHLS Waves 3-14

- Slightly larger proportions of gay male individuals ‘leapfrogging’ in terms of upward social mobility
- Is this an origins effect or an ‘in-spite of origins’ effect?
- Supportive households are presumably more likely to have a net positive origin effect on individuals

Modelling the sexuality pay gap

- Four components to this modelling strategy
- 1: Demographics
- 2: Human Capital
- 3: Geography
- 4: Time/Growth

Demographics

- Social Origins
- Sexuality
- Age
- Ethnicity
- Sex
- Housing Tenure
- Marital Status
- Parental Status
- Long Term Illness

Human Capital

- Education
- Work Hours
- Current NS-SEC
- Sector
- Industry
- Size of Firm

Geography

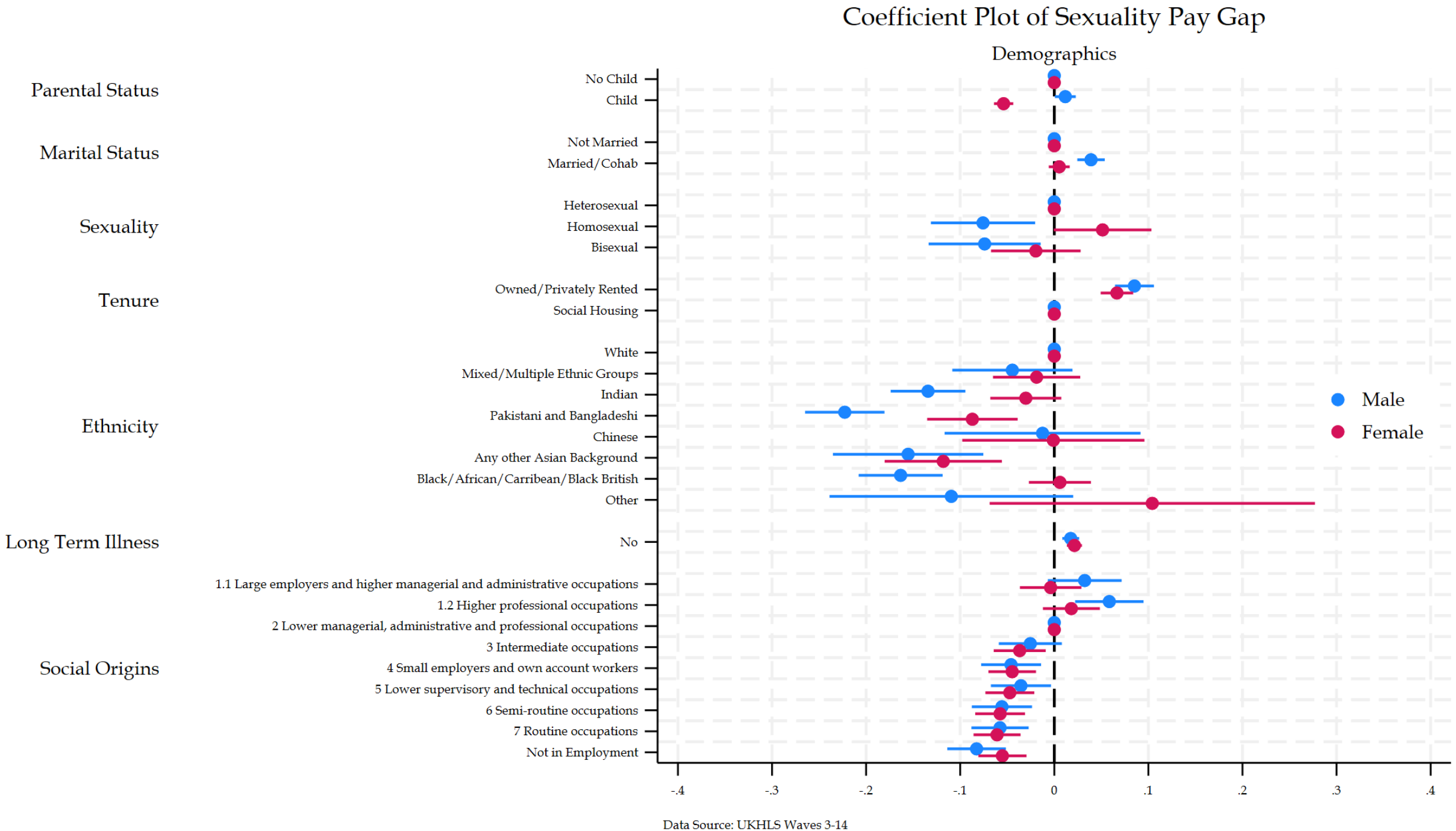
- Urban
- Region

Time/Growth

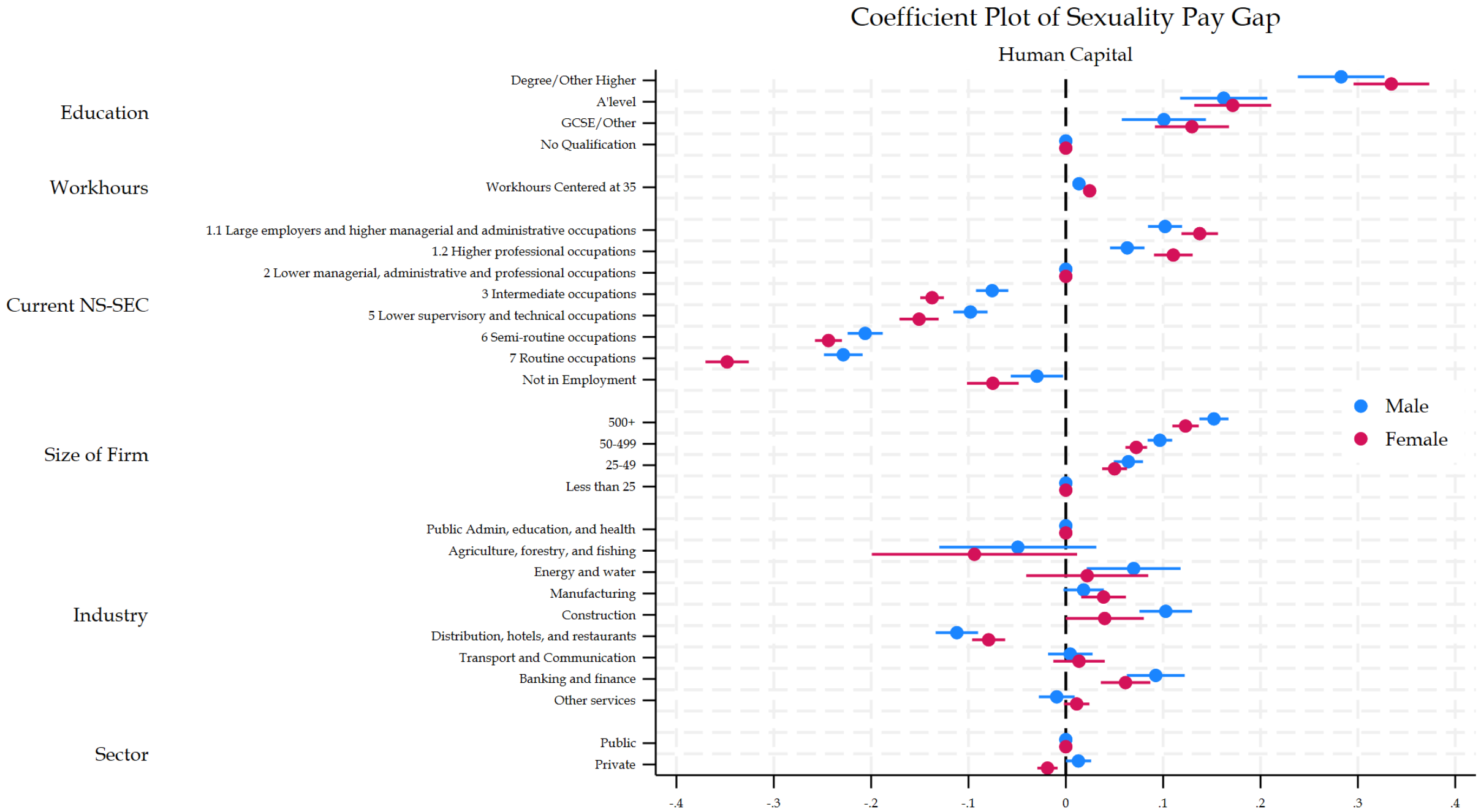
- Wave as a function of time
- Modelling through an appropriate panel set up via a unique individual pidp
- Measure change over time

Regression Models

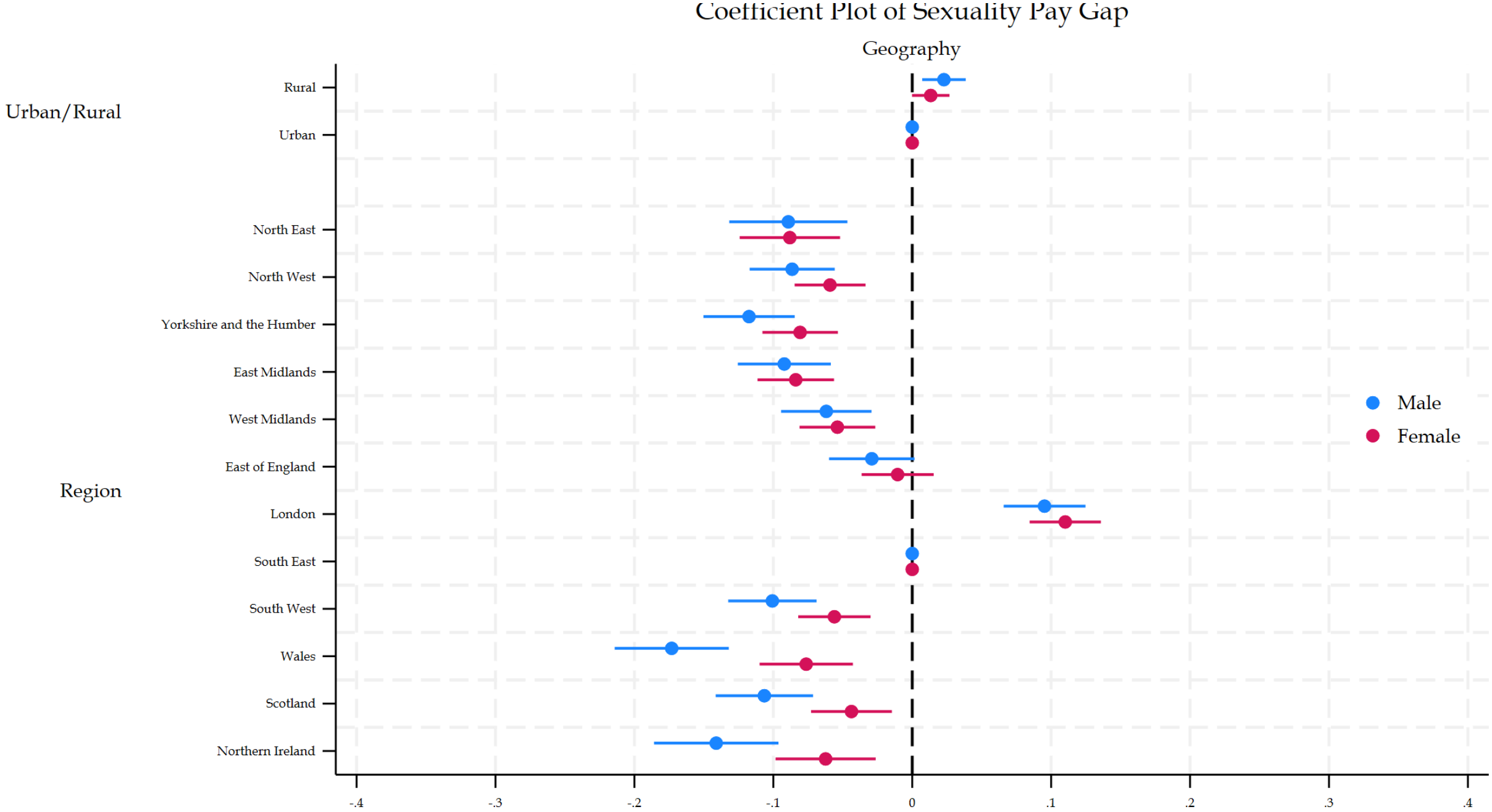
- Big model
- Shown in the form of coefficient plots and predictive marginal effects
- Shown in ‘clusters’
- Not interpreting all effects (Shout at me if you want me to go back or look at a specific effect)



Data Source: UKHLS Waves 3-14

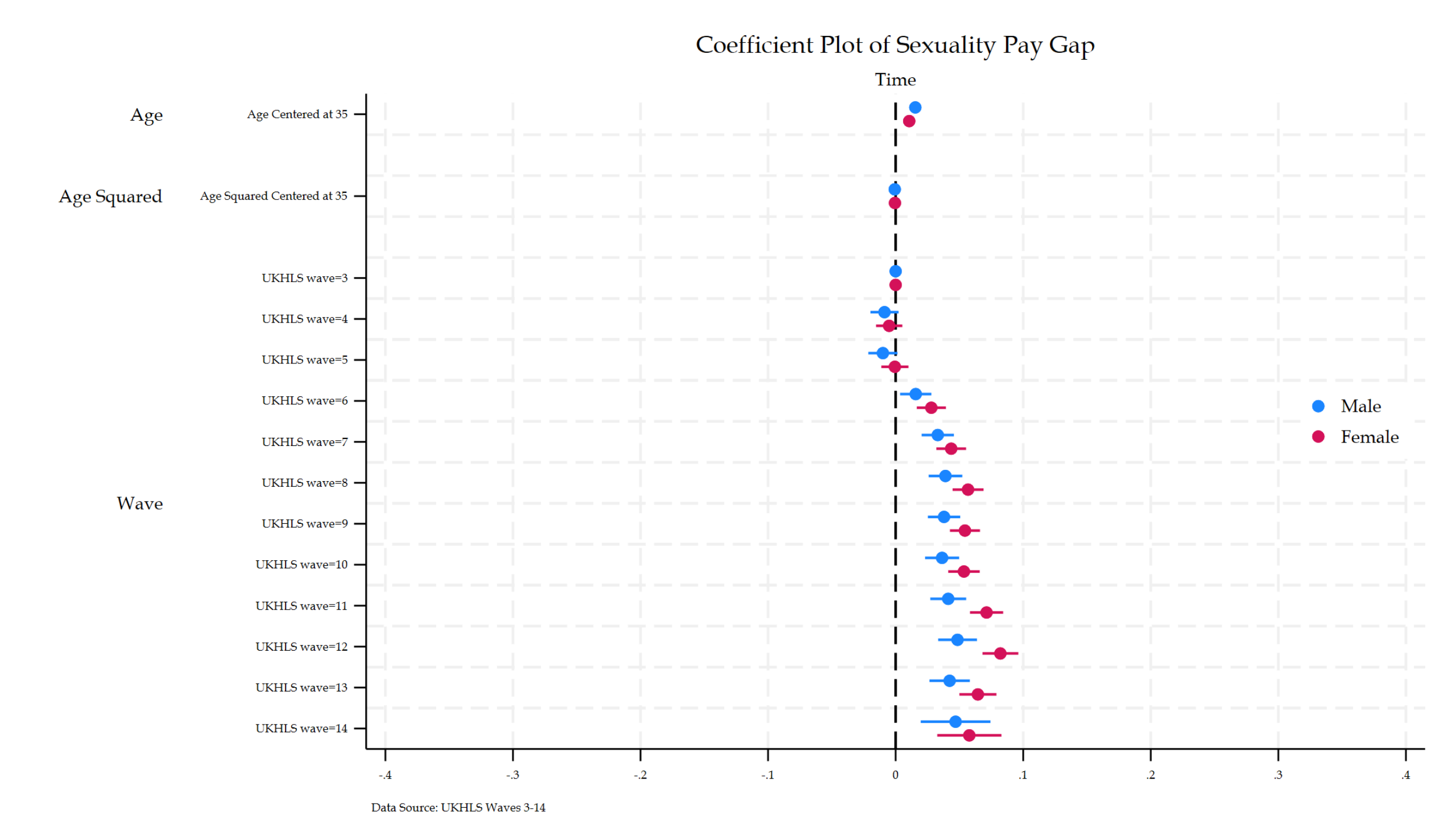


Data Source: UKHLS Waves 3-14



Data Source: UKHLS Waves 3-14

Male Model n=40,135 & Female Model n=48,917


Coefficient Plot of Sexuality Pay Gap
Time
Age
Age Centered at 35
Age Squared
Age Squared Centered at 35
Wave
UKHLS wave=3
UKHLS wave=4
UKHLS wave=5
UKHLS wave=6
UKHLS wave=7
UKHLS wave=8
UKHLS wave=9
UKHLS wave=10
UKHLS wave=11
UKHLS wave=12
UKHLS wave=13
UKHLS wave=14
Male
Female
-.4
-.3
-.2
-.1
0
.1
.2
.3
.4
Data Source: UKHLS Waves 3-14

Sexual Orientation

- Gay men earn 8% less than straight men annually and bi men 7% less controlling for all other variables

- Gay women and bi women not statistically significant

Sexual Orientation

- Remember the meta-analysis?
  - Gay men 11% penalty + Gay women 9% premium
- My model:
  - Gay men 8% penalty
  - Bi men 7% penalty
- Reduction in penalty

Sexual Orientation

- Converting this into real £s would also be beneficial

- Set a new constant:
  - Straight white men with no children that are married age 35 and work 35 hours a week and own their own home with a degree in an urban region of London with NS-SEC 2 parents in an NS-SEC 2 job for a size 500+ company in the private banking industry at wave 3.
  - New constant = 10.28 OR £30,000

- Straight men = £30,000 gross OR £2,500 a month
- Gay men = £26,900 gross OR £2241 a month
- Bi men = £27,173 gross OR £2264 a month

Sexual Orientation

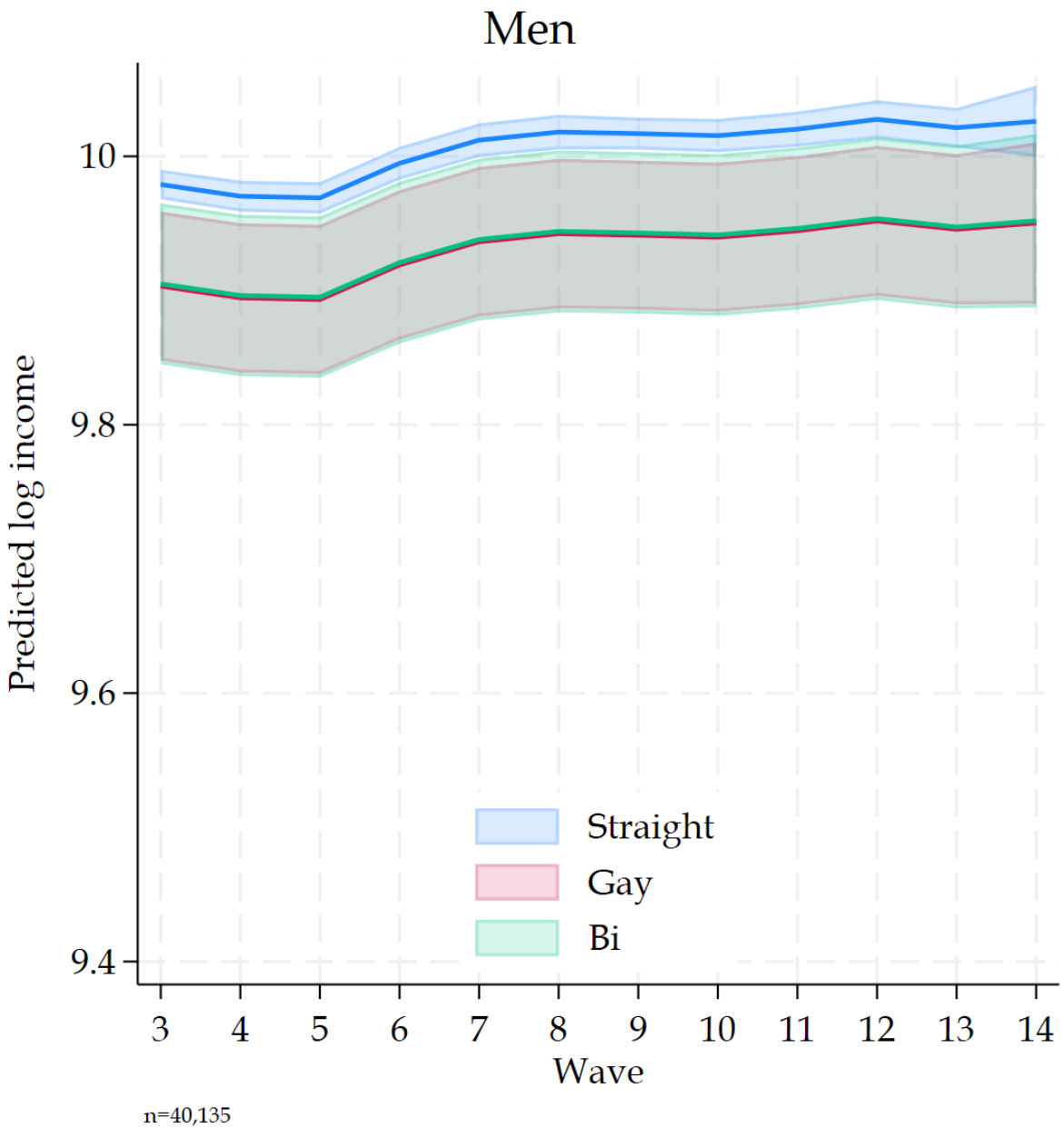
- Straight men = £30,000 gross OR £23,303 net (£1,942 a month)
- Gay men = £26,900 gross OR £21,501 net (£1,792 a month)
- Bi men = £27,173 gross OR £21,660 net (£1,805 a month)

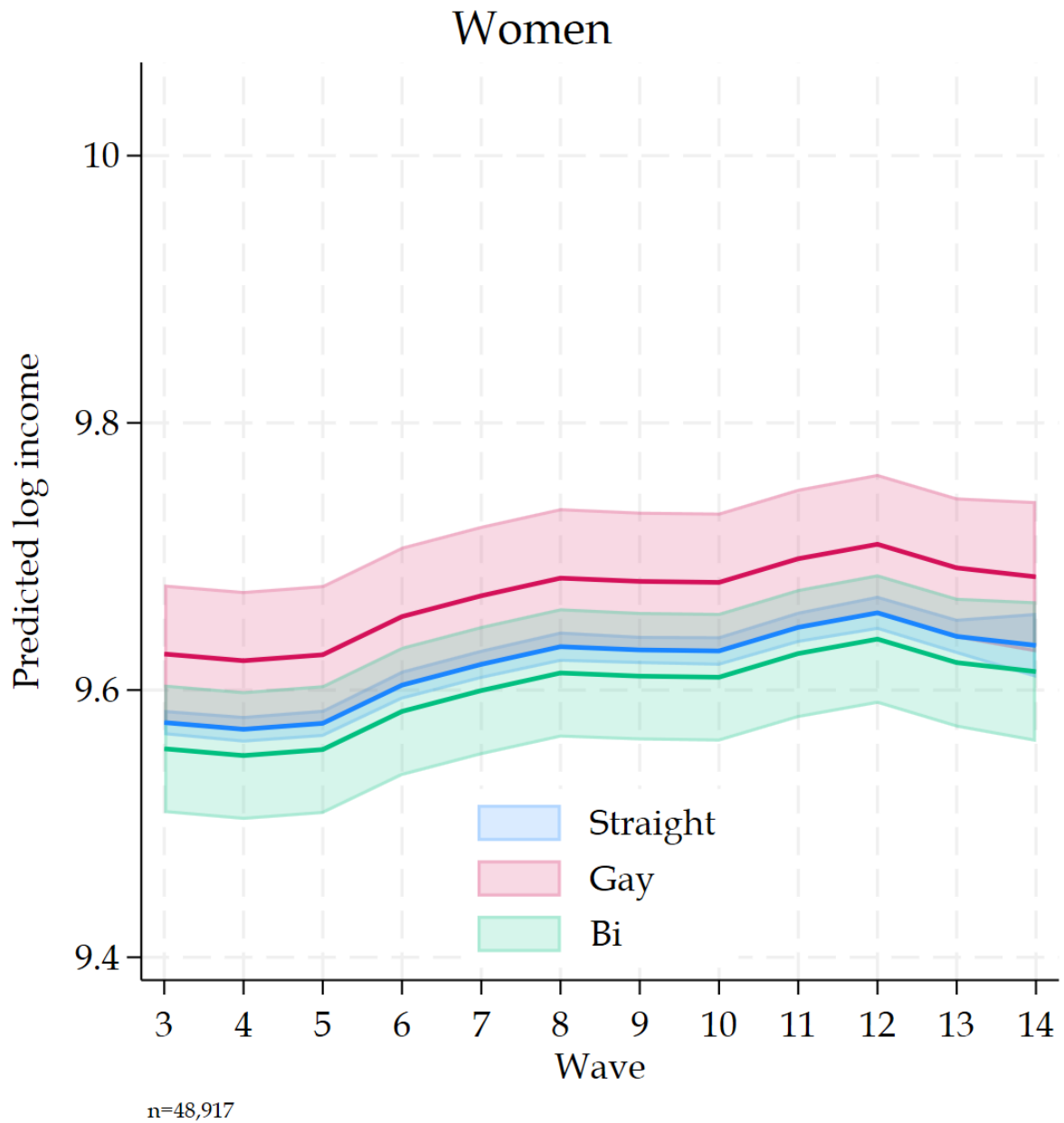
- Compared to women?
  - Women earn less than men of all orientations across the board

Growth Curves

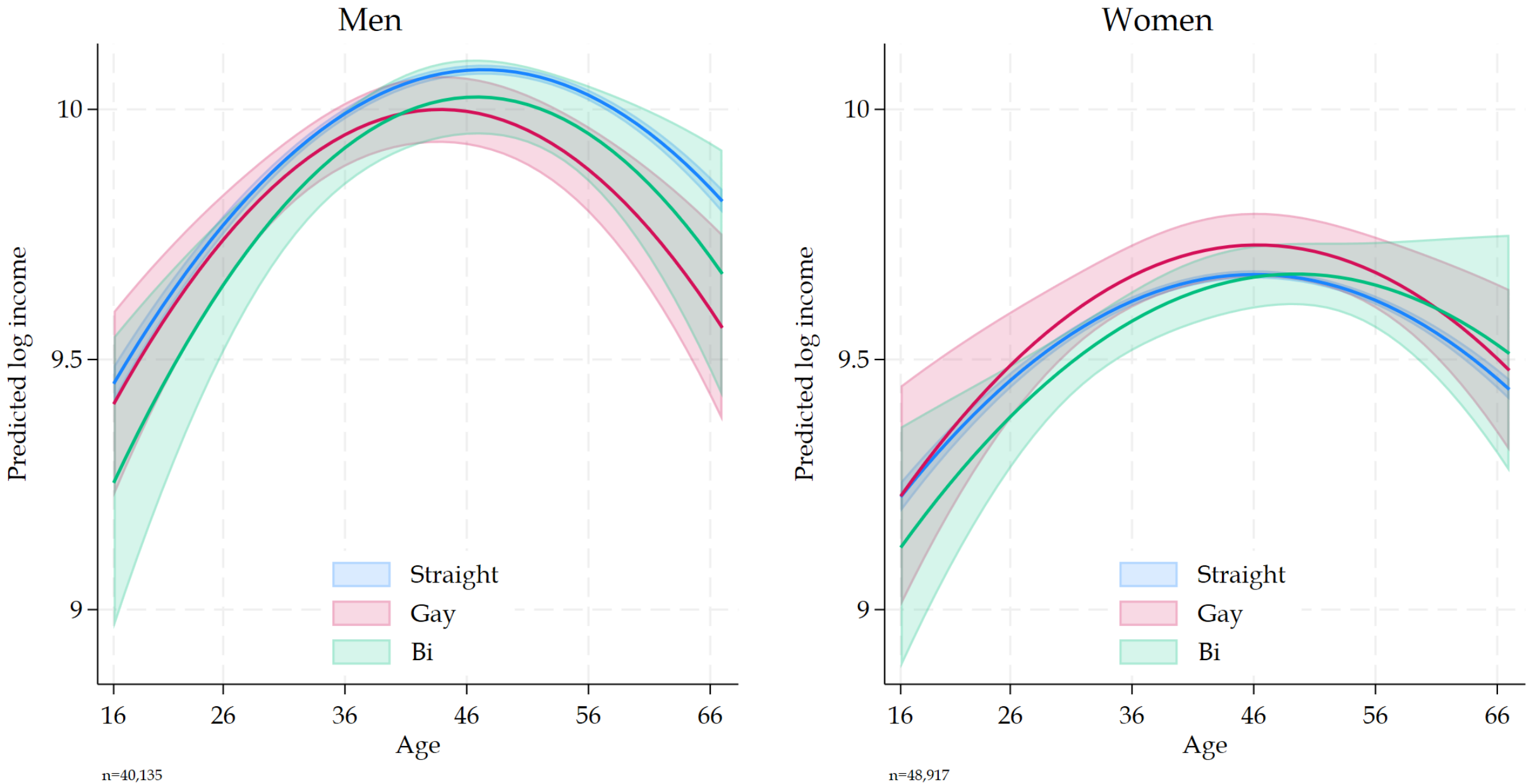
- Using wave as a function of time
- Possibility to look at age and age2 for curvilinear affects
- Careful of age=period-cohort effects
- Model may need tweaking
- Synthetic cohorts + age instead of waves?

Predicted log income growth curves by sexuality





Predicted log income growth curves by sexuality



Future Plans

- Growth curve needs tweaking a little
  - Stay with xtreg or move over to mixed
    - Possibility to random slopes
- Complex survey design adjustments
- Handling missing data
- Experimental longitudinal decomposition techniques
  - Used to explain possible ‘discrimination’

Questions