



Working from home and the explosion of enduring divides: income, employment and safety risk

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COVID-19 and the world of work: Towards a human-centred recovery

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Covid-19 Pandemic and its (on-going) impact on the labor market

The outbreak of the Covid-19 Pandemic has produced a dramatic shock on national productive structures.

In Europe the adoption of layoff schemes funded by national governments has avoided a massive rise in unemployment.

However, **the impact of the pandemic has not been equal**: the most vulnerable segments of the population (*like temporary, female and irregular workers*) have been hardly hit.

On the other hand, many of those who have continued to work during the lockdown (i.e. *essential workers*) have frequently faced higher risk of contagion and increased workload.

Telework as a “must” in pandemic times

During the lockdown, telework practices have been implemented worldwide.

In Italy, **between 4 and 6,5 million of workers** were estimated to work from home against the **500.000 teleworkers before the pandemic**. In 2019, only 5.4% of workers in the EU-27 usually worked from home (*constant share since 2009*), with Italy below the European average (3,6%).

From being an opportunity, telework becomes a “must” for the majority of workers, despite the absence of clear rules, adequate tools and flexible organisation schemes.

Research questions

The aim of this work is twofold:

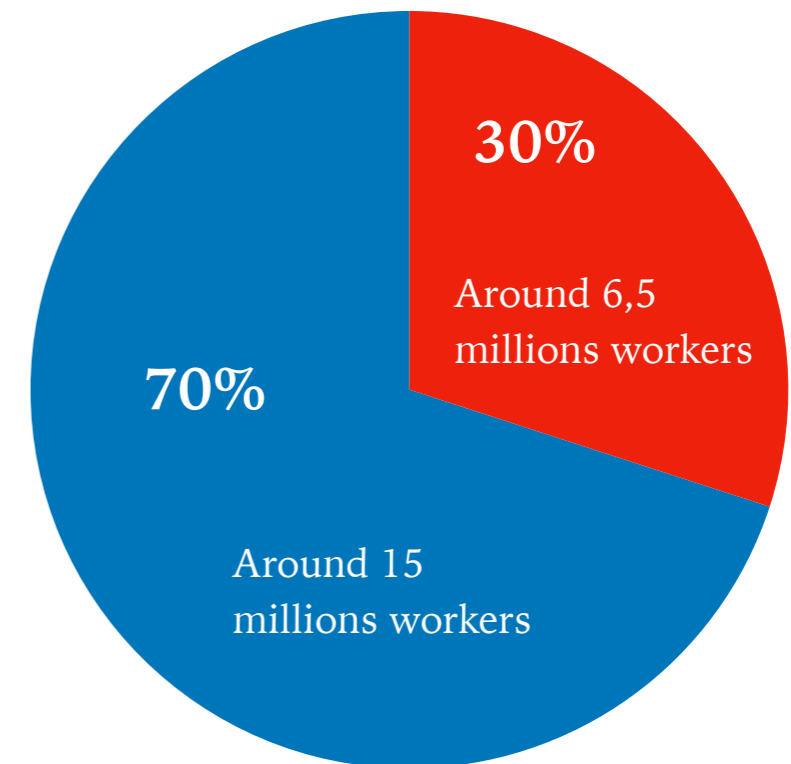
1. Which are the jobs that can be performed from home and those that cannot? How do these jobs distribute across the occupational structure in Italy?
2. Which are the socio-economic risks faced by those who cannot work from home? Do *Not From Home* workers face higher unemployment risk, low income risk and health safety at work risk with respect to *From Home* workers?

Database	Description	Original Unit of Observation	Year	Variables of interest
ICP - INAPP & ISTAT	Italian Occupation Survey	5-digit occupations	2012-2016 (ICP II wave)	Selection from: ✓ Section G “Generalised Work Activities” ✓ Section H “Working Condition”
Occupations database - INAIL	Database on accidents and fatalities at work	5-digit occupations	2017	✓ Accidents at work ✓ Occupational illness
RFLC - ISTAT	Labour force survey	Individual worker (more than 85.000 observations)	2011-2017	✓ Monthly wage ✓ Employment status ✓ Socio-demographic variables ✓ 4-digit occupation

Not From Home indicator

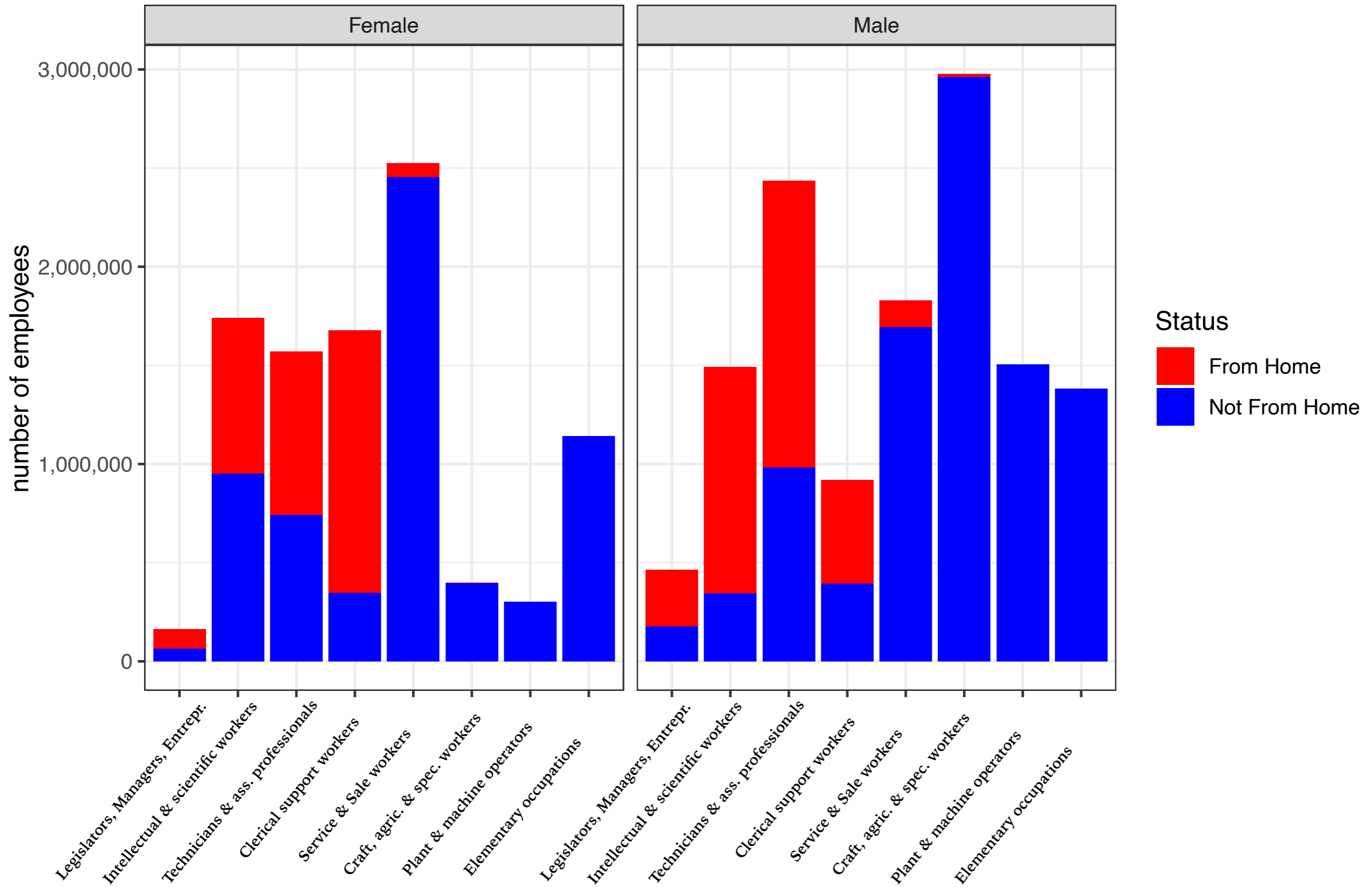
The binary indicator is built following Dingel and Neiman(2020) with few modifications. The classification is based on the consideration of those predominantly physical, technical, organisational and social factors that determine the way in which tasks are performed.

Subgroup	Questions (n.)	Threshold
Outdoor activities	3	If any question ≥ 60 , then "Not from home"
Use of machine or specific equipment	12	If any question ≥ 60 , then "Not from home"
Bio-chemical risk exposure	5	If any question ≥ 60 , then "Not from home"
Highly physical or manual activities	7	If any question ≥ 60 , then "Not from home"
Social contact	2	If any question ≥ 60 , then "Not from home"
Mail use	1	If any question < 40 , then "Not from home" = 1



● From Home ● Not From Home

Distribution of *NFH* and *FH* male and female workers across 1-digit groups

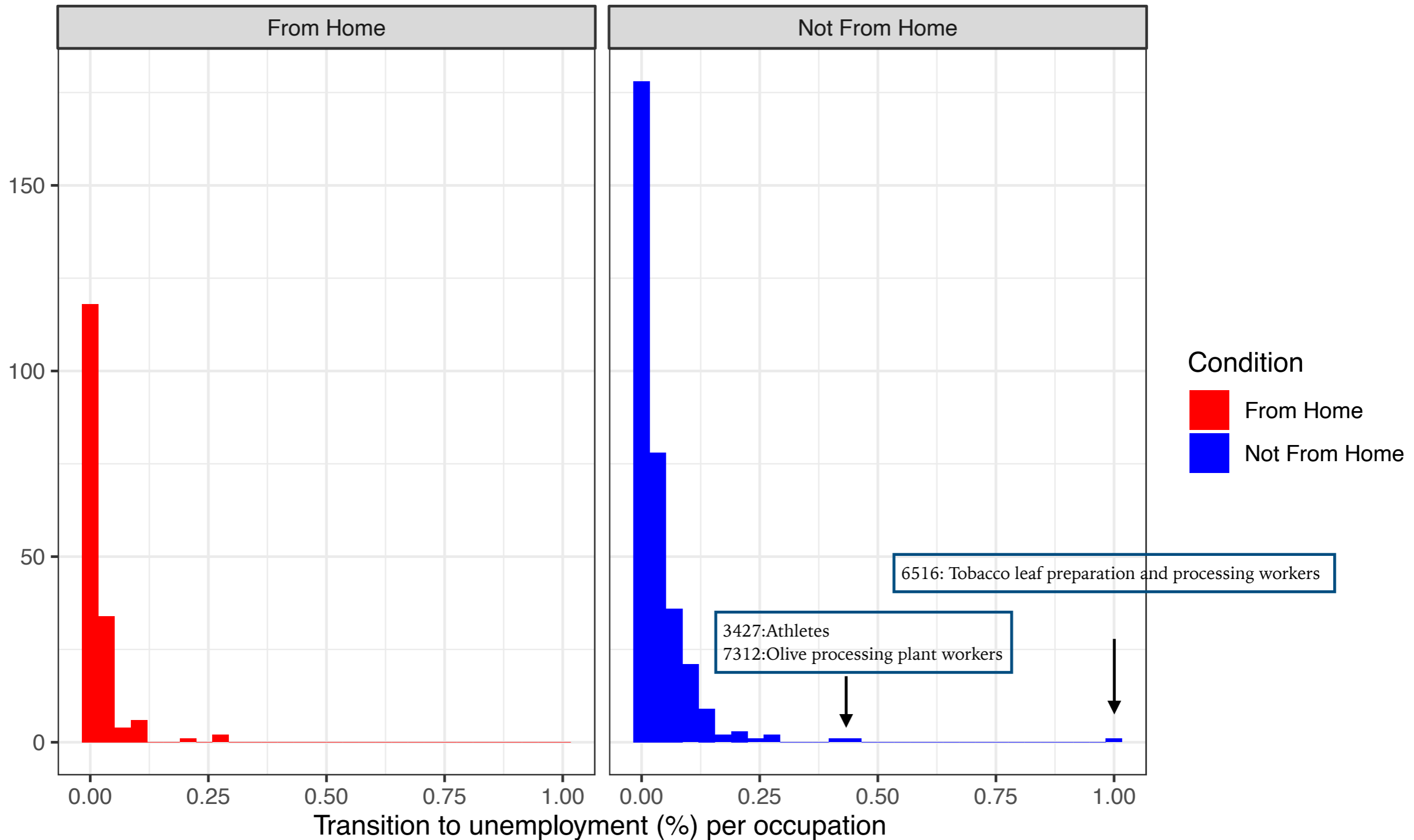


Research questions

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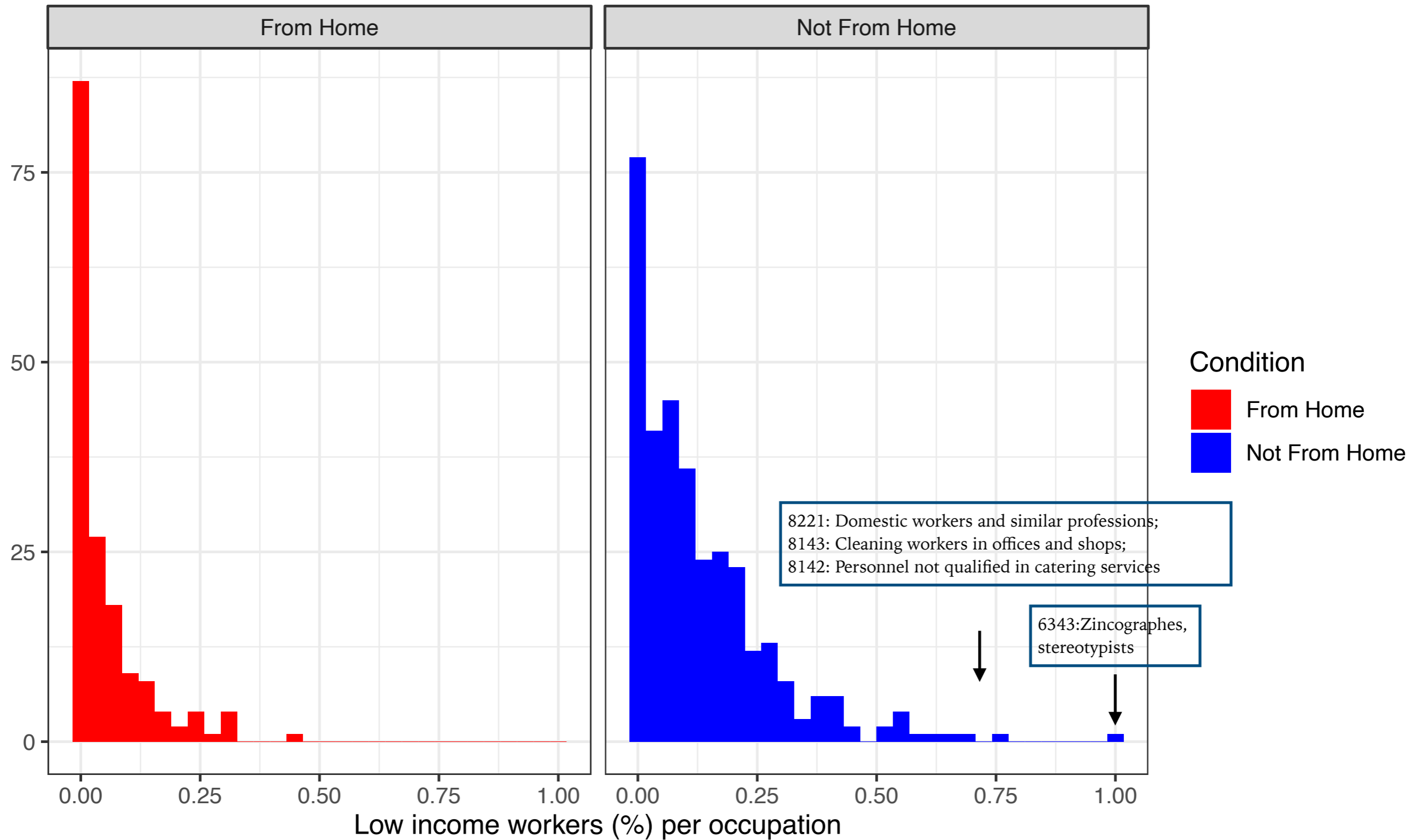
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Transition to unemployment



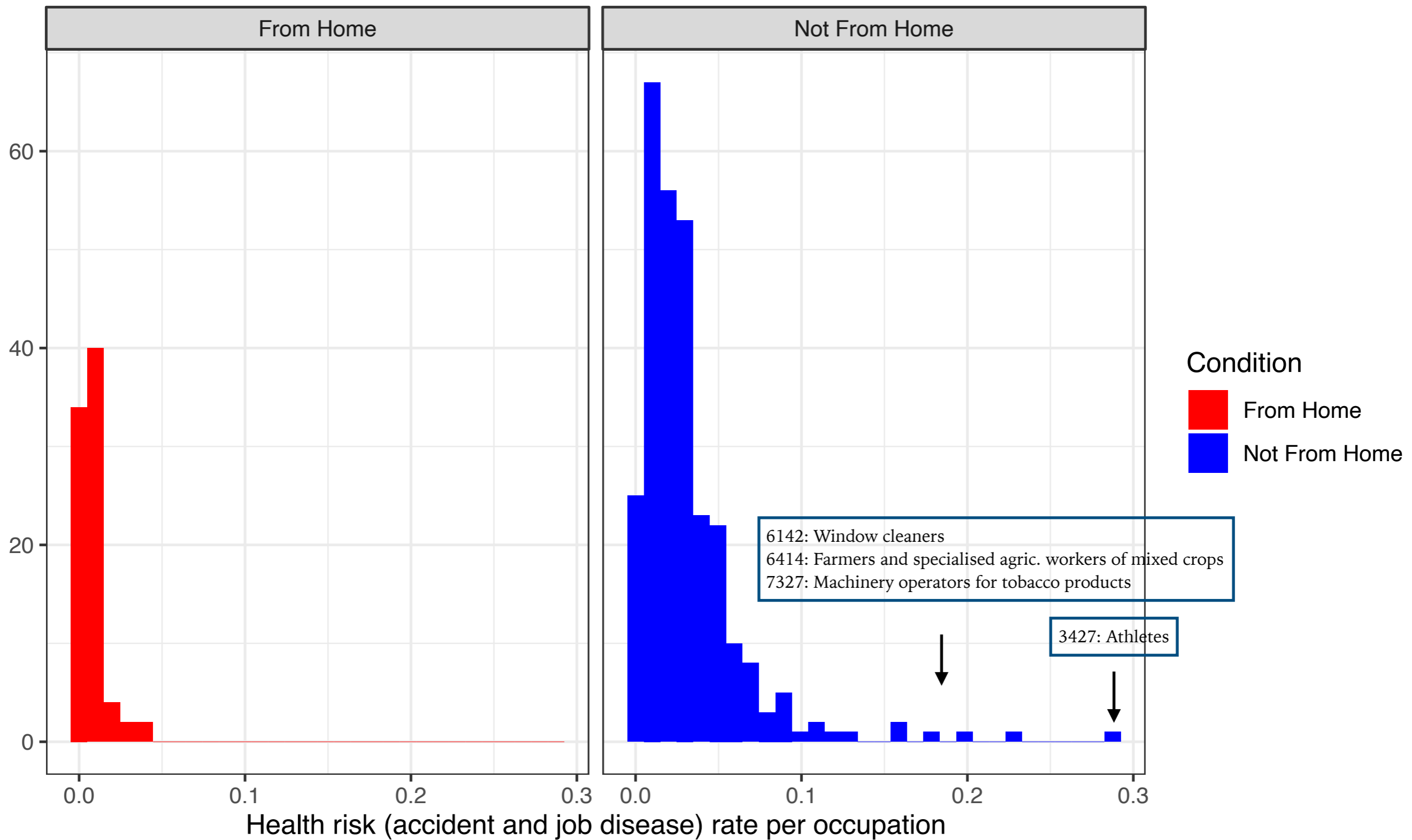
*% transition events by occupation (2016-2017) based on micro ISTAT-ICP (weighted)

Low income



*% low income events by occupation (2016-2017) based on micro ISTAT-ICP (weighted)

High Health Risk



*Accident and job disease rate by occupation (2016-2017) based on ISTAT-ICP

Empirical analysis

- The econometric strategy applies the probit binary response methodology and shows that workers performing a **Not From Home** jobs are more likely to experience the **risk** of:
 1. transition from employment to unemployment,
 2. low wage,
 3. job illness and accident at work (based on occupations data).
- Control variables include: **gender**, **level of education** (lower secondary, secondary, bachelor, master), **age groups** (16-35, 36-50, 51-70), **type of employment contract** (temporary, permanent, autonomous), **geographical area** (northern, southern and central), **sectors** (nace sectors 1-18).
- In addition, regardless of the type of job, **female workers** are much more likely to earn a lower income with respect to their male colleagues, and **temporary workers** are more likely to face unemployment with respect to permanent workers.

Risk Stratification and gender

Among those occupations that face stratifying and conflating risks (characterized by the co-occurrence of these three events) we find several **female segregated jobs**. This result confirms the necessity of adopting a combined approach, accounting for job class and gender.

3-Digit Code	Occupation	Female share (%)
264	Primary and pre-primary school teachers and similar professions	95
345	Social services technicians	91
822	Unqualified personnel in charge of domestic services	89
531	Qualified professions in health and social services	82
545	Animal trainers and keepers	77
321	Health technicians	75
231	Specialists in life sciences	72
541	Masters of arts and crafts	72
523	Travel assistants and similar professions	71
544	Qualified professions in personal and assimilated services	71

Moreover, patterns of occupational segregation map into **lower income** for female workers, **lower degree of power, autonomy and ICT skills** in female dominated occupations.

Discussion ⁽¹⁾

Performing a *From Home* job represents a possibility only for a limited number of Italian workers: **about 30% of the entire working population.**

Our econometric results show that *Not From Home* workers record, in normal times, higher probabilities of losing job, earning low wage and experiencing accidents or job illness at work. Similar results have been recorded in other advanced economies.

First available statistics confirm the higher incidence of job losses among *NFH* and precarious workers during the pandemic.

Discussion ⁽²⁾

The distinction of **Not From Home** and **From Home** workers turns out to be revealing of **stratifying vulnerabilities** in terms of income remuneration, employment stability and health safety at work.

Labour and social protection policies should aim at reducing rather than exacerbating those **enduring divides**, starting with flexible shifts, extension of sick leaves, full-paid paternal and maternal leaves, secure income stability. Particular attention should be devoted to gender, age and ethnic disparities.

At the same time, **fostering social dialogue**, promoting regulation on remote work and adopting effective health and safety protocols through the direct involvement of workers and trade unions is crucial.

THANK YOU!

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Variables used to build *Not from home* index

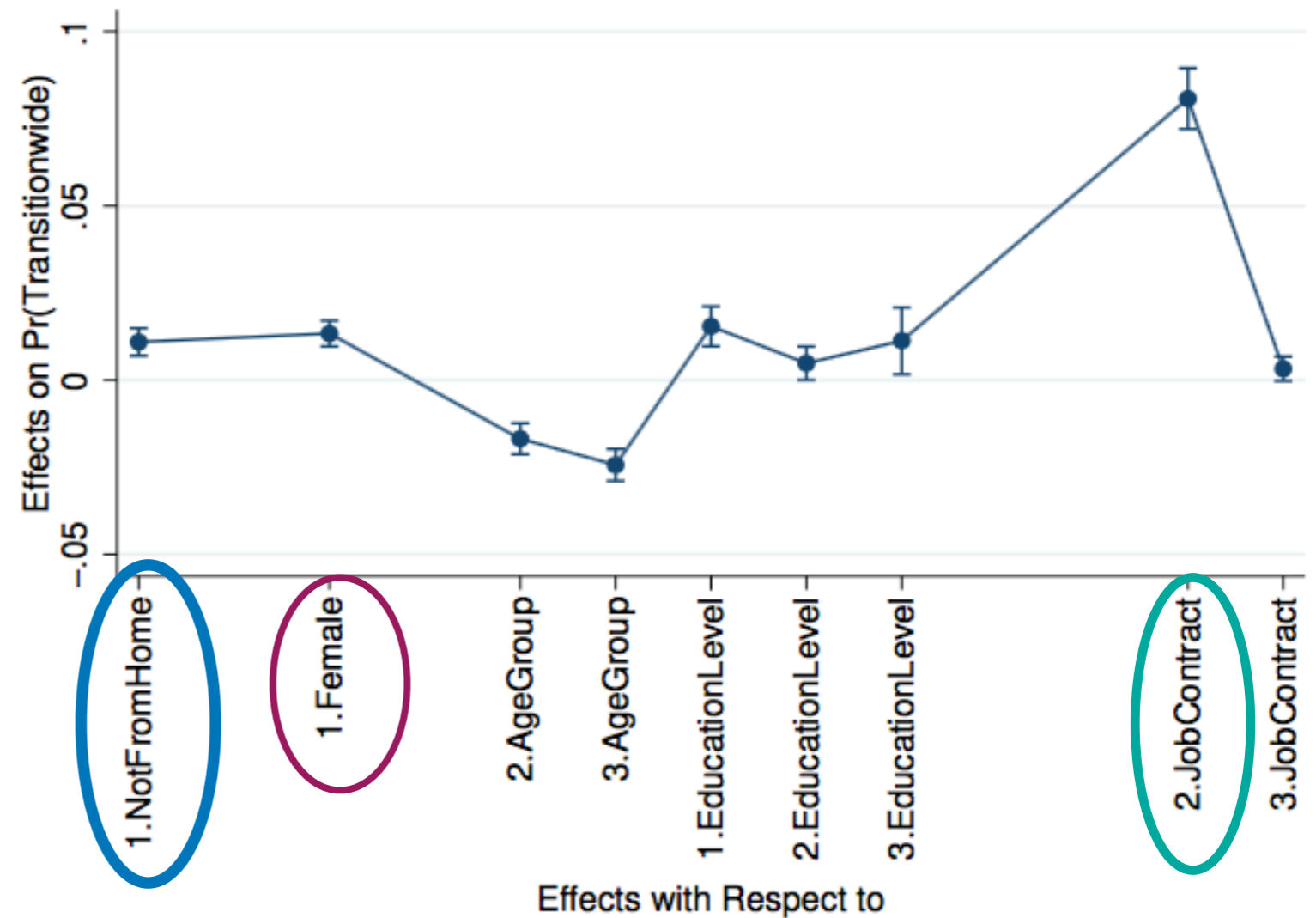
H.17 How often does your profession require you to work outdoors exposed to all weather conditions?	Outdoor activities
H.18 How often does your profession require you to work outdoors but sheltered (like in an open shack)?	Outdoor activities
H.19 How often does your profession require you to work in a piece of equipment or an open vehicle (such as a tractor)?	Outdoor activities
H.20 How often does your profession require you to work in closed equipment or vehicle (such as a machine)?	Use of machine or specific equipment
H.27 How often in your work are you exposed to vibrations throughout your body (such as when operating a jackhammer or bulldozer)?	Use of machine or specific equipment
H.32 How often does your work require you to expose yourself to dangerous equipment (such as working with saws, near machines with moving parts or vehicles)?	Use of machine or specific equipment
H.40 In your work, how long do you use your hands to manipulate, control or feel objects, tools or control systems?	Use of machines or specific equipment
H.43 In your work, how long do you wear protective or safety equipment such as shoes, glasses, gloves, earplugs, helmets or jackets?	Use of machines or specific equipment
H.44 In your work, how long do you wear specialist protective or safety equipment such as self-contained breathing apparatus, harnesses, full protective suits or radiation protection clothing?	Use of machines or specific equipment
H.55 How important is it in your work to keep sequences of machinery and equipment under control?	Use of machines or specific equipment
G.18 Managing machines and processes	Use of machines or specific equipment
G.20 Maneuvering vehicles, vehicles and equipment	Use of machines or specific equipment
G.22 Repair and maintain equipment	Use of machines or specific equipment
G.23 Repairing and maintaining electronic equipment	Use of machines or specific equipment
G.4 Inspect equipment, structures or materials	Use of machines or specific equipment

Variables used to build *Not from home* index

H.25 How often are you exposed to contaminants (such as polluting gases or dust) in your work?	Bio-chemical risk exposure
H.28 How often does your work require you to be exposed to radiation? This may happen, for example, to people working in chemistry or radiology laboratories)	Bio-chemical risk exposure
H.29 How often does your work require you to expose yourself to disease or infection? This may happen, for example, to people working in hospitals, or in medical or analytical laboratories, or to those engaged in disinfection activities.	Bio-chemical risk exposure
H.31 How often does your work require you to expose yourself to hazardous situations (such as working with high voltage electricity, flammable materials, explosives or chemicals)?	Bio-chemical risk exposure
H.33 How often does your work require you to expose yourself to small burns, small cuts, bites, stings?	Bio-chemical risk exposure
H.30 How often does your work require you to expose yourself in places or places high above the ground (such as working on poles, scaffolding, stairs, walkways higher than 2.5 m)?	Highly Physical or manual activities
H.35 In your work, how long do you climb ladders, poles, scaffolding, etc.?	Highly Physical or manual activities
H.36 How long do you walk or run in your work? (excluding home-work trips)	Highly Physical or manual activities
H.37 In your work how long do you kneel, crouch, crawl, crawl or bend ?	Highly Physical or manual activities
H.38 How long in your work do you maintain or recover your balance?	Highly Physical or manual activities
G.16 Perform physical activities that require moving the entire body, or...	Highly Physical or manual activities
G.17 Handling and moving objects	Highly Physical or manual activities
G.29 Assisting and caring for others	Social contact
G.32 Working in direct contact with the audience and performing	Social contact
H.4 How often does your profession require the use of e-mail?	E-mail Use

Unemployment Risk

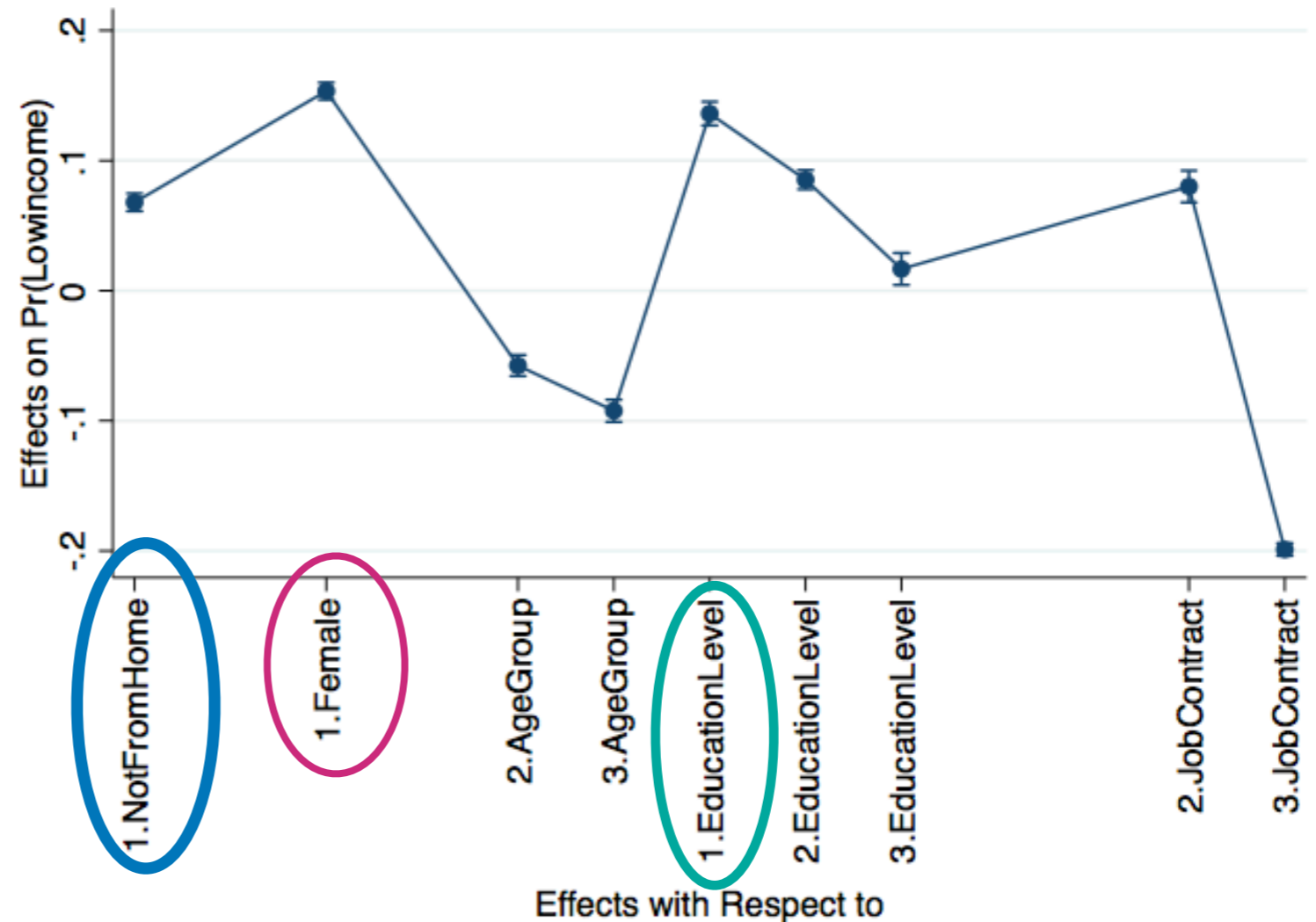
Unemployment risk	
Not From Home	.187*** (5.31)
Female	.197*** (7.41)
36-50 years old	-.222*** (-7.90)
51-75 years old	-.358** (-10.84)
Lower sec. education level	.23*** (4.67)
Secondary education level	.0815 (2.52)
Bachelor education level	.185* (2.52)
Temporary contract	.78*** (25.80)
Autonomous contract	.06 (1.97)
Center Italy	.119** (3.71)
Southern Italy	.369*** (13.97)
Sector	Yes
N	82177
Pseudo R ²	0.124
<i>Robust standard errors</i>	
t statistics in parentheses	
*p < 0.05, **p < 0.01, ***p < 0.001	



Low Income Risk

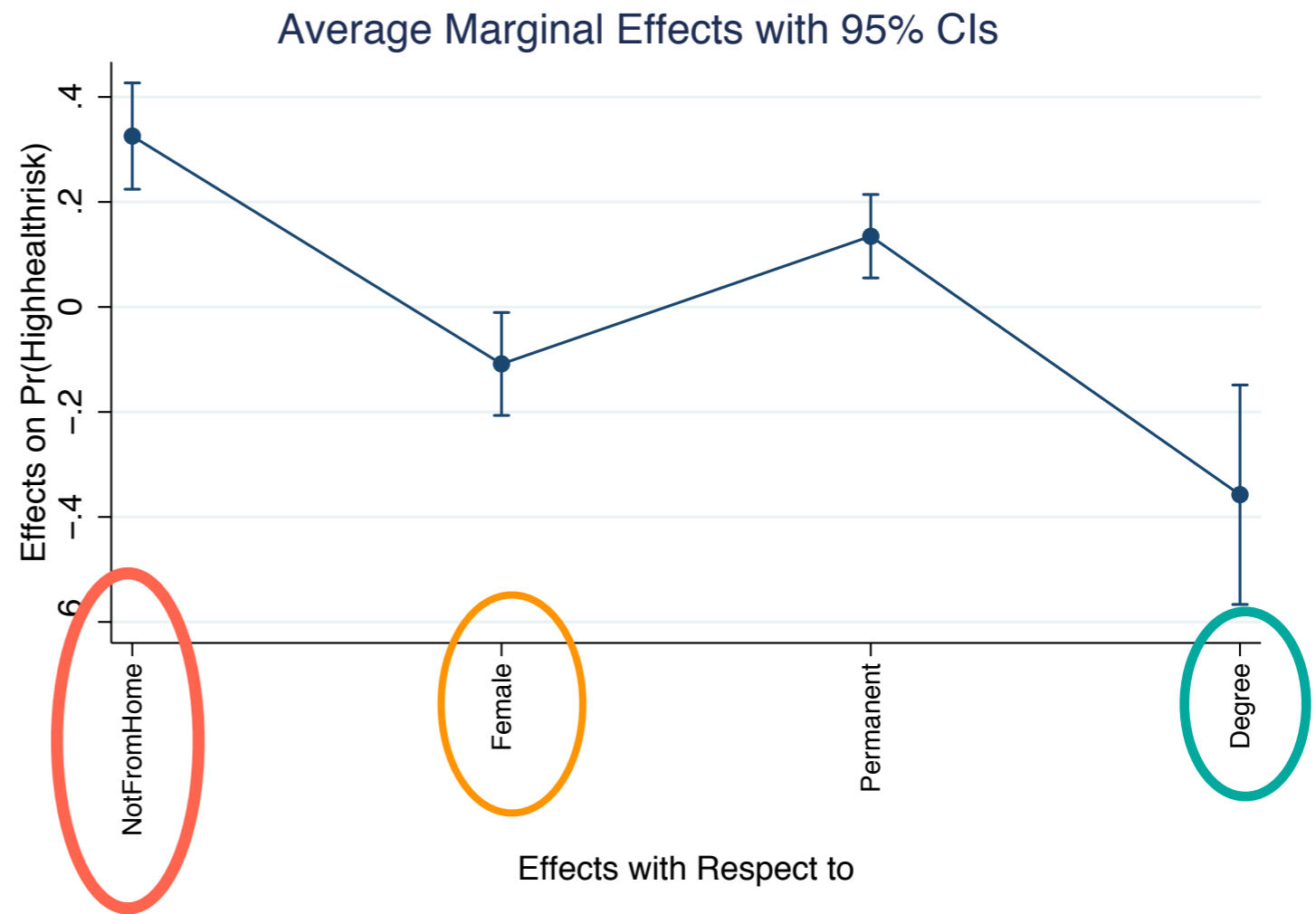
Low income

Not From Home	.374*** (18.41)
Female	.749*** (44.76)
36-50 years old	-0.257** (-13.64)
51-75 years old	-0.448*** (-21.05)
Lower sec. education level	.717*** (24.74)
Secondary education level	0.498*** (18.94)
Bachelor education level	0.141** (3.19)
Temporary contract	0.271** (12.11)
Autonomous contract	-1.458 *** (-44.12)
Center Italy	0.145*** (7.61)
Southern Italy	0.348 *** (20.08)
Sector	Yes
N	85763
Pseudo R ²	0.256
<i>Robust standard errors</i>	
t statistics in parentheses	
*p < 0.05, **p < 0.01, ***p < 0.001	

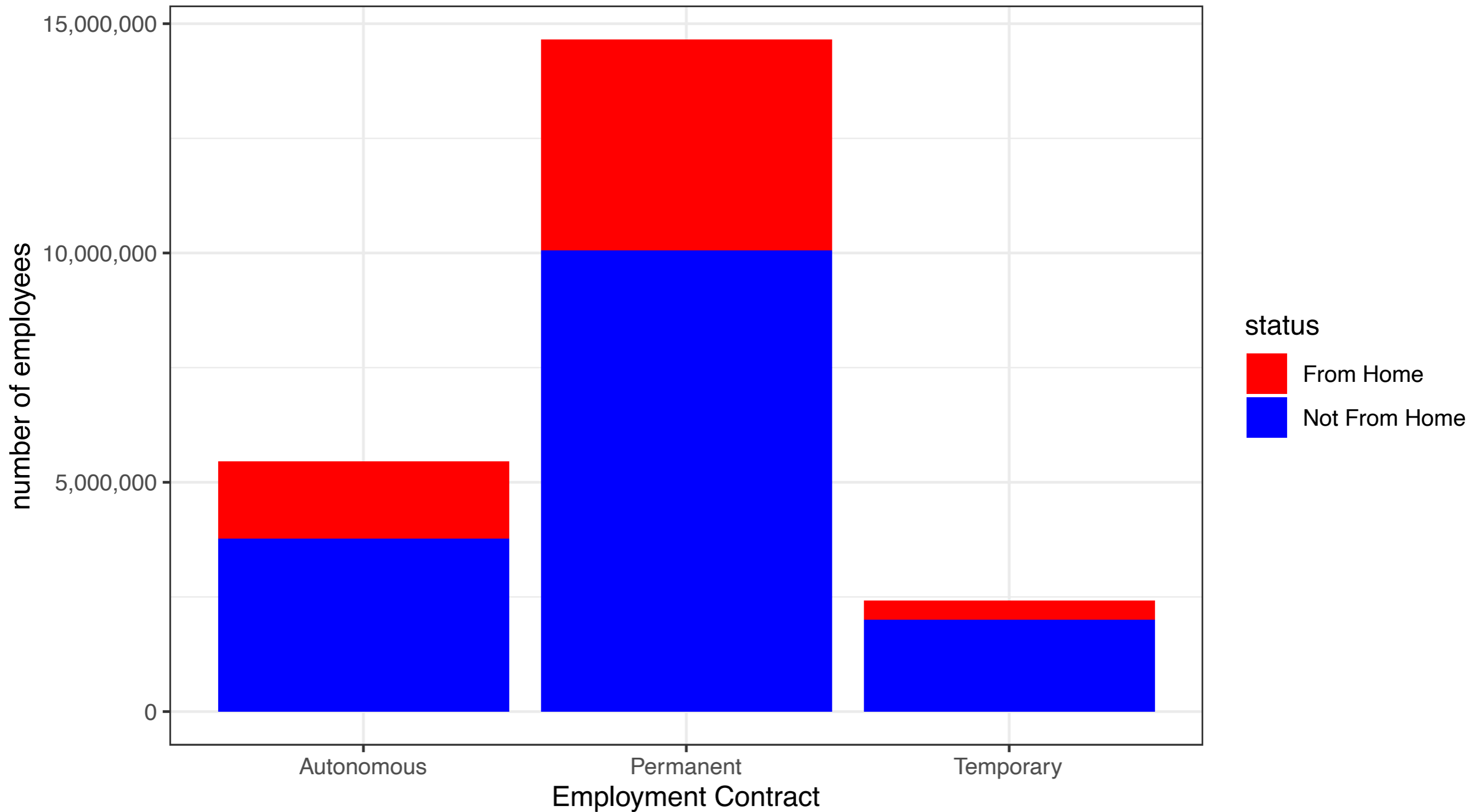


Health Risk

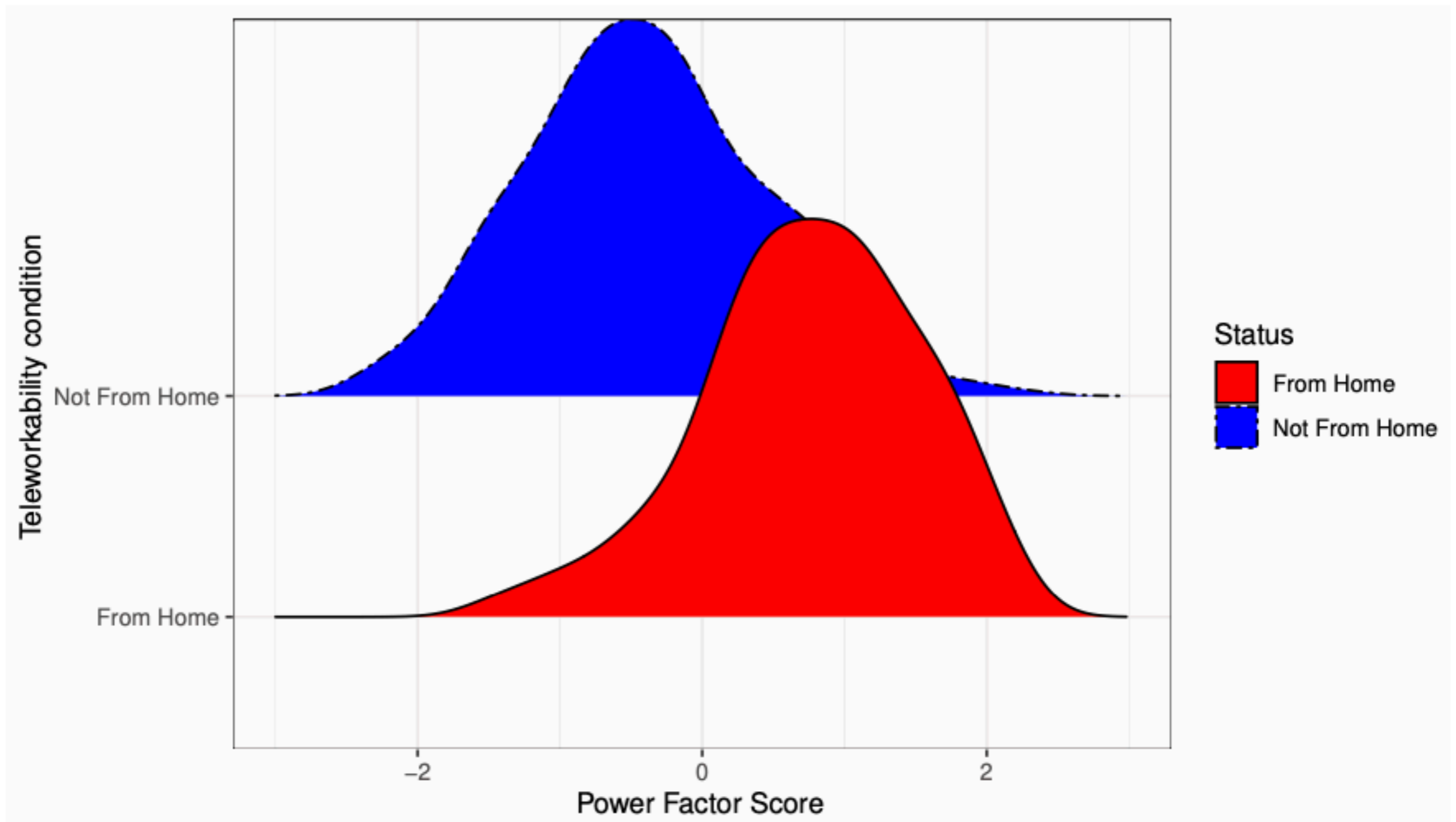
Health Risk	
Not From Home	1.169*** (4.74)
Female	-.445* (-1.95)
Permanent	.459** (2.61)
Degree	-1.470** (3.29)
Northern	.058 (-.34)
Sector	YES
N	485
<i>Robust standard errors</i>	
t statistics in parentheses *p < 0.05, **p < 0.01, ***p < 0.001	



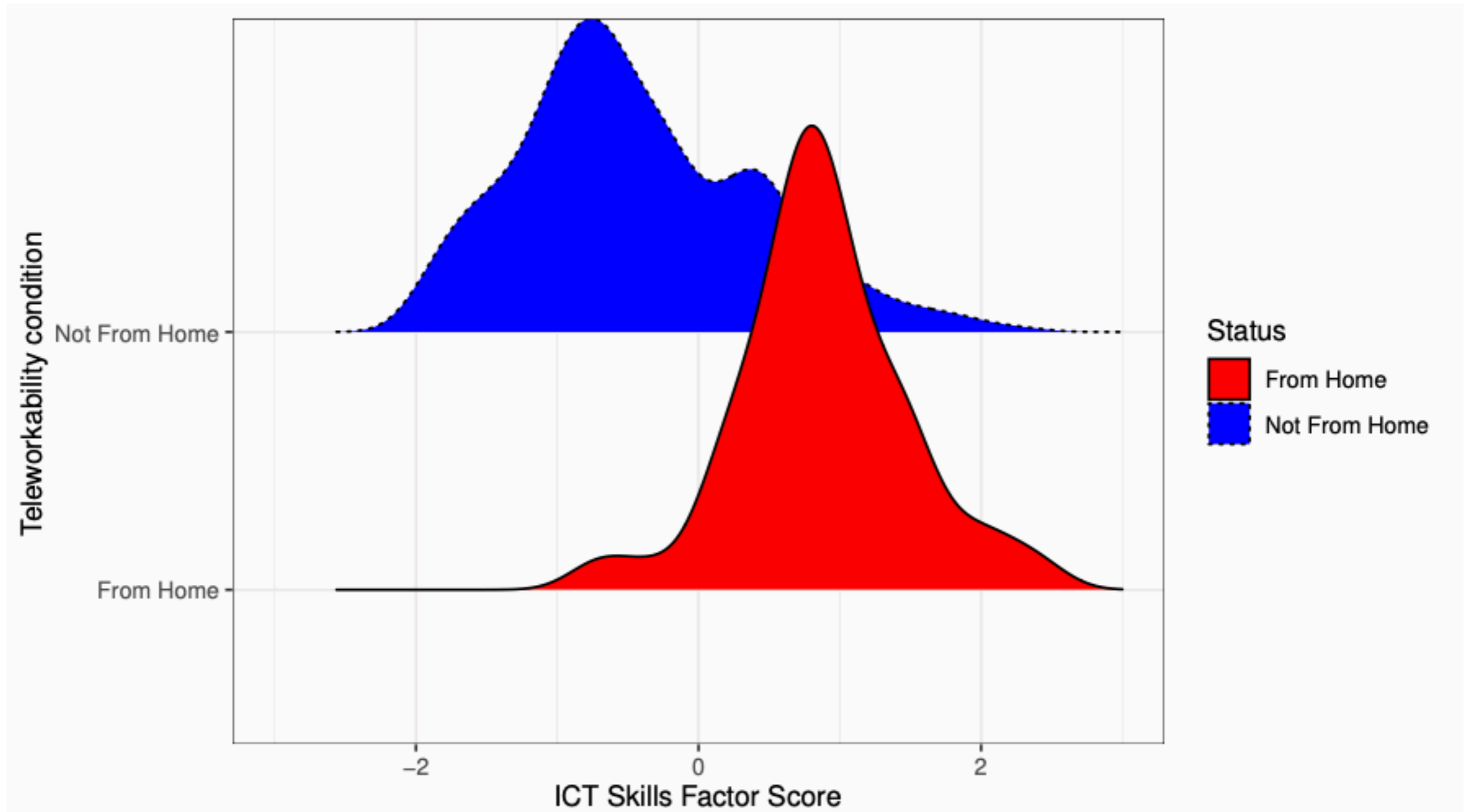
Contractual framework of *NFH* and *FH* workers

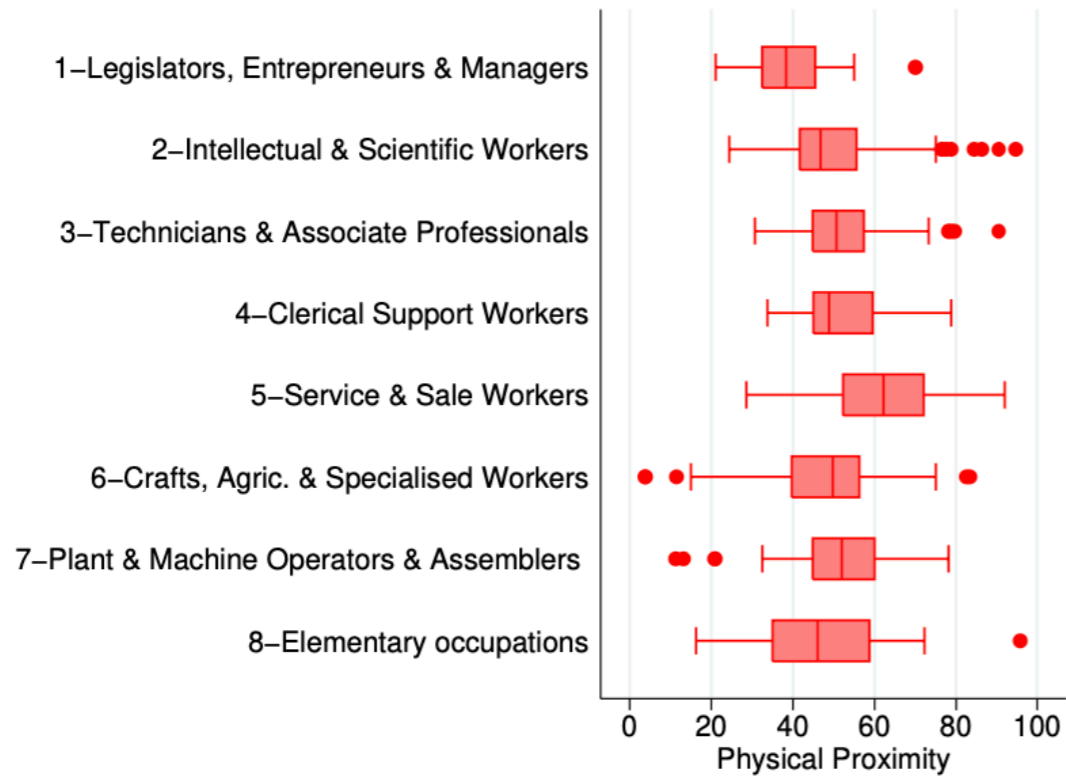


Kernel density distribution of the Power Factor Score for FH and NFH occupations

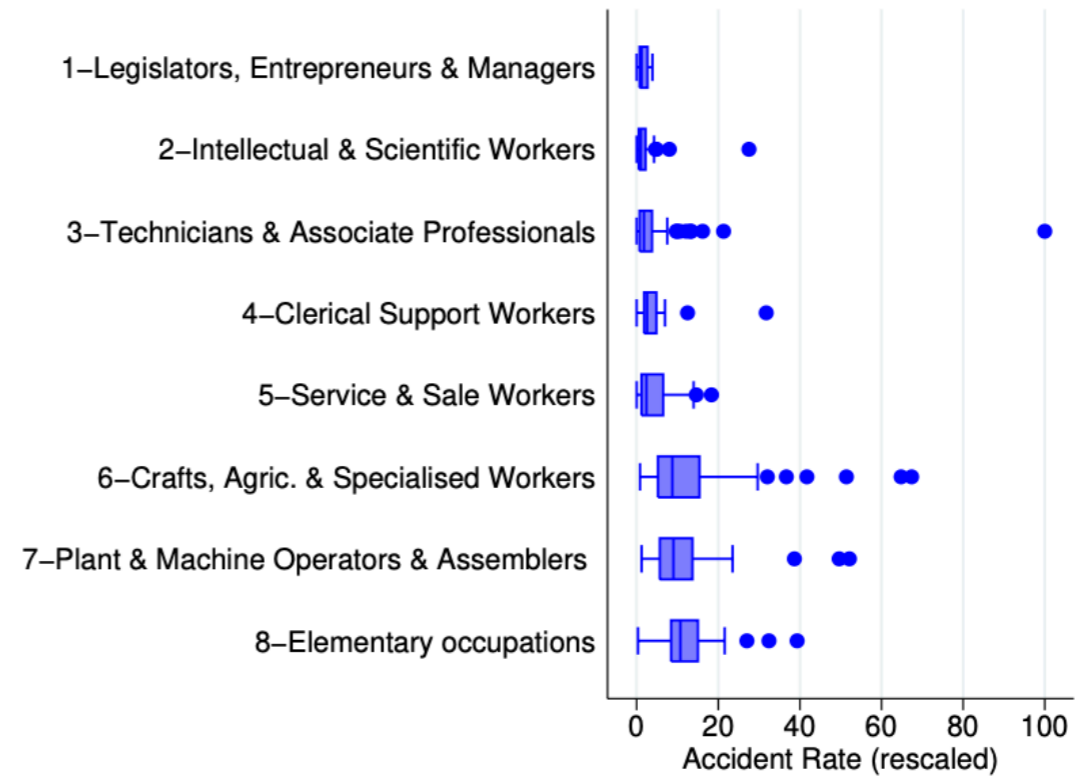


Kernel density distribution of the ICT Skills Factor Score for FH and NFH occupations

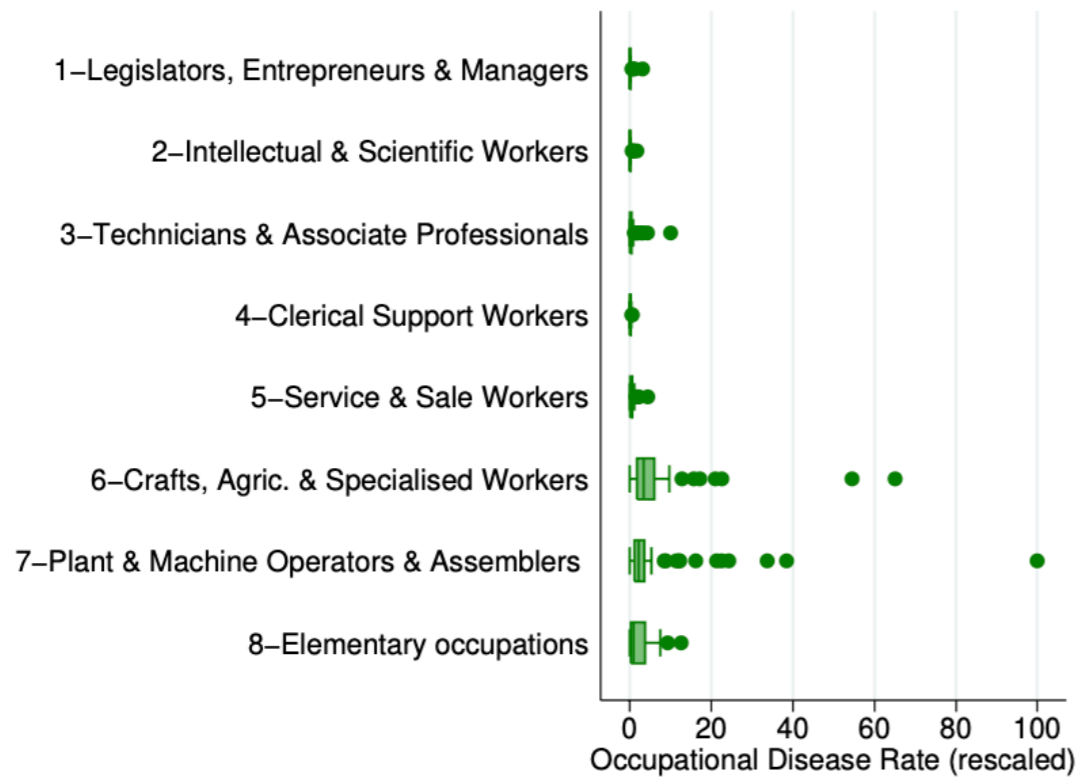




(a) Physical proximity



(b) Accident rate at work

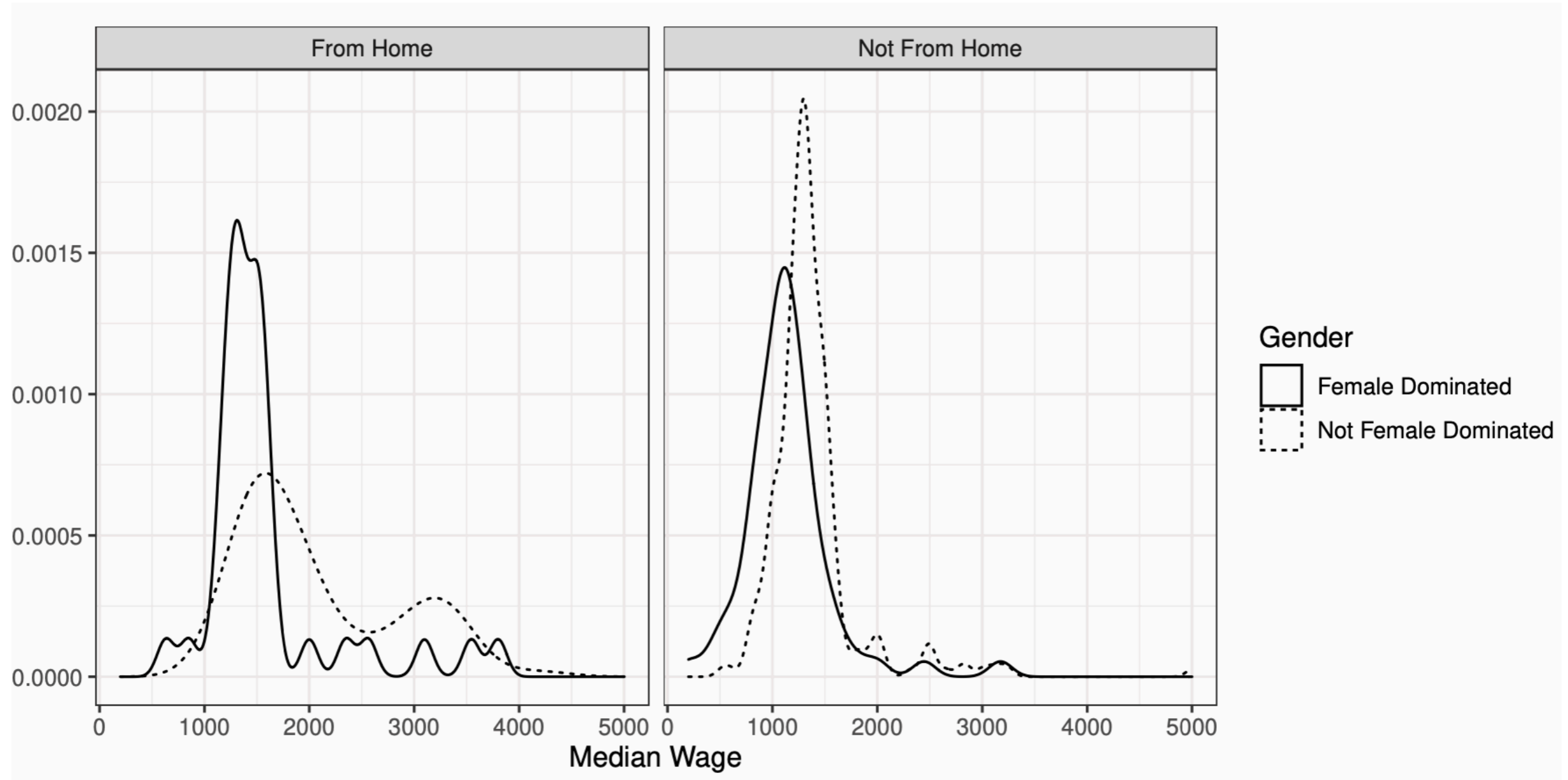


(c) Occupational disease rate

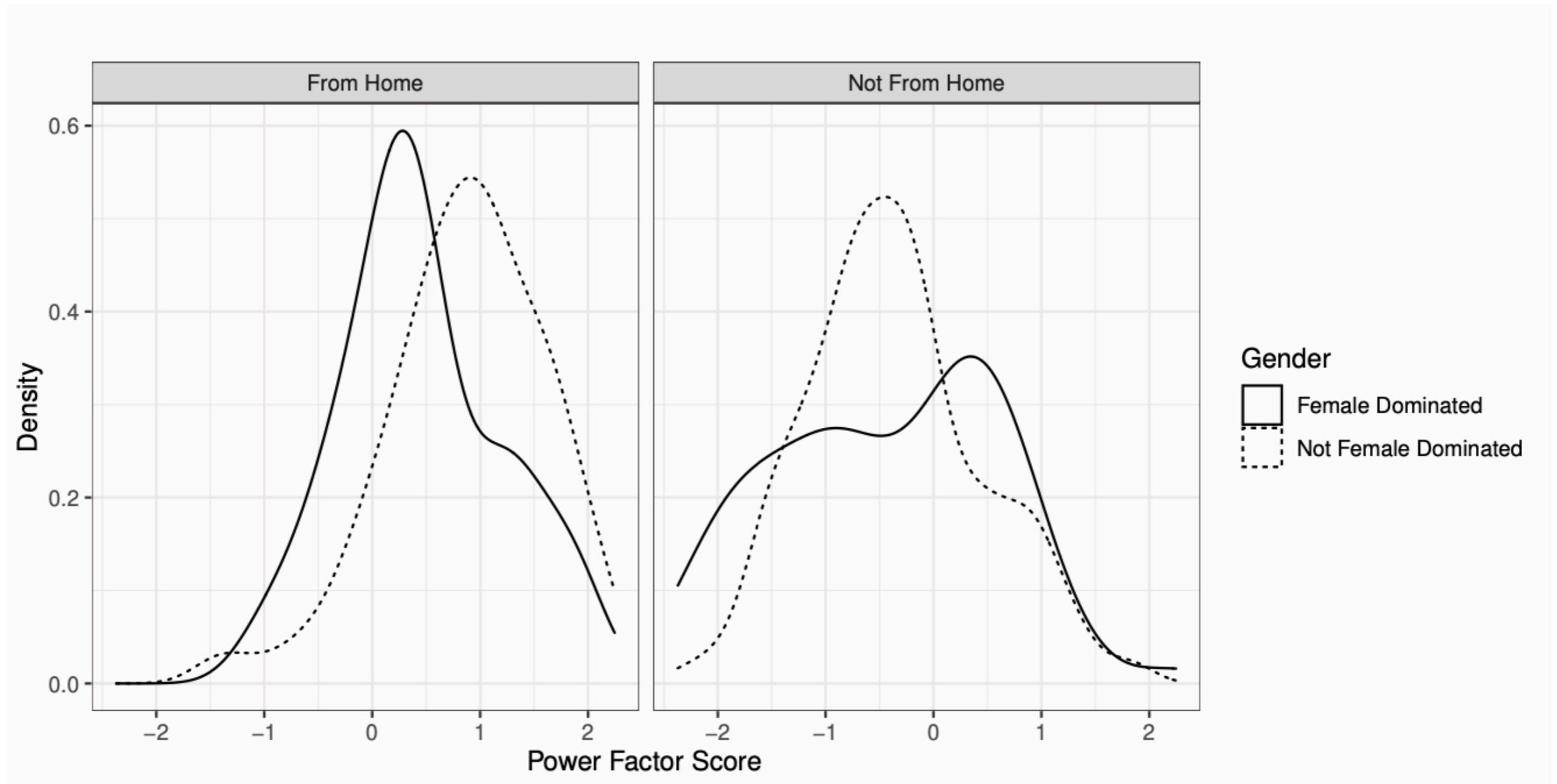


(d) Health risk

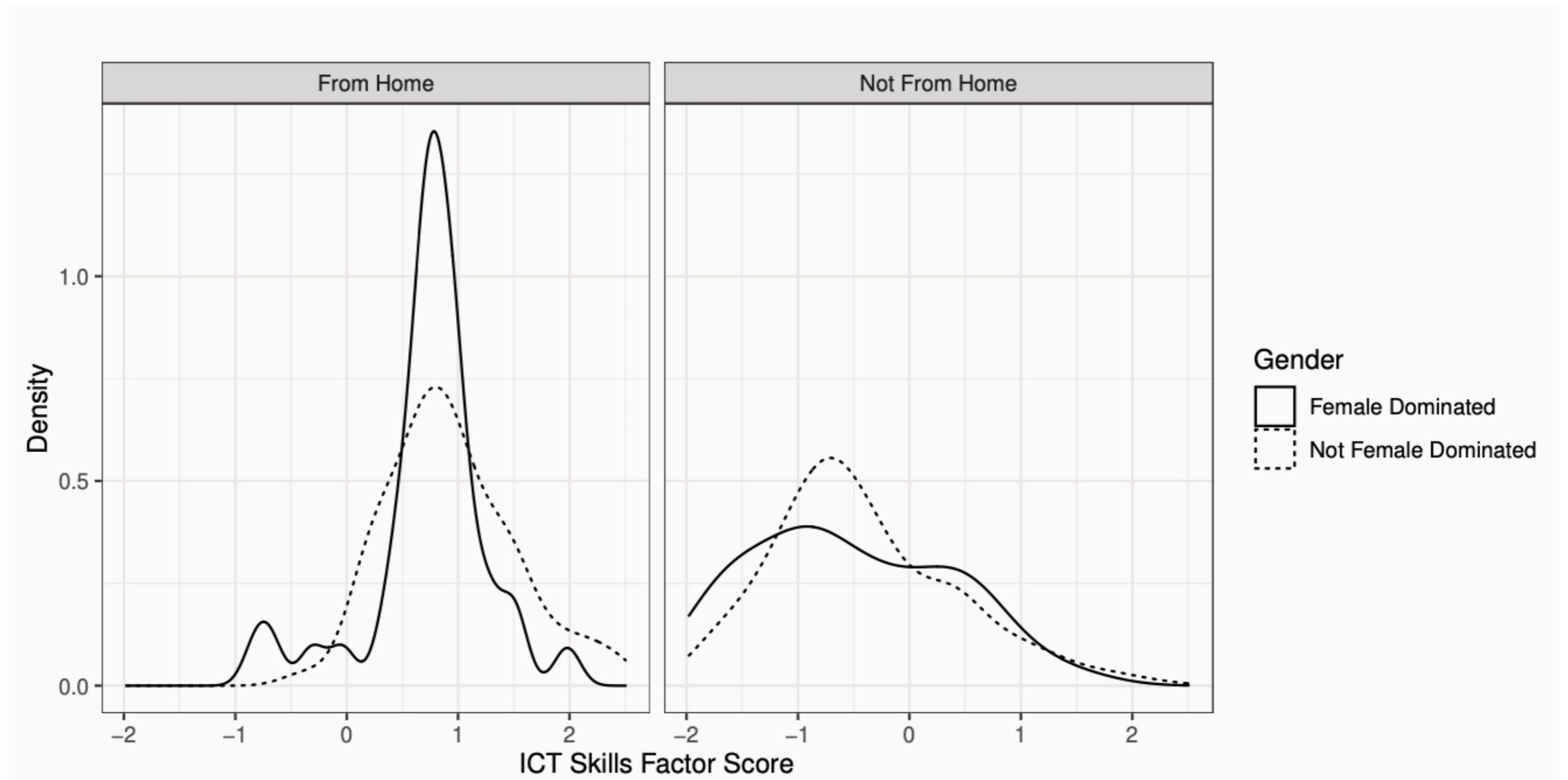
Wage distribution by gender for FH and NFH occupations



Power factor score by gender for FH and NFH occupations



ICT skills by gender for FH and NFH occupations



Occupations manually moved from one group to another

Occupation	Initial Group	Final Group
2311-Biologists, botanists, zoologists and similar professions	From home	Not from home
2312-Pharmacologists, bacteriologists and similar professions	From home	Not from home
2414-Laboratories and clinical pathologists	From home	Not from home
3426-Coaches and technicians competitive sports	From home	Not from home
5472-Funeral parlour attendants	From home	Not from home
8161-Buildings surveillance unqualified personnel	From home	Not from home
2551-Painters and sculptors	Not from home	From home
2554-Composers	Not from home	From home

Educators not working from home

Occupation	4-digit code
Lower secondary school teachers	2633
Primary school teachers	2641
Pre-primary school teachers	2642
Specialists in the education and training of people with disabilities	2651
Professors from academies, conservatories and assimilated educational institutions	2631
University professors in legal, political and social sciences	2617
University professors in antiquity, philological-literary and historical-artistic sciences	2614

Social contact intensity
among educators

