Labor Market Dynamics and Regional Fertility:
A Spatial Analysis for Germany

RC28 Summer Meeting

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Jobs & Children

- Unemployment (Adsera, 2004; Becker, 1961; Oppenheimer, 1994)
  - ➢ The relationships are gendered

- Uncertainty (Vignoli, D., *et al*, 2020)
  - ➢ Objective uncertainty vs subjective uncertainty

- Labor market dynamics
  - ➢ The drivers of employment fluctuation

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Labor Market Dynamics
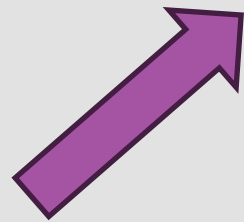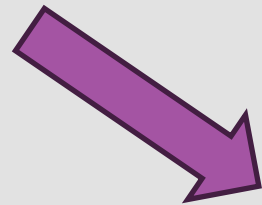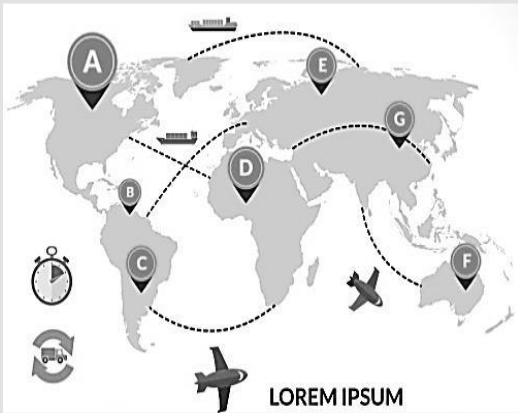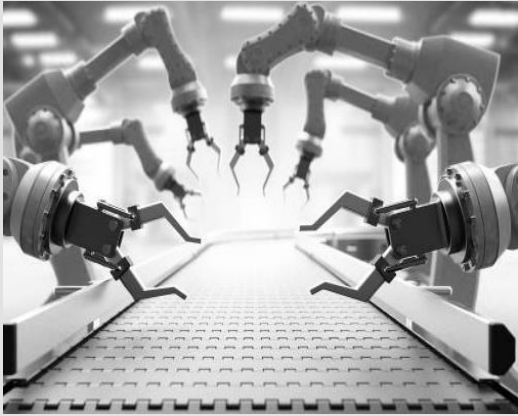
The *creation* and *destruction* of job opportunities

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Labor Market Dynamics

- Job Creation: gauges the ease with which an individual can secure his/her current job or transition to another one.
  - ➢ It's calculated by aggregating job gains from expanding industries within a specific region.
- Job Destruction measures the likelihood of an individual losing their current job.
  - ➢ It's calculated by aggregating job losses from contracting industries within a specific region.

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Research Questions and Hypotheses

- How do labor market dynamics affect regional fertility?
  - ➤ Job Creation
    - + Lower risks of job loss
    - + Career development opportunities
    - − Potential life adjustments
    - − Work-life conflicts

  - ➤ Job Destruction
    - − Objective job instability
    - − Subjective job insecurity
    - + Secure personal life through childbearing

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Research Questions and Hypotheses

➤ Do the effects vary by gender?

❖ The "modern" male breadwinner model in Germany
❖ Are men more affected by job loss?
❖ Gendered concentration in occupations and industries

❖ More women in the labor market, but still disadvantaged
❖ More social benefits for employed women
❖ Job loss as an opportunity for childbearing

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Data and Methodologies

- Employment data from 2008 to 2019 by industries (WZ2008~88 industries) are from the Federal Employment Agency of Germany
  - Only for workers who are subject to social security contribution
- Data on the rest of the variables were derived from the Regional Database Germany

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Data and Methodologies

- Labor market dynamics are measured for all workers, female workers solely, and male workers solely

- Spatial panel data modeling to identify the patterns of changes over time and space

  Spatial Durbin Model to account for
  - ✓ Diffusion of TFR
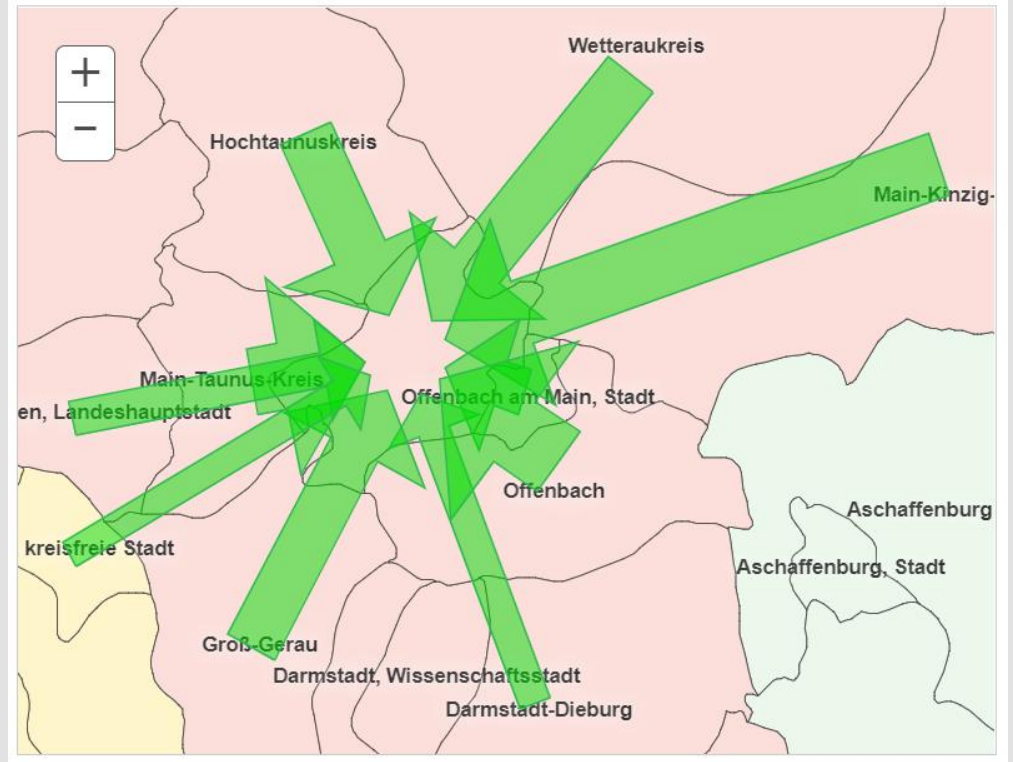 - ✓ Labor mobility and spillover of labor market changes

$$y_{it} = \delta \sum_{j=1}^{N} w_{ij} y_{jt} + x_{it} \beta + \sum_{j=1}^{N} w_{ij} x_{ijt} \gamma + \mu_i + \varepsilon_{it}$$

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Spatial Modeling

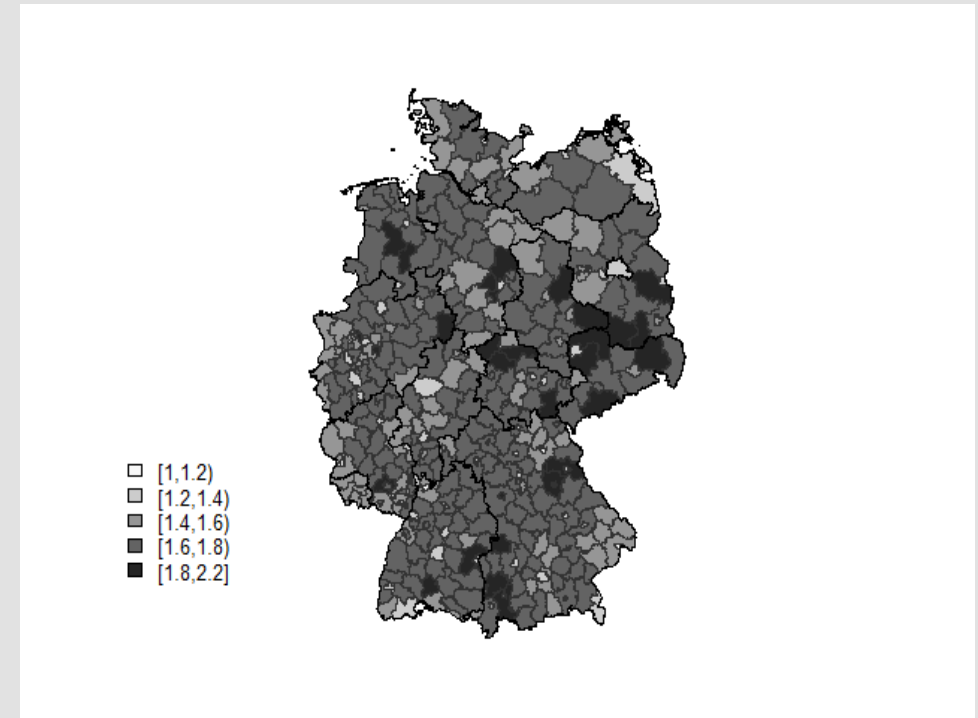Commuters from Frankfurt am Main, city
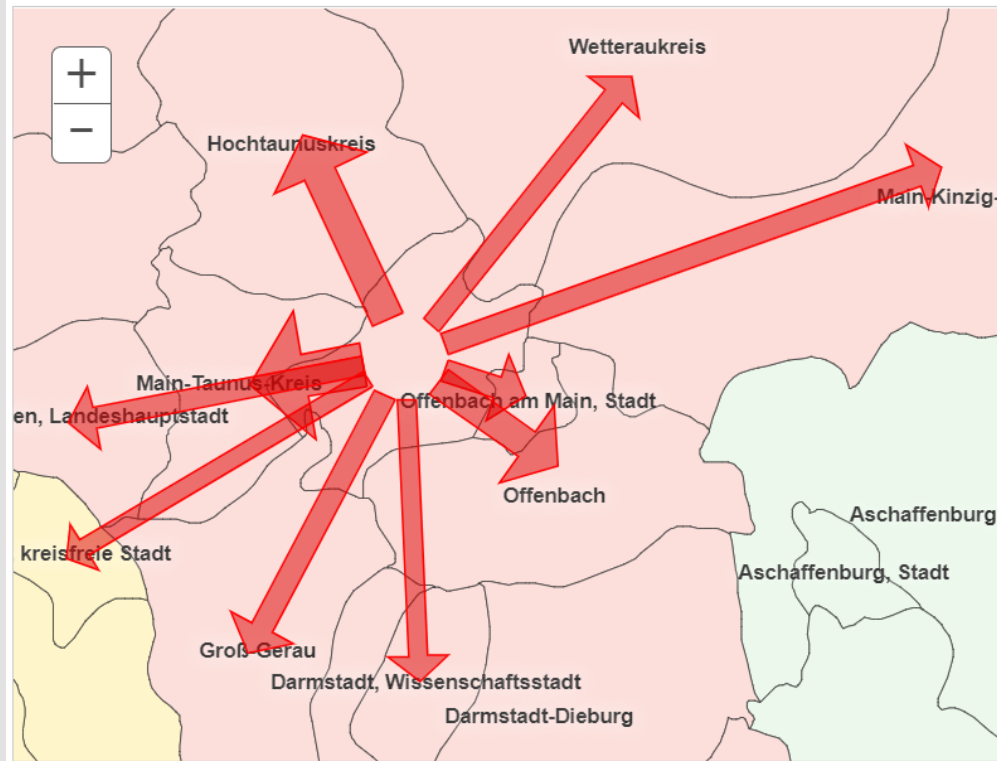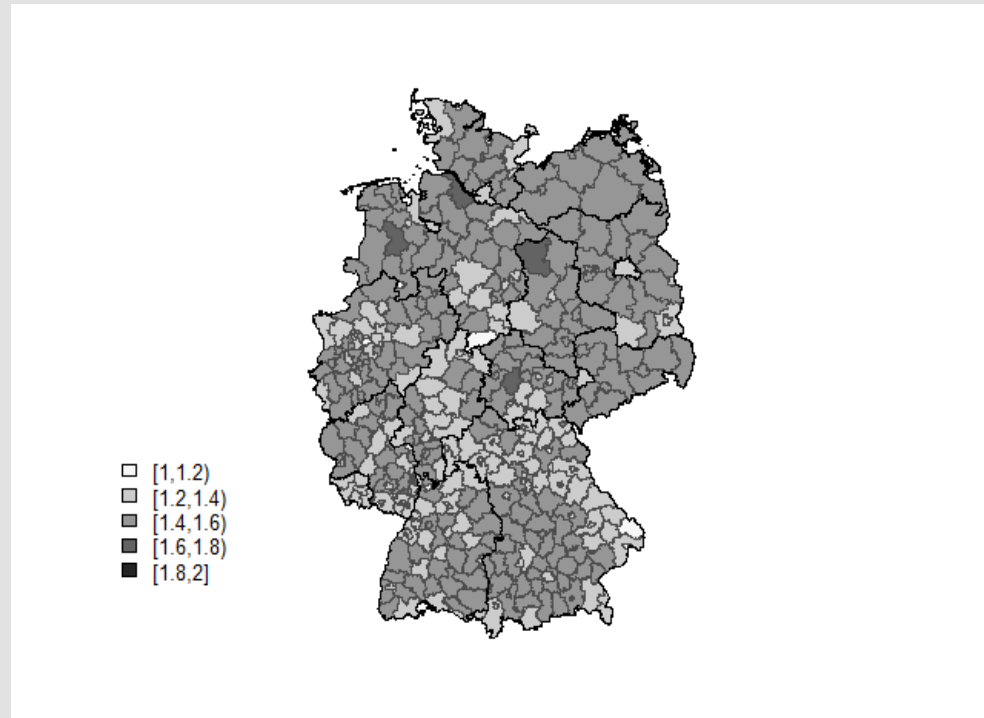

Commuters to Frankfurt am Main, city
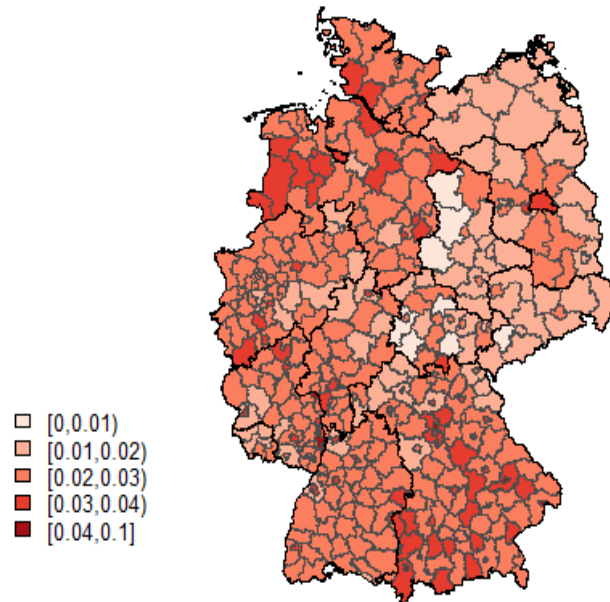
Regional Total Fertility Rate in Germany

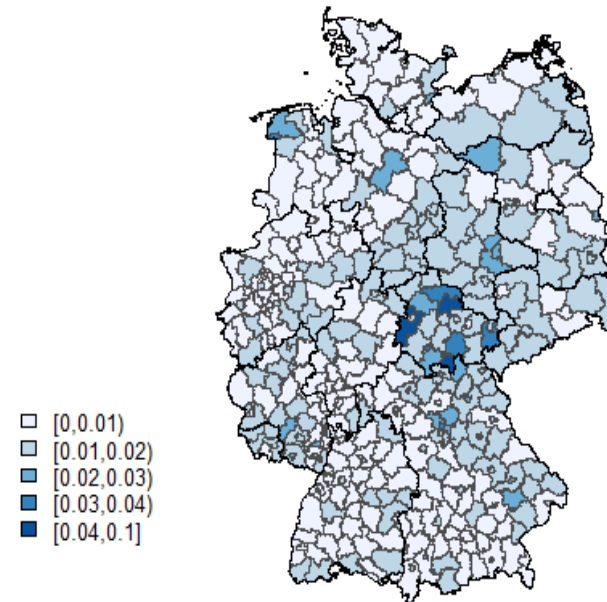**Regional TFR in Germany, 2010 and 2020**

Descriptive Results
Labor Market Dynamics for All Workers

Job Creation of All Workers, 2019
- [0,0.01)
- [0.01,0.02)
- [0.02,0.03)
- [0.03,0.04)
- [0.04,0.1]

Job Destruction of All Workers, 2019
- [0,0.01)
- [0.01,0.02)
- [0.02,0.03)
- [0.03,0.04)
- [0.04,0.1]

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Descriptive Results:
Gender-Specific Job Creation
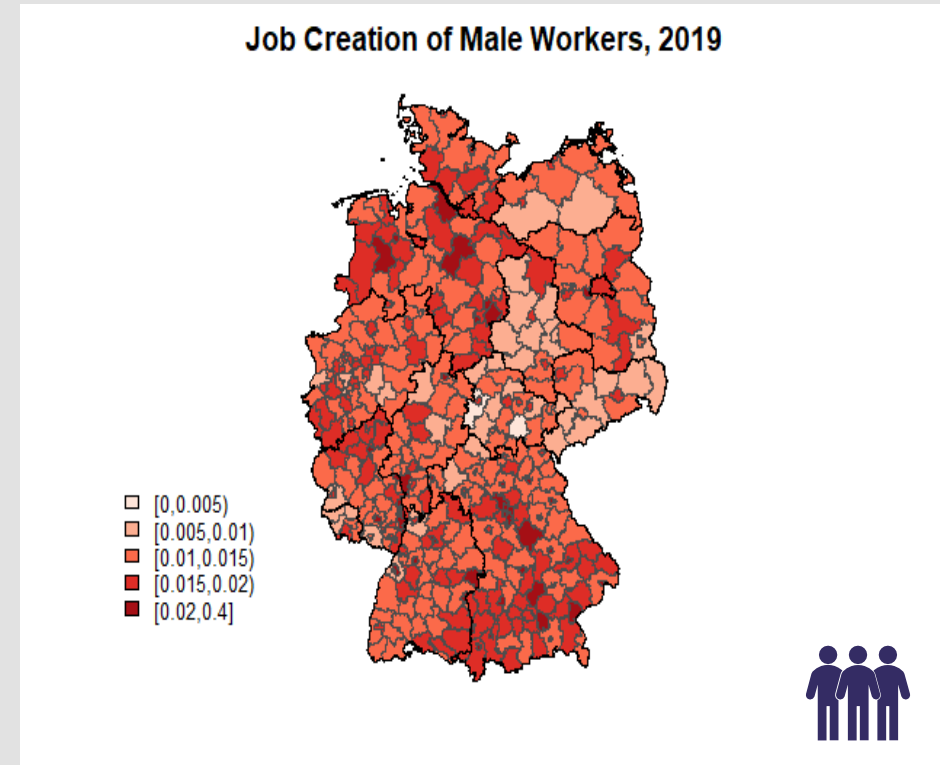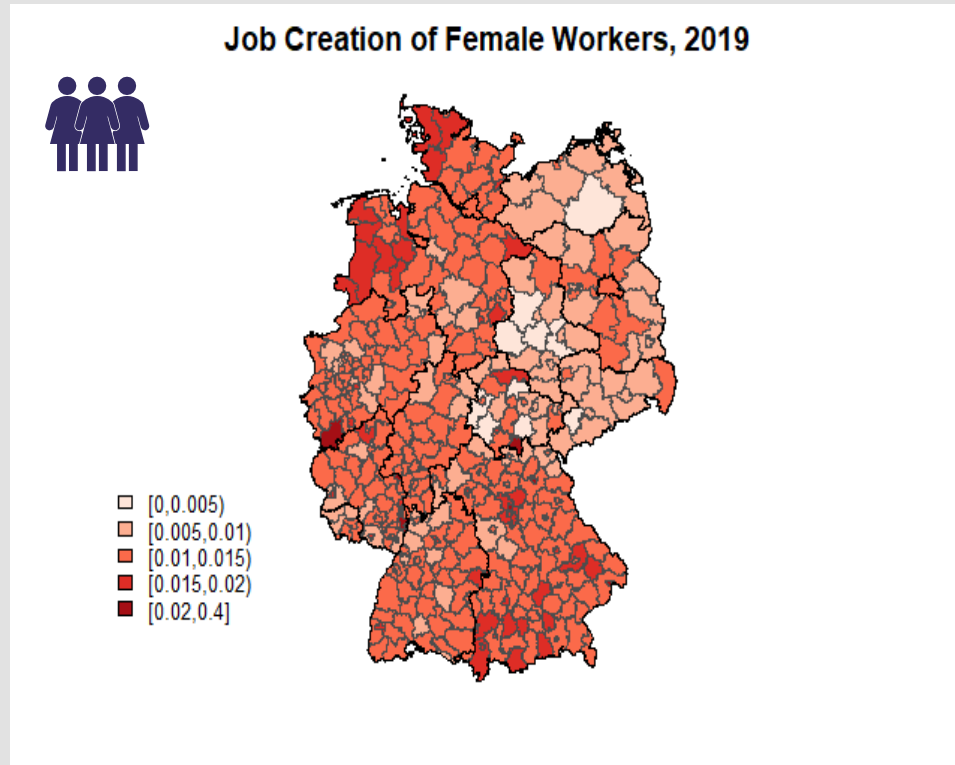
Descriptive Results:
Gender-Specific Job Destruction

Job Destruction of Female Workers, 2019

[0,0.005)
[0.005,0.01)
[0.01,0.015)
[0.015,0.02)
[0.02,0.3]

Job Destruction of Male Workers, 2019

[0,0.005)
[0.005,0.01)
[0.01,0.015)
[0.015,0.02)
[0.02,0.3]

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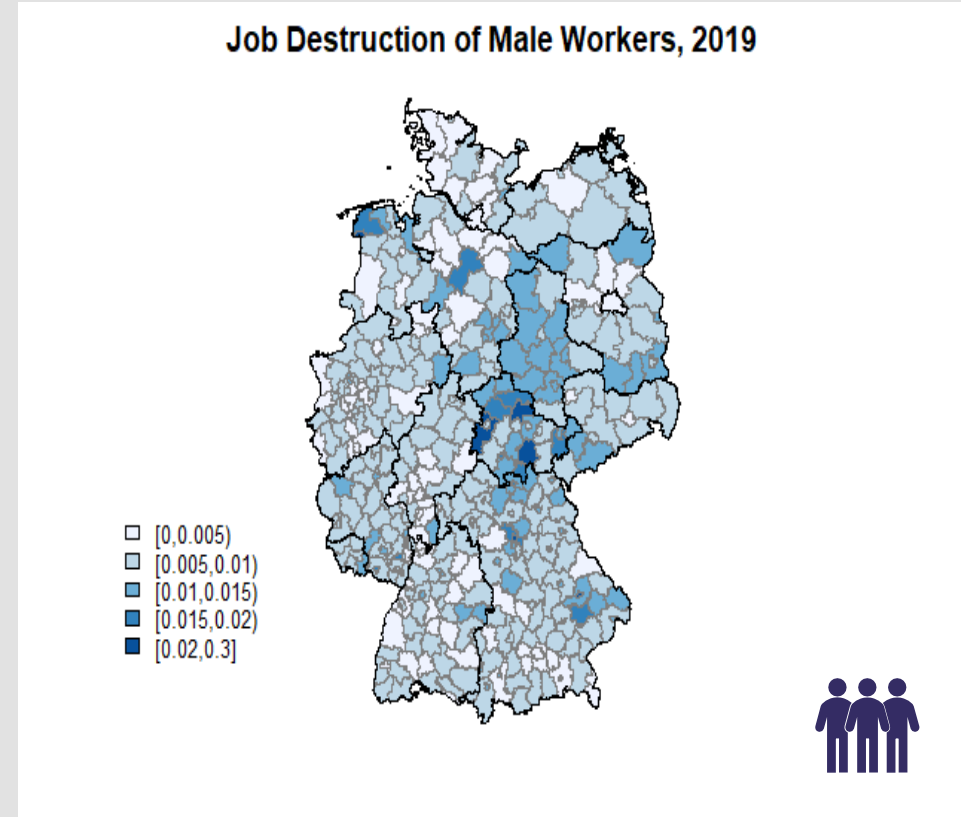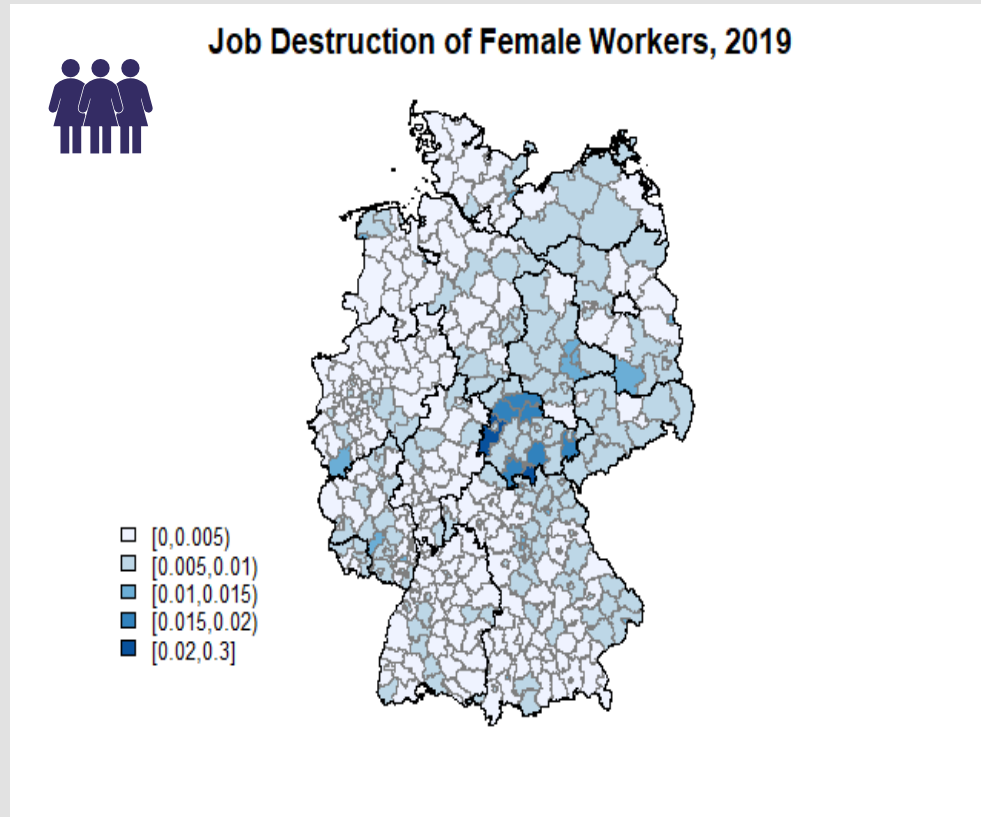
Result 1:
Labor Market Dynamics for All Workers

Dependent Variable: TFR	1	2	3
Job Creation	0.410*	0.335+	0.530**
Job Destruction	-0.514**	-0.502**	-0.585**
Job Creation (Spatial Lag)	-1.174***		-1.065***
Job Destruction (Spatial Lag)	0.347		-0.308
Year of Economic Crisis			-0.018***
Spatial Lag of TFR	0.094***		0.485***

Control variables:
Female labor force participation (20-30)
Log GDP per capita,
Housing Price,
Share of Expats at fertility ages

Additional variables for the robustness test:
The proportion of women between 20-45

Notes: Source: author's calculation based on data from the Federal Employment Agency of Germany and the Regional Database Germany.
Abbreviation: GDP: gross domestic product.
Significance levels: ✝ <10% * <5% ** <1% *** <0.1%

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Results 2:
Gender-Specific Labor Market Dynamics

Dependent Variable:	Models for Female Workers		Models for Male Workers	
TFR	4	5	6	7
Job Creation of Female/Male Workers	0.954**	1.056**	0.466+	0.401
Job Destruction of Female/Male Workers	-0.613	-1.131**	-0.870***	-0.751**
Female/Male Workers	-2.009**	-2.203***	-1.757***	-1.842***
Female/Male Workers (Spatial Lag)	0.629	0.985	0.487	0.635
Gender Employment Gap		-1.404***		-1.368***
Gender Employment Gap (Spatial lag)		0.506*		0.467*
Spatial Lag of TFR	0.095***	0.093***	0.092***	0.091***

Control variables:
Female labor force participation (20-30)
Log GDP per capita,
Housing Price,
Share of Expats at fertility ages

Additional variables for the robustness test:
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Direct Effect and Indirect Effect

$$y_{it} = \delta \sum_{j=1}^{N} w_{ij} y_{jt} + x_{it}\beta + \sum_{j=1}^{N} w_{ij} x_{ijt}\gamma + \mu_i + \varepsilon_{it}$$
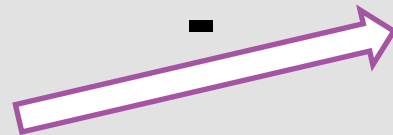
Independent Variable:

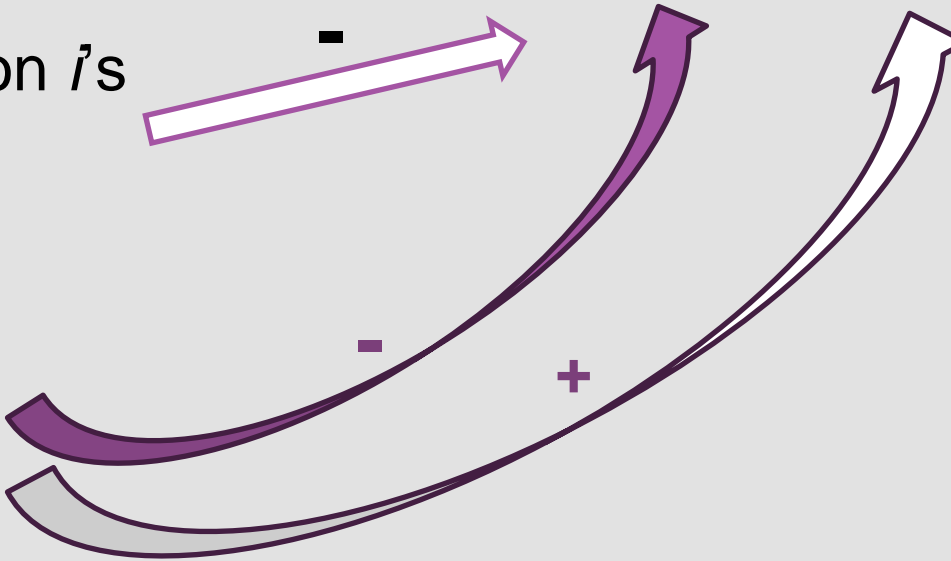**Dependent Variable:**

Job creation at region *i*

+

TFR of region *i*

Job creation of region *i*'s *neighboring* regions

-

-

+

TFR of region *i*'s *neighboring* regions

-

+

Direct effect

Indirect effect

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Results 3 :
Direct and Spillover Effects

Model	Labor Market Dynamics	Average Direct Effects	Average Indirect Effects	Average Total Effect
All Workers	Job Creation	0.3897	-0.0031	0.3866
	Job Destruction	-0.5090	0.0008	-0.5082
Female Workers	Job Creation	0.9187	-0.0052	0.9135
	Job Destruction	-0.6029	0.0015	-0.6014
Male Workers	Job Creation	0.4353	-0.0046	0.4306
	Job Destruction	-0.8630	0.0011	-0.8619

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Conclusion

➢ Overall, job creation has a positive effect on the regional total fertility rate, whereas job destruction has the opposite effect

➢ For female workers, the effect of job creation is more pronounced and stronger than that of job destruction;

➢ For male workers, job destruction plays a more essential role in fertility than job creation

➢ Controlling for the gender employment gap makes the effects of labor market dynamics stronger for women and weaker for men

Thank you for your attention!

Labor Market Dynamics

Figure 1 National Level Labor Market Dynamics in Germany 2009-2019

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