The Fertility Effects of Remote Work

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Can remote work affect fertility?

- Birth rates have been low for decades
- One reason: combining a career and family is difficult

- The way we work has changed
- Working from home:
  - \+ More flexibility, less commuting
  - – Blurred boundaries, more work-family conflict

WFH → fertility ↑ or ↓?

This paper

- **Research question**: Does greater exposure to remote work affect fertility?
- **Data**: Administrative records from a large German statutory health insurer: 684,520 employed women from 2018–2024
- **Empirical strategy**: Covid–19 Pandemic as a natural experiment for remote work adoption
- DiD that compares fertility outcomes across women with different WFH potential before and after the pandemic

Preview: Findings

On average, ↑ WFH potential does not change the probability of giving birth

↑ WFH potential has **positive** effect on **first** births among women in their 20s and a **negative** effect on births for women in their 30s

Interpretation: WFH may help some women start a family but does not necessarily lead to larger families

Related evidence and contribution

WFH & Fertility Literature:

- Davis et al. (2026): positive WFH–fertility association investigating 38 countries
- US: mixed results: Johnston (2026) **–** , Lu et al. (2026) **+**

→ I provide causal evidence on when (and why) we observe each of the fertility responses and what role child care plays.

Data

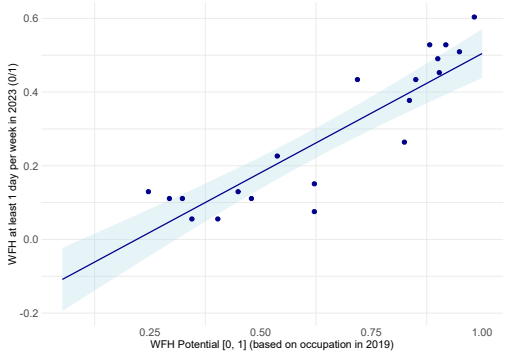
Statutory health insurance data

- Mandatory enrollment in health insurance: ~90% enrolled in statutory health insurance
- Second-largest statutory health care insurer (8.3 million insured nationwide)
- Sample restrictions: women of childbearing-age employed on January 1, 2020
- Balanced panel: 684,520 women and 84 calendar months (N=57,499,680) Descriptives
- Outpatient and hospital records, incl. diagnoses (ICD-10), sick leave Details
- Sociodemographic characteristics: year of birth, place of residence, occupation, education, industry
- No information on actual WFH

Occupation-specific WFH Potential Index

- **WFH potential**: share of jobs in an occupation that can be performed from home (Alipour et al., 2023)
- WFH potential is assigned based on occupation a woman held on January 1, 2020

First-stage relationship: WFH potential & actual WFH usage in 2023



Note: Binned scatter plot of actual WFH usage in 2023 against WFH potential [0,1]. Outcome is a dummy for working remotely at least one day per week. Observations are grouped into equal-sized bins. 95% CIs based on standard errors clustered by 3-digit occupation. *Source:* SOEP, Version 40.1.

Empirical strategy

Dynamic DiD specification

$$y_{it} = \sum_{q \neq 2019Q4} \beta^q \mathbb{1}\big(\text{quarter}(t) = q\big) \times WFH_{s(i)} + \gamma_i + \gamma_t + \varepsilon_{it} \quad (1)$$

- y_{it} woman i gives birth (dummy) (in quarter *birthmonth* – 9)
- $WFH_{s(i)}$ treatment: WFH potential of i's occupation s (as of January 1, 2020)
- γ_i individual fixed effects
- γ_t time fixed effects (with Q4 2019 as a reference)

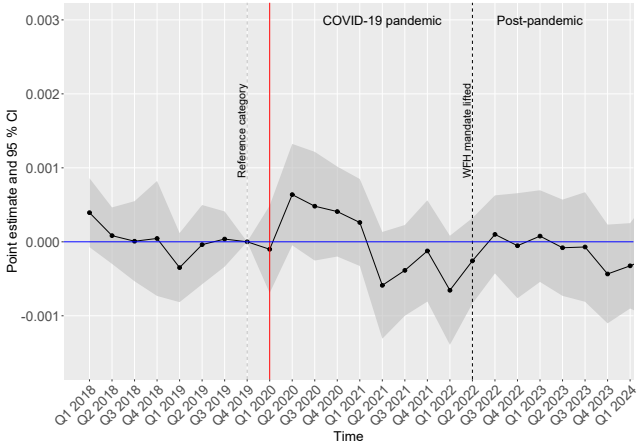
β^q – differences in births across i-s with different $WFH_{s(i)}$ between quarter q and Q4 2019
– ITT effect of an increase in $WFH_{s(i)}$ from zero to one

Standard errors clustered by 3-digit occupation, i.e., level of treatment assignment (Abadie et al., 2023)

Results

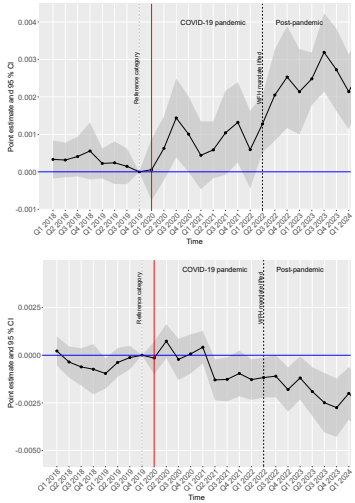
Effect of WFH potential on birth probability

ES (unadjusted)



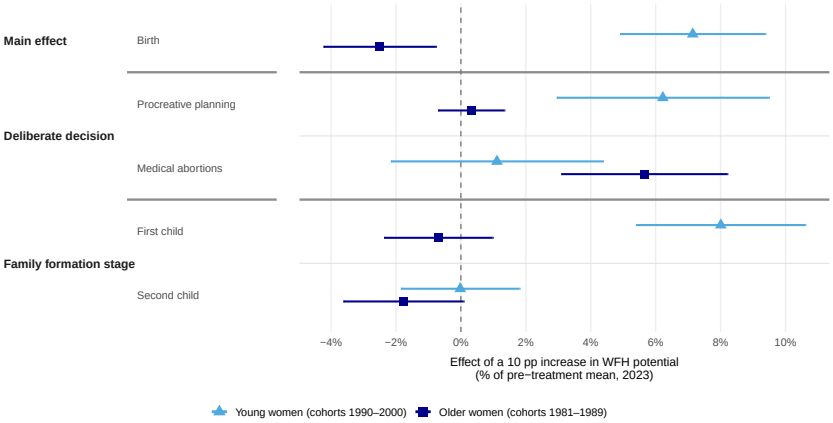
Effect of WFH potential on birth probability by age

Num. of Children



	Birth		
	(1) 20–39	(2) 20–30	(3) 31–39
WFH Potential			
× 2018	0.0002	0.0003	−0.0000
	(0.0001)	(0.0002)	(0.0003)
× 2020	0.0004***	0.0006**	0.0005
	(0.0002)	(0.0003)	(0.0003)
× 2021	−0.0001	0.0007**	−0.0004
	(0.0002)	(0.0003)	(0.0004)
× 2022	−0.0001	0.0015***	−0.0010**
	(0.0002)	(0.0004)	(0.0005)
× 2023	−0.0000	0.0025***	−0.0017***
	(0.0002)	(0.0004)	(0.0006)
Effect Size 2023 (%)	**−0.00**	**7.14**	**−2.51**
Mean dep. var.	0.0053	0.0035	0.0068
Individual FE	684,520	323,657	360,863
Time FE	✓	✓	✓

Mechanism



▸ Table

▸ Table

▸ ES 1990–2000

▸ ES 1981–1989

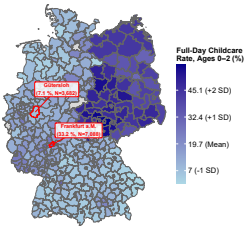
Mechanism: Does WFH substitute for missing childcare?

Unmet Demand

Why does WFH raise fertility for younger women?

- Entering motherhood is hard if work and childcare cannot be combined because public childcare is scarce

Full-day care *(district)*



Share of ages 0–2 in ≥7h/day care, 2019 (fixed & standardized)

	Birth	
	(1) 20–30	(2) 31–39
WFH Potential		
× 2018	0.0001	0.0003
× 2022	0.0013***	−0.0012**
× 2023	0.0022***	−0.0018***
WFH Potential × Full-Day Care (reversed)		
× 2018	0.0003	−0.0004**
	(0.0002)	(0.0002)
× 2022	0.0006**	−0.0003
	(0.0003)	(0.0002)
× 2023	**0.0007*** **	**−0.0002**
	(0.0002)	**(0.0002)**
Individual FE	306,598	341,826
District × Time FE	✓	✓

Full–Day Care (reversed): proxy for low childcare availability

Robustness

- **Time-varying confounders?** Interacted FE: age, education, age × education, industry, state, requirement level, occupation, state × requirement level × education × age, and state × age × industry × requirement level × education, each × time 20–39 20–30 31–39
- **Employment stability?** Unemployment as outcome
- **Income uncertainty?** Short-time work (*Kurzarbeit*) as outcome
- **Both jointly?** Add unemployment & short-time work as time-varying controls
- **Health, not fertility decisions?** Maternal health & early pregnancy loss as outcomes
- **Artifact of 9-month backdating?** Outcomes observed earlier in gestation
- **Mechanical convergence of age groups?** Age-varying instead of fixed-cohort sample
- **Differential attrition from the insurer?** Re-estimate on continuously insured subsample

Conclusion

Conclusion

→ I study how exposure to the **pandemic-induced shift to remote work** affected **fertility**, comparing women in occupations that differed in their pre-pandemic potential to work from home

→ I find **no effect on average**, but:
WFH potential ↑ first births among women in their 20s and
↓ births among women in their 30s

→ WFH may help women **start** a family, but does not necessarily lead to **larger** families

Thank you!

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Covid-19 in Germany

Timeline

- Spring 2020 (1st wave): broad contact restrictions, school & entire sector closures; push to WFH
- Winter 2020/21-Spring 2021 (2nd wave): renewed, stricter containment & stay-at-home orders
- New post-2020: **AU certificate over the phone**, but only for first-time AU up to 5 days and minor illnesses without severe symptoms; 0.9% of all AU certificates (Zi Berlin, 2025)
- Jan 2021-Mar 2022: **legal duty to offer WFH** where possible
- 2023: Tax incentive for WFH days (*Homeoffice-Pauschale*) made permanent; as an alternative to the deduction of commuting costs within the commuter allowance (*Pendlerpauschale*)

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Short-time work (STW, *Kurzarbeit*)

- Germany heavily relies on STW to prevent mass layoffs during economic crises
- Partial wage replacement for temporarily reduced working hours
- At peak of Covid-19, ca. **1/3 of workforce affected by STW**, sector-specific differences

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Implications for our analysis:

- **2020–2021**: estimates reflect a sudden WFH adoption plus public-health emergency restrictions and STW (potential confounders, which we try to address)
- **2022–2023**: estimates are more informative about the effects of sustained WFH adoption

Sample means: Socioeconomic characteristics (on January 1, 2020)

	All		Low WFH Potential		High WFH Potential	
	Mean	SD	Mean	SD	Mean	SD
Age	30.611	5.44	30.317	5.609	30.848	5.288
School Degree: No School Degree	0.006		0.011		0.002	
School Degree: Secondary School *(Hauptschule)*	0.076		0.131		0.032	
School Degree: Intermediate *(*Mittlere Reife)	0.314		0.368		0.271	
School Degree: High School Diploma *(*Abitur)	0.423		0.26		0.555	
School Degree: Unknown	0.18		0.23		0.14	
Vocational Qualification: None	0.131		0.158		0.108	
Vocational Qualification: Vocational Training (incl. Master Craftsman)	0.544		0.586		0.510	
Vocational Qualification: Bachelor & Diploma & Master	0.196		0.062		0.255	
Vocational Qualification: Unknown	0.15		0.186		0.12	
Occupation: Agriculture, forestry, animal husbandry, landscaping	0.011		0.018		0.004	
Occupation: Extraction of raw materials, production, manufacturing	0.167		0.242		0.092	
Occupation: Construction and architecture	0.041		0.071		0.011	
Occupation: Natural sciences, geography, information technology	0.032		0.014		0.050	
Occupation: Transportation, logistics, protection and security	0.110		0.203		0.019	
Occupation: Commercial services, trade in goods, tourism	0.128		0.184		0.074	
Occupation: Business organization, accounting, law, administration	0.232		0.000		0.460	
Occupation: Health, social work, teaching, education	0.247		0.267		0.227	
Occupation: Literature, social and economic sciences, media, culture	0.032		0.001		0.063	

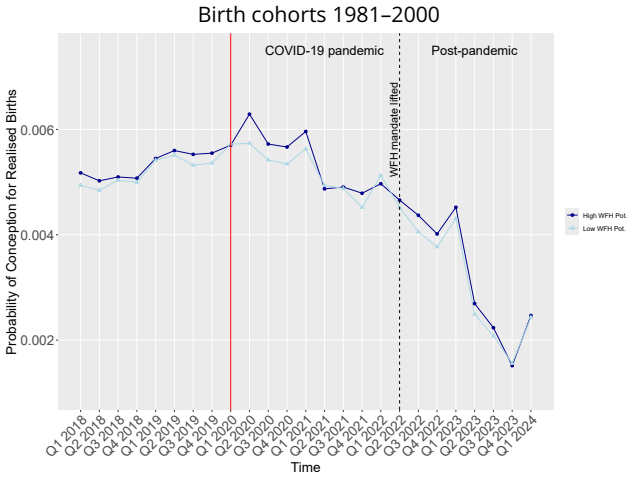
Sample means: Outcomes & Treatment

Variable	All		Low WFH Potential		High WFH Potential	
	Mean	SD	Mean	SD	Mean	SD
Outcomes (2018-2023)						
Probability of giving birth during month in 2018	0.005	0.069	0.005	0.069	0.005	0.069
Probability of giving birth during month in 2019	0.005	0.071	0.005	0.071	0.005	0.072
Probability of giving birth during month in 2020	0.006	0.074	0.005	0.074	0.006	0.075
Probability of giving birth during month in 2021	0.006	0.076	0.006	0.074	0.006	0.077
Probability of giving birth during month in 2022	0.005	0.07	0.005	0.07	0.005	0.07
Probability of giving birth during month in 2023	0.004	0.065	0.004	0.064	0.004	0.066
Probability of giving birth during month in 2024	0.002	0.047	0.002	0.046	0.002	0.047
Probability of conceiving during month in 2018	0.005	0.071	0.005	0.07	0.005	0.071
Probability of conceiving during month in 2019	0.005	0.074	0.005	0.073	0.006	0.074
Probability of conceiving during month in 2020	0.006	0.075	0.006	0.074	0.006	0.076
Probability of conceiving during month in 2021	0.005	0.071	0.005	0.07	0.005	0.072
Probability of conceiving during month in 2022	0.004	0.067	0.004	0.066	0.005	0.067
Probability of conceiving during month in 2023	0.003	0.052	0.003	0.051	0.003	0.052
Treatment (on January 1, 2020)						
Work from home (WFH) feasibility	0.63	0.243	0.388	0.092	0.825	0.118
Individuals	684,520		342.260		342.260	

Sample means: Comparison of BARMER and SOEP samples

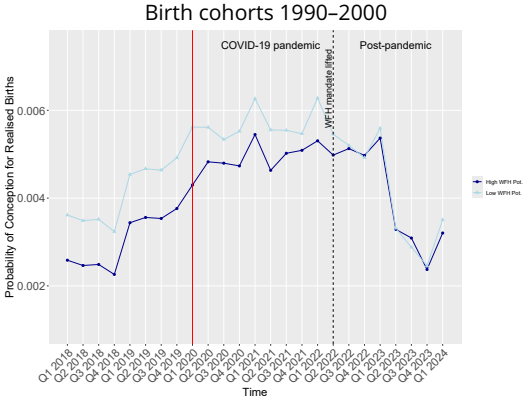
	BARMER		SOEP	
	(1) Mean	(2) SD	(3) Mean	(4) SD
Sociodemographic characteristics				
Age	30.372	6.015	30.611	5.44
School Degree: Unknown	0.000		0.180	
School Degree: No School Degree	0.022		0.006	
School Degree: Secondary School (Hauptschule)	0.091		0.076	
School Degree: Intermediate (Mittlere Reife)	0.256		0.314	
School Degree: High School Diploma (Abitur)	0.424		0.423	
Occupation: Agriculture, forestry, animal husbandry and landscaping	0.008		0.009	
Occupation: Extraction of raw materials, production and manufacturing	0.065		0.060	
Occupation: Construction and architecture	0.007		0.009	
Occupation: Natural sciences, geography and information technology	0.023		0.022	
Occupation: Transportation, logistics, protection and security	0.079		0.044	
Occupation: Commercial services, trade in goods, tourism	0.185		0.159	
Occupation: Business organization, accounting, law and administration	0.221		0.280	
Occupation: Health, social work, teaching, education	0.369		0.373	
Occupation: Literature, social and economic sciences, media, culture	0.040		0.045	
Treatment				
WFH potential (3-digit occupation)	0.607	0.254	0.630	0.243

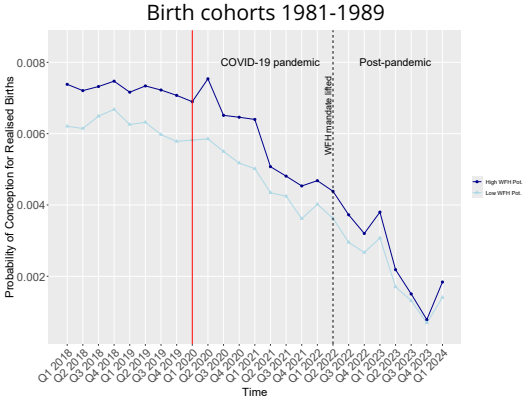
Outcome: quarterly probability of birth



- Main outcome: birth (0/1) in a calendar month, backdated 9 months → proxies month of conception
- > 98% of German deliveries occur in hospitals
- Plotted quarterly by high vs low WFH potential (defined as WFH potential > or < as the median WFH potential)
- De-seasonalized: net of occupation-specific calendar-month FE (2018–19)

Outcome: quarterly probability of birth by age





- Split by stage of family formation: mean age at first birth in Germany is 30.2 (2020) → younger group mostly before, older group mostly after first birth

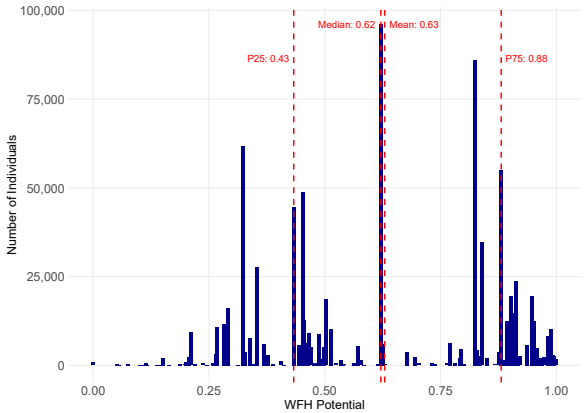
Occupation-specific WFH Potential Index

- 2018 BIBB/BAuA Employment Survey
  - Representative sample of ~20,000 employees
  - Q1: *Do you work from home, even if only occasionally?* Yes/No
  - Q2: *If your employer would allow you to work from home, even temporarily, would you accept the offer?* Yes/No/Not possible in my job type

- **Individual WFH feasibility**: respondent works from home (Q1 → Yes) OR does not rule out the feasibility of WFH in his/her job (Q2 → Yes/No)
- Hypothetical WFH feasibility, i.e., independent of the actual usage & measured pre-2020

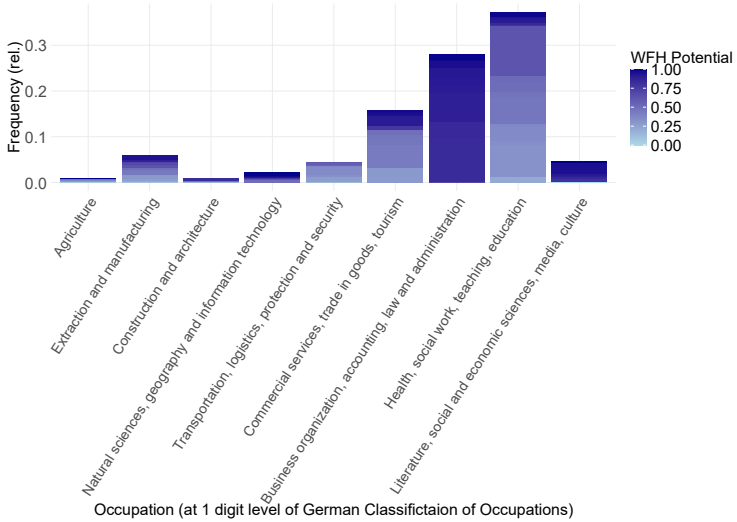
- Estimate the **occupation-specific WFH potential** as a fraction of individuals with a WFH feasible job within a given occupation; continuous index $\in [0, 1]$
- Largely following Alipour et al. (2023), but aggregated at the KldB 3-digit level (139 occupations)
- Strong predictor of actual WFH usage after 2020

Distribution of WFH potential (on January 1, 2020)

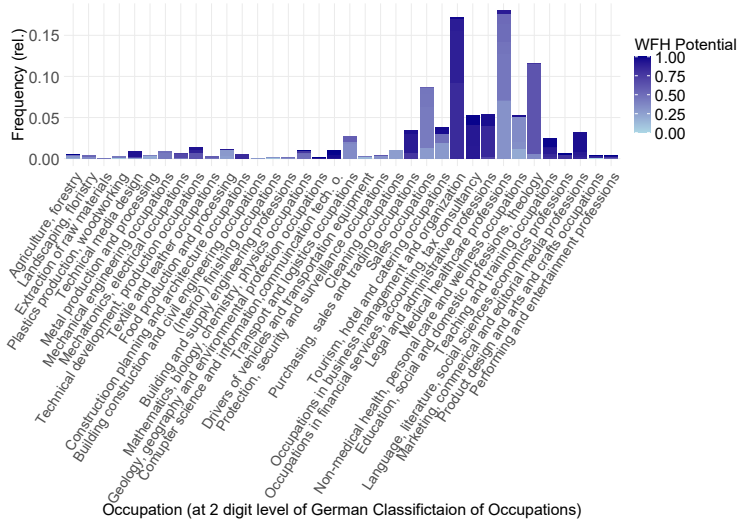


- Min: Industrial glass manufacturing; vehicle guidance in maritime transport
- Mean: 0.63: 63% could have performed part of their job remotely before the pandemic
- Max: IT systems analysis, user support, sales; mathematics and statistics
- Examples of increases in WFH potential:
  - 0.1 (10pp): job in medical technology → medical assistant
  - 0.2 (20pp): animal care worker → veterinary medicine and animal health

WFH potential: variation between and within occupations (1-digit)



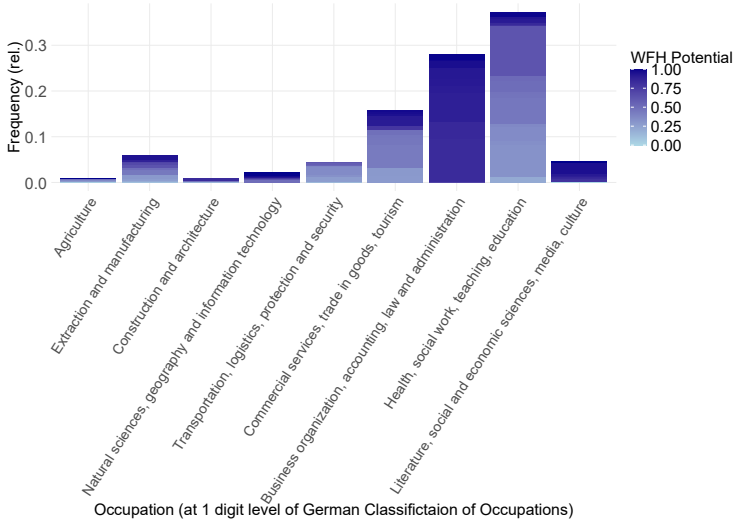
WFH potential: variation between and within occupations (2-digit)



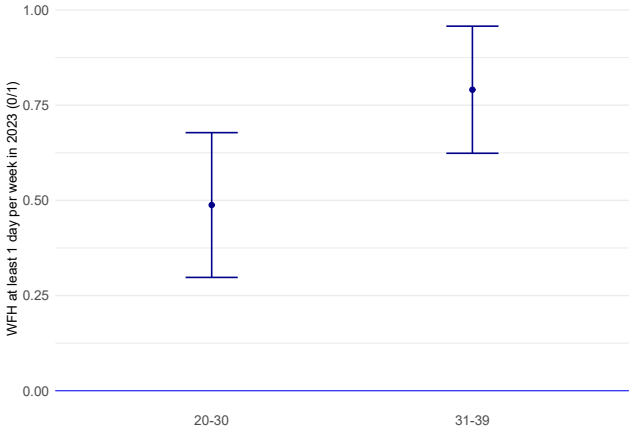
German Socio-Economic Panel (SOEP-Core 2023, v40)

- Validation of the ”first-stage” relationship & representativeness of the BARMER sample
- Longitudinal survey of private households in Germany, since 1984
- Information on sociodemographic characteristics, employment, occupation etc.
- Since 2021, the core questionnaire includes questions on work from home
  - Q: *How often have you worked from home in the last 6 months?*
    Daily/Several times a week/Once a week/Every 2 to 4 weeks/Less often
  - **WFH at least one day per week** (0/1) in 2023
- Sample restrictions:
  - employed subject to mandatory SSC (excl. minijobs) in 2019
  - prime working age 26–55
- Sample size: 4,165 individuals
- Linked to the WFH Potential Index at the KldB 3-digit level

WFH potential: variation between and within occupations (1-digit)

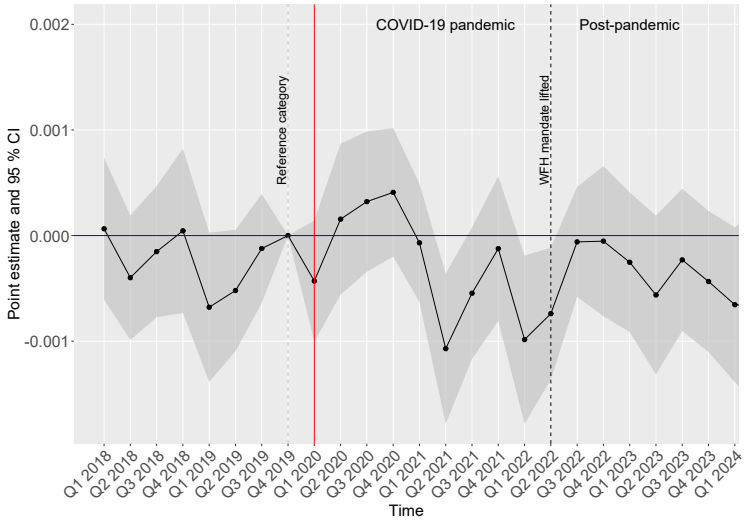


First-stage effect by age

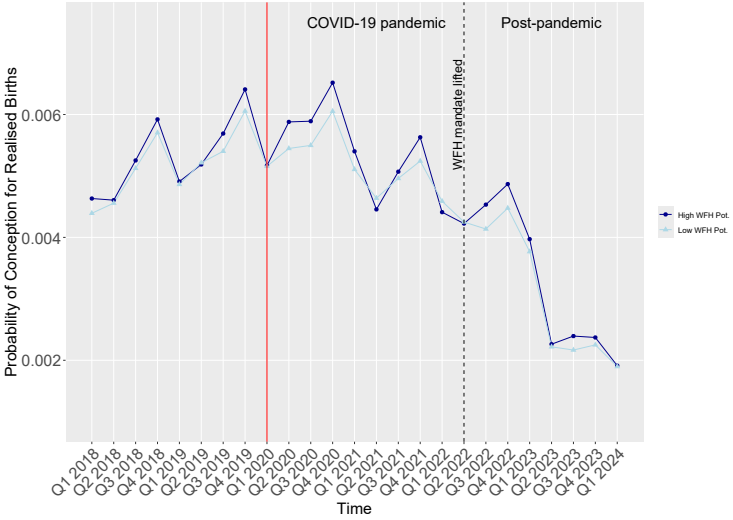


Notes: The figure shows the marginal effect of the WFH potential [0,1] on actual WFH usage in 2023 by age groups. The estimates come from a fully-interacted regression. The outcome variable indicates whether an individual worked remotely at least one day per week. The 95% confidence intervals are based on standard errors clustered by 3-digit occupation. *Source*: SOEP, Version 40.1.

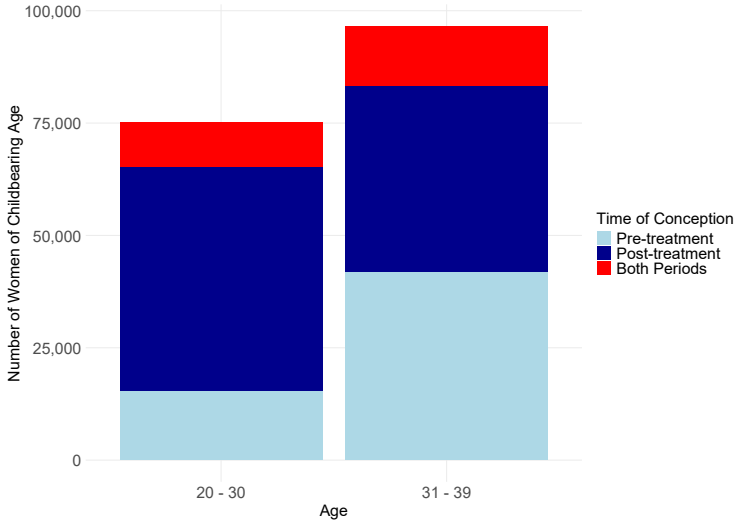
Effect of WFH potential on birth probability: unadjusted



Quarterly Birth Probability: 20 - 39; unadjusted



Number of Children per Period



Mechanism: Maternal Health and Pregnancy Loss

	Maternal Health		Early Pregnancy Loss	
	(1) 20–30	(2) 31–39	(3) 20–30	(4) 31–39
WFH Potential				
× 2018	−0.0007	−0.0015	−0.0002	0.0003
	(0.0006)	(0.0009)	(0.0002)	(0.0003)
× 2020	−0.0043*	0.0079***	0.0006	0.0015**
	(0.0022)	(0.0031)	(0.0006)	(0.0006)
× 2021	0.0026	0.0068*	0.0017**	0.0016***
	(0.0032)	(0.0040)	(0.0007)	(0.0006)
× 2022	0.0073**	−0.0008	0.0020***	0.0013*
	(0.0036)	(0.0053)	(0.0007)	(0.0007)
× 2023	0.0185***	−0.0017	0.0031***	0.0010
	(0.0050)	(0.0057)	(0.0007)	(0.0007)
× 2024	**0.0244*** **	**−0.0054**	**0.0023*** **	**0.0008**
	(**0.0056**)	(**0.0065**)	(**0.0008**)	(**0.0008**)
Effect Size 2024 (%)	7.23	−0.62	5.16	0.79
Mean dep. var.	0.0338	0.0876	0.0044	0.0104
Individual FE	320,746	358,256	320,746	358,256
Time FE	✓	✓	✓	✓

WFH potential does not differentially affect maternal health or early pregnancy loss.

Maternal Health:

(1) Younger women: effect size 7.2% closely matches 7.0% effect on conceptions → mechanical consequence of more pregnancies, *not* deteriorating health

(2) Older women: coefficients ≈ 0, insignificant → reduced fertility not driven by worse maternal health

Early Pregnancy Loss:

(3) Younger women: effect size 5.2% < 7.0% conception effect → more losses driven by more conceptions, not higher loss rate conditional on conception

(4) Older women: coefficients ≈ 0 (0.8%), insignificant → negative fertility effect *not* attributable to pregnancy loss

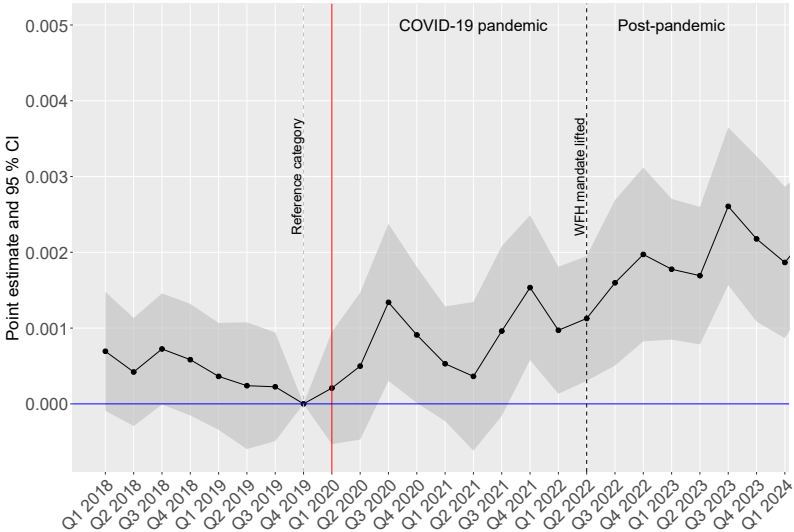
→ **Health channels ruled out** for both age groups

Mechanism: First vs. Second Births

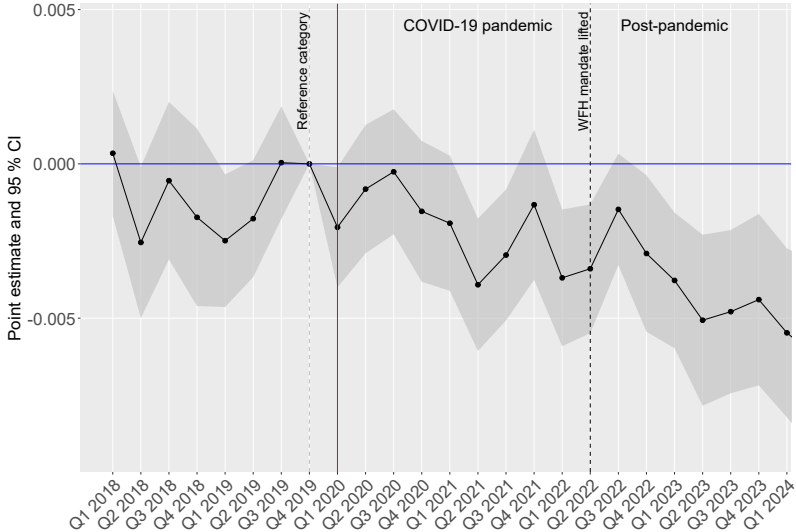
	1990-2000		1981-1989	
	(1) First child	(2) Second child	(3) First child	(4) Second child
WFH Potential				
× 2018	0.0002	−0.0026	0.0003	−0.0000
	(0.0002)	(0.0016)	(0.0003)	(0.0006)
× 2020	0.0005*	0.0001	0.0008**	0.0003
	(0.0003)	(0.0012)	(0.0004)	(0.0005)
× 2021	0.0006*	−0.0002	0.0005	−0.0003
	(0.0003)	(0.0010)	(0.0004)	(0.0006)
× 2022	0.0013***	0.0009	−0.0001	−0.0008
	(0.0004)	(0.0012)	(0.0004)	(0.0007)
× 2023	**0.0022*** **	**−0.0000**	**−0.0004**	**−0.0018***
	(**0.0004**)	(**0.0011**)	(**0.0005**)	(**0.0009**)
× 2024	0.0025***	−0.0018	−0.0010	−0.0027**
	(0.0003)	(0.0013)	(0.0007)	(0.0010)
Effect Size 2023 (%)	8.00	−0.02	−0.68	−1.77
Mean dep. var. (pre)	0.0027	0.0120	0.0062	0.0100
Occupation (KldB-3) FE	✓	✓	✓	✓
Age × Educ. × Time FE	✓	✓	✓	✓

Notes: Dependent variable is an indicator for a first or second birth, backdated by nine months. Women must be employed on January 1, 2020; WFH potential fixed at its 2020 value. Individual FE are not identified because women enter and exit the age window; identification compares women of the same exact age and education, in the same month, within the same 3-digit occupation. Parity is constructed from hospital birth records from 2005 onward and is therefore subject to left-censoring: births occurring under a different insurer are unobserved (annual switching rates in Germany are ≈3%), and the oldest women in the sample were 25 in 2005. Censoring is least consequential for younger women. For older women, the second-birth indicator is best read as a proxy for higher-order births, while the first-birth indicator may occasionally capture a higher-order birth. SE clustered at the 3-digit occupation level (139 clusters). $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Event Study: First Births, 1990–2000

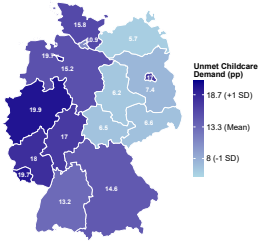


Event Study: Second Births, 1981–1989



Appendix: Childcare mechanism — unmet demand

Unmet childcare demand *(state)*



Desired − actual childcare rate, ages <3, 2019, 16 states (fixed & standardized)

	Unmet Demand	
	(1) 20–30	(2) 31–39
WFH Potential		
× 2018	0.0002	0.0001
× 2022	0.0013***	−0.0010**
× 2023	0.0023***	−0.0017***
WFH Potential × Childcare		
× 2022	0.0006**	0.0003
	(0.0002)	(0.0002)
× 2023	**0.0006****	**0.0003**
	(0.0002)	**(0.0002)**
Mean dep. var.	0.0036	0.0069
Individual FE	323,082	359,958
State × Time FE	✓	✓

Same pattern as the district-level full-day care measure: the WFH effect for younger women is stronger where unmet childcare demand is higher.

Effect of WFH potential on alternative fertility measures

	Birth	Prenatal Examination	Pregnancy Supervision	Conception
	(1)	(2)	(3)	(4)
WFH Potential				
× 2018	0.0005	−0.0000	0.0005	0.0009
	(0.0004)	(0.0004)	(0.0008)	(0.0012)
× 2020	**0.0011****	**0.0007**	**0.0010***	**0.0014****
	(**0.0005**)	(**0.0005**)	(**0.0006**)	(**0.0006**)
× 2021	−0.0006	0.0002	0.0004	−0.0001
	(0.0005)	(0.0005)	(0.0006)	(0.0008)
× 2022	−0.0004	0.0002	0.0001	0.0001
	(0.0006)	(0.0006)	(0.0008)	(0.0008)
× 2023	−0.0001	0.0011	0.0011	0.0011
	(0.0006)	(0.0007)	(0.0008)	(0.0009)
× 2024		0.0005	0.0007	0.0005
		(0.0006)	(0.0009)	(0.0010)
Effect Size 2023 (%)	−0.08	1.1	0.52	0.45
Mean dep. var.	0.01466	0.01063	0.02109	0.02464
Individual FE	✓	✓	✓	✓
Time FE	✓	✓	✓	✓
Individuals: 684,520				

By 2023, ↑ **WFH potential by 0.1 (10pp)** ↛ **fertility** (live births, initiation of pregnancy).

Robustness: Alternative FE — Women 20–39

	Birth									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
WFH Potential										
× 2018	0.0002	0.0002	0.0004***	0.0004**	0.0003	0.0003**	0.0002	0.0002	0.0004*	0.0002
	(0.0001)	(0.0002)	(0.0001)	(0.0002)	(0.0002)	(0.0001)	(0.0001)	(0.0002)	(0.0002)	(0.0002)
× 2020	0.0004***	0.0005***	0.0003**	0.0003*	0.0007***	0.0004**	0.0003**	0.0006***	0.0007***	0.0005**
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)
× 2021	−0.0001	0.0001	0.0001	0.0000	−0.0001	−0.0002	−0.0000	−0.0001	0.0001	−0.0001
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0003)	(0.0002)	(0.0002)
× 2022	−0.0001	0.0003	0.0002	0.0002	−0.0002	−0.0002	0.0002	0.0001	0.0002	0.0001
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0003)	(0.0002)	(0.0003)	(0.0003)	(0.0003)	(0.0003)
× 2023	**−0.0000**	**0.0006***	**0.0006****	**0.0005****	**−0.0003**	**−0.0001**	**0.0005***	**−0.0002**	**0.0004**	**0.0004**
	(0.0002)	**(0.0003)**	**(0.0002)**	**(0.0002)**	**(0.0003)**	**(0.0002)**	**(0.0003)**	**(0.0004)**	**(0.0003)**	**(0.0003)**
Effect Size 2023 (%)	−0.08	1.05	1.04	1.00	−0.53	−0.27	1.00	−0.37	0.75	0.68
Mean dep. var.	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053	0.0053
Individual FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Time FE	✓									
Age × Time		✓								
Education × Time			✓							
Age × Educ. × Time				✓						
Industry × Time					✓					
State × Time						✓				
Requirement × Time							✓			
Occupation × Time								✓		
State × Ind. × Age × Educ. × Time									✓	
State × Ind. × Req. × Age × Educ. × Time										✓

Robustness: Alternative FE — Women 20–30

	Birth									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
WFH Potential										
× 2018	0.0003	0.0004**	0.0004**	0.0004**	0.0003	0.0003	0.0004*	0.0004*	0.0005*	0.0003
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0003)	(0.0003)
× 2020	0.0006**	0.0005**	0.0003	0.0003	0.0008**	0.0006**	0.0003	0.0011***	0.0006**	0.0003
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0002)	(0.0004)	(0.0003)	(0.0003)
× 2021	0.0007**	0.0007**	0.0003	0.0003	0.0007**	0.0006*	0.0001	0.0013***	0.0004	−0.0002
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0004)	(0.0003)	(0.0003)
× 2022	0.0015***	0.0016***	0.0010***	0.0011***	0.0015***	0.0013***	0.0009**	0.0023***	0.0012***	0.0007*
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)
× 2023	**0.0025*** **	**0.0030*** **	**0.0021*** **	**0.0022*** **	**0.0022*** **	**0.0023*** **	**0.0020*** **	**0.0028*** **	**0.0020*** **	**0.0013*** **
	(**0.0004**)	(**0.0004**)	(**0.0004**)	(**0.0003**)	(**0.0004**)	(**0.0004**)	(**0.0003**)	(**0.0004**)	(**0.0004**)	(**0.0004**)
Effect Size 2023 (%)	7.10	8.71	5.86	6.30	6.23	6.62	5.75	7.99	5.59	3.65
Mean dep. var.	0.0035	0.0035	0.0035	0.0035	0.0035	0.0035	0.0035	0.0035	0.0035	0.0035
Individual FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Time FE	✓									
Age × Time		✓								
Education × Time			✓							
Age × Educ. × Time				✓						
Industry × Time					✓					
State × Time						✓				
Requirement × Time							✓			
Occupation × Time								✓		
State × Ind. × Age × Educ. × Time									✓	
State × Ind. × Req. × Age × Educ. × Time										✓

Robustness: Alternative FE — Women 31–39

	Birth									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
WFH Potential										
× 2018	−0.0000	0.0000	0.0003	0.0003	0.0000	0.0001	−0.0000	−0.0002	0.0004	0.0001
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0004)	(0.0004)	(0.0004)
× 2020	0.0005	0.0005	0.0003	0.0003	0.0008**	0.0004	0.0004	0.0004	0.0007*	0.0007*
	(0.0003)	(0.0003)	(0.0003)	(0.0003)	(0.0004)	(0.0003)	(0.0003)	(0.0004)	(0.0004)	(0.0004)
× 2021	−0.0004	−0.0004	−0.0002	−0.0003	−0.0003	−0.0005	−0.0000	−0.0009	−0.0001	−0.0000
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0005)	(0.0004)	(0.0005)
× 2022	−0.0010**	−0.0010**	−0.0006	−0.0006	−0.0010**	−0.0010**	−0.0004	−0.0013**	−0.0006	−0.0004
	(0.0005)	(0.0005)	(0.0004)	(0.0004)	(0.0005)	(0.0005)	(0.0004)	(0.0006)	(0.0004)	(0.0005)
× 2023	**−0.0017*** **	**−0.0017*** **	**−0.0010***	**−0.0010***	**−0.0016*** **	**−0.0017*** **	**−0.0007**	**−0.0024*** **	**−0.0009***	**−0.0004**
	(0.0006)	**(0.0006)**	**(0.0006)**	**(0.0006)**	**(0.0005)**	**(0.0006)**	**(0.0006)**	**(0.0007)**	**(0.0005)**	**(0.0006)**
Effect Size 2023 (%)	−2.51	−2.48	−1.48	−1.52	−2.40	−2.53	−1.07	−3.44	−1.35	−0.62
Mean dep. var.	0.0068	0.0068	0.0068	0.0068	0.0068	0.0068	0.0068	0.0068	0.0068	0.0068
Individual FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Time FE	✓									
Age × Time		✓								
Education × Time			✓							
Age × Educ. × Time				✓						
Industry × Time					✓					
State × Time						✓				
Requirement × Time							✓			
Occupation × Time								✓		
State × Ind. × Age × Educ. × Time									✓	
State × Ind. × Req. × Age × Educ. × Time										✓

Robustness: WFH Potential and Unemployment

	Unemployed		
	All (1)	20–30 (2)	31–39 (3)
WFH Potential			
× 2018	−0.01370	0.02198	−**0.03379****
	(0.01600)	(0.02226)	(**0.01553**)
× 2020	0.00626	−0.00989	0.01519***
	(0.00661)	(0.01144)	(0.00531)
× 2021	0.00853	−0.00476	0.01768**
	(0.00870)	(0.01234)	(0.00774)
× 2022	0.01341	0.00304	0.02128**
	(0.01065)	(0.01447)	(0.01042)
× 2023	0.01402	0.00568	0.02121
	(0.01262)	(0.01636)	(0.01305)
× 2024	0.01003	0.00199	0.01777
	(0.01464)	(0.01738)	(0.01598)
Effect Size 2023 (%)	1.27	0.34	3.44
Mean dep. var.	0.1106	0.1652	0.0617
Individual FE	684,506	323,652	360,854
Time FE	✓	✓	✓

Concern: Occupations with higher WFH potential may have provided greater employment stability during/after the pandemic → fertility effects could operate through differential unemployment risk rather than actual WFH.

Test: Estimate baseline specification with unemployment indicator (0/1) as dependent variable.

Results:

(1) All women (20–39): coefficients small, insignificant in all years

(2) Young women (20–30): coefficients small, insignificant

(3) Older women (31–39):

- 2018: significantly negative → low-WFH women had *higher* unemployment (pre-existing difference)
- 2020–2022: significantly *positive* → high-WFH occupations had *higher* unemployment during pandemic (opposite of concern)
- 2023–2024: insignificant → no differential unemployment when fertility effects are strongest

→ **Fertility effects do not operate through employment stability.** Actual WFH adoption is the operative channel.

Robustness: WFH Potential and Short-Time Work

	Short-Time Work		
	All (1)	20–30 (2)	31–39 (3)
WFH Potential			
× 2018	−0.0002**	−0.0002**	−0.0001**
	(0.0001)	(0.0001)	(0.0001)
× 2020	−0.0176	−0.0166	−0.0183
	(0.0215)	(0.0235)	(0.0197)
× 2021	−0.0273	−0.0266	−0.0277
	(0.0230)	(0.0253)	(0.0210)
× 2022	−0.0027	−0.0027	−0.0026
	(0.0030)	(0.0033)	(0.0027)
× 2023	0.0004*	0.0005*	0.0004**
	(0.0002)	(0.0003)	(0.0002)
× 2024	**0.0009*****	**0.0010****	**0.0008*****
	(**0.0003**)	(**0.0004**)	(**0.0003**)
Mean dep. var.	0.00014	0.00014	0.00014
Individual FE	684,520	323,657	360,863
Time FE	✓	✓	✓

Concern: High-WFH occupations may have faced less short-time work (*Kurzarbeit*); income uncertainty from STW could independently depress fertility.

Test: Baseline specification with the industry-level volume-weighted STW quota as dependent variable.

Results:

- 2020–2021: negative but **insignificant** → WFH potential does not significantly predict STW exposure when the confound would operate
- 2023–2024: significant but **economically negligible** (pre-mean = 0.014%; STW near zero after 2022)
- Adding STW & unemployment as time-varying controls leaves WFH coefficients **unchanged** across all age groups

→ **Fertility effects are not driven by short-time work.**

Robustness: Controlling for Unemployment & Short-Time Work

	Birth											
	All (20–39)				20–30				31–39			
	(1) Base	(2) +UE	(3) +STW	(4) Both	(5) Base	(6) +UE	(7) +STW	(8) Both	(9) Base	(10) +UE	(11) +STW	(12) Both
WFH Potential												
× 2018	0.0002	0.0002	0.0002	0.0002	0.0003	0.0003	0.0003	0.0003	−0.0000	−0.0001	−0.0000	−0.0001
× 2020	0.0004***	0.0005***	0.0004**	0.0004**	0.0006**	0.0006**	0.0006**	0.0006**	0.0005	0.0005	0.0005	0.0005
× 2021	−0.0001	−0.0001	−0.0002	−0.0001	0.0007**	0.0007**	0.0006**	0.0006**	−0.0004	−0.0004	−0.0004	−0.0004
× 2022	−0.0001	−0.0001	−0.0001	−0.0001	0.0015***	0.0015***	0.0015***	0.0015***	−0.0010**	−0.0009**	−0.0010**	−0.0009**
× 2023	**−0.0000**	**−0.0000**	**−0.0000**	**−0.0000**	**0.0025*****	**0.0025*****	**0.0025*****	**0.0025*****	**−0.0017*****	**−0.0017*****	**−0.0017*****	**−0.0017*****
Unemployed		−0.0018***		−0.0018***		−0.0016***		−0.0016***		−0.0016***		−0.0016***
Short-Time Work			−0.0010***	−0.0010***			−0.0021***	−0.0021***			0.0001	0.0001
Effect Size 2023 (%)	−0.07	−0.03	−0.07	−0.03	7.00	7.03	7.00	7.03	−2.51	−2.47	−2.51	−2.47
Mean dep. var.	0.0053	0.0053	0.0053	0.0053	0.0035	0.0035	0.0035	0.0035	0.0068	0.0068	0.0068	0.0068
Individual FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Time FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

- Adding individual **unemployment** status and industry-level **short-time work** (STW) as time-varying controls leaves the WFH × year coefficients **virtually unchanged** in all age groups

→ Fertility effects are driven by **actual WFH adoption**, not by correlated labor-market disruptions

Caveat: both controls are potentially endogenous to WFH potential; included here only as a diagnostic, cf. Angrist and Pischke (2009).

Robustness: Continuously insured subsample

	Birth		
	(1) 20–39	(2) 20–30	(3) 31–39
WFH Potential			
× 2018	0.0000	−0.0002	−0.0001
	(0.0002)	(0.0002)	(0.0003)
× 2020	0.0007***	0.0010***	0.0007**
	(0.0002)	(0.0003)	(0.0003)
× 2021	−0.0001	0.0008**	−0.0002
	(0.0002)	(0.0004)	(0.0004)
× 2022	−0.0001	0.0017***	−0.0008*
	(0.0002)	(0.0005)	(0.0005)
× 2023	**−0.0002**	**0.0028*****	**−0.0019*****
	(**0.0003**)	(**0.0004**)	(**0.0007**)
Effect Size 2023 (%)	−0.36	7.15	−2.66
Mean dep. var.	0.0057	0.0039	0.0070
Individual FE	✓	✓	✓
Time FE	✓	✓	✓

Notes: Births backdated by nine months. Some women exit the insurance records during the observation window, so their outcomes are unobserved in the corresponding months. The specification above re-estimates the baseline on the strictly balanced subsample of women continuously insured over the entire panel (527,858 women; 44.3m observations, vs. 684,520 and 57.5m in the baseline). Results are almost identical to the main estimates: +7.15% vs. +7.00% for women aged 20–30 and −2.66% vs. −2.51% for women aged 31–39, with the aggregate null unchanged. All regressions include individual and time FE; no additional controls. SE clustered at the 3-digit occupation level (136 clusters). $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

Robustness: Age-Varying Sample — Ruling out mechanical convergence

	Birth		
	(1) 20–39	(2) 20–30	(3) 31–39
WFH Potential			
× 2018	0.0002	−0.0000	0.0004*
	(0.0001)	(0.0002)	(0.0002)
× 2020	0.0004**	0.0003	0.0004
	(0.0002)	(0.0002)	(0.0003)
× 2021	0.0002	0.0001	0.0000
	(0.0002)	(0.0002)	(0.0003)
× 2022	0.0003	0.0005**	−0.0003
	(0.0002)	(0.0003)	(0.0003)
× 2023	**0.0006*** **	**0.0013*** **	**−0.0005**
	(0.0002)	**(0.0002)**	**(0.0004)**
× 2024	0.0006*	0.0022***	−0.0012**
	(0.0003)	(0.0003)	(0.0005)
Effect Size 2023 (%)	1.21	2.84	−0.84
Mean dep. var. (pre)	0.0052	0.0045	0.0059
Occupation FE (3–digit I.)	✓	✓	✓
Age × Educ. × Time FE	✓	✓	✓

Notes: Births backdated by nine months. Unlike the baseline, the sample is not a fixed cohort: each year includes all women of the respective age *in that year*, rather than in 2020. Women must be employed on January 1, 2020; WFH potential remains fixed at its 2020 value. This holds age composition constant over time and addresses the concern that the age-specific effects reflect the mechanical aging of a fixed cohort. Because women enter and exit the age window, individual FE are not identified; identification instead compares women of the same exact age and education, in the same month, within the same 3-digit occupation. Caveats: sample composition varies across years, and unobserved heterogeneity is absorbed only at the occupation level. SE clustered at the 3-digit occupation level. $^{*}p < 0.10$, $^{**}p < 0.05$, $^{***}p < 0.01$.

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