Online Appendix

The Division of Child Care During the Coronavirus Crisis in Germany: How Did Short-Time Work Affect Fathers' Engagement?

Tabea Naujoks, Michaela Kreyenfeld, & Sandra Dummert

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1 Sensitivity Analysis

1.1 Exclusion of fathers who did care work "completely" before Corona

Table 1.1

Dependent variable: Decline of fathers' engagement (base outcome), no change, increase of fathers' engagement
Method: Multinomial regression model. Average marginal effects; z-statistic in parentheses
Sample: Males only, exclusion of fathers doing care work "entirely" before Corona

	Decline	No change	Increase
Employment status			
Employed, no short-time work	Ref.	Ref.	Ref.
Employed, short-time work	-0.066**	-0.032	0.099**
	(-2.53)	(-0.70)	(2.24)
Not working	-0.064	0.009	0.056
	(-1.59)	(0.13)	(0.85)
Educational status			
Low or medium education	Ref.	Ref.	Ref.
High education	-0.016	-0.014	0.030
	(-0.65)	(-0.41)	(0.97)
Region			
Western Germany	Ref.	Ref.	Ref.
Eastern Germany	-0.036	0.047	-0.011
	(-1.16)	(1.09)	(-0.28)
Age of the youngest child	-0.005	0.007	-0.002
	(-1.42)	(1.44)	(-0.51)
Migration background			
No migration background	Ref.	Ref.	Ref.
Migration background	-0.015	-0.006	0.021
	(-0.43)	(-0.12)	(0.48)
Employment status partner			
Not working	Ref.	Ref.	Ref.
Working	-0.015	0.046	-0.031
	(-0.50)	(1.10)	(-0.84)
Interview month	0.034***	-0.038***	0.004
	(3.38)	(-2.62)	(0.29)
N (person-months)	811	811	811

Source: IAB-HOPP wave 2-5, own estimations.
Note: * p<0.10, ** p<0.05, *** p<0.01

1.2 Including "division of care before Corona" as additional covariate

Table 1.2
Dependent variable: Decline of fathers' engagement (base outcome), no change, increase of fathers
Method: Multinomial regression model. Average marginal effects; z-statistic in parentheses
Sample: Males only

	Decline	No change	Increase
Division of childcare pre-Corona			
Entirely mother	Ref.	Ref.	Ref.
Mostly mother	0.119***	0.176***	-0.295***
	(6.53)	(3.32)	(-6.09)
50/50 or mostly/entirely father[1]	0.265***	0.226***	-0.492***
	(10.69)	(4.95)	(-12.36)
Employment status			
Employed, no short-time work	Ref.	Ref.	Ref.
Employed, short-time work	-0.054*	-0.021	0.075*
	(-1.93)	(-0.48)	(1.91)
Not working	-0.040	-0.044	0.084
	(-1.02)	(-0.66)	(1.37)
Educational status			
Low or medium education	Ref.	Ref.	Ref.
High education	-0.028	-0.018	0.046*
	(-1.21)	(-0.53)	(1.65)
Region			
Western Germany	Ref.	Ref.	Ref.
Eastern Germany	-0.055*	0.032	0.024
	(-1.87)	(0.72)	(0.66)
Age of the youngest child	-0.002	0.005	-0.004
	(-0.53)	(1.15)	(-0.95)
Migration background			
No migration background	Ref.	Ref.	Ref.
migration background	-0.029	0.006	0.022
	(-0.82)	(0.12)	(0.53)
Employment status partner			
Not working	Ref.	Ref.	Ref.
Working	-0.089***	0.018	0.071**
	(-2.98)	(0.41)	(2.00)
Interview month	0.037***	-0.036**	-0.001
	(3.94)	(-2.55)	(-0.09)
N (person-months)	822	822	822

Source IAB-HOPP wave 2-5, own estimations.
Note: * p<0.10, ** p<0.05, *** p<0.01

[1] Due to low case numbers we summarized the categories "split about 50/50", "mostly father", and "(almost) completely father".

1.3 The role of home-office for fathers

Table 1.3
Dependent variable: Decline of fathers' engagement (base outcome), no change, increase of fathers' engagement
Method: Multinomial regression model. Average marginal effects; z-statistic in parentheses
Sample: Employed males

	Decline	No change	Increase
Short-time work			
No	Ref.	Ref.	Ref.
Yes	-0.055*	-0.085	0.140**
	(-1.71)	(-1.37)	(2.28)
Home office			
No	Ref.	Ref.	Ref.
Yes	-0.066*	0.001	0.064
	(-1.81)	(0.03)	(1.46)
Educational status			
Low or medium education	Ref.	Ref.	Ref.
High education	0.009	-0.019	0.010
	(0.28)	(-0.39)	(0.23)
Region			
Western Germany	Ref.	Ref.	Ref.
Eastern Germany	-0.047	0.078	-0.031
	(-1.24)	(1.46)	(-0.64)
Age of the youngest child	-0.004	0.004	0.000
	(-1.06)	(0.65)	(0.01)
Migration background			
No migration background	Ref.	Ref.	Ref.
Migration background	-0.081	0.056	0.025
	(-1.48)	(0.83)	(0.43)
Employment status partner			
Not working	Ref.	Ref.	Ref.
Working	-0.004	0.020	-0.016
	(-0.13)	(0.39)	(-0.33)
Interview month	0.013	-0.021	0.008
	(1.13)	(-1.14)	(0.48)
N (person-months)	520	520	520

Source: IAB-HOPP wave 2-5, own estimations.
Note: * p<0.10, ** p<0.05, *** p<0.01

2 Analysis of the "mother sample"

2.1 Main model

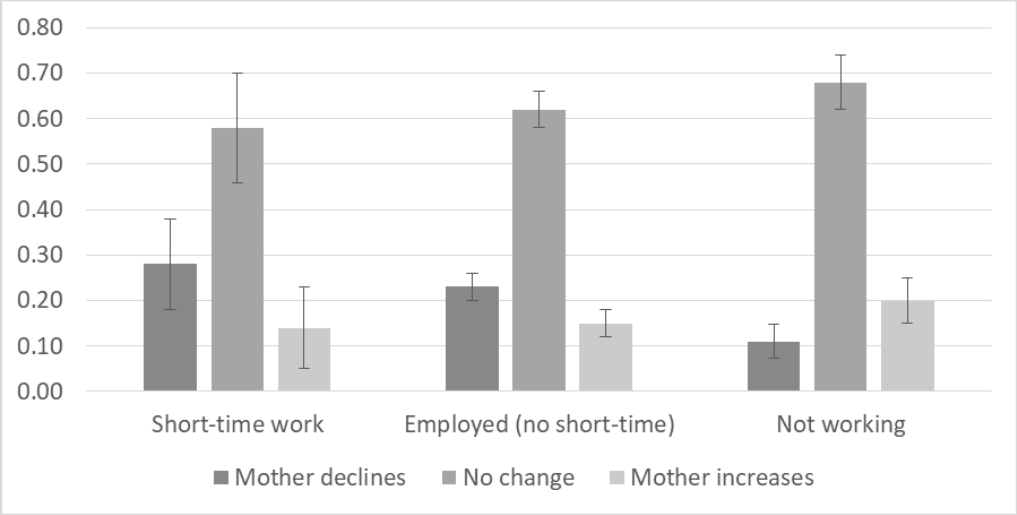
Table 2.1

Dependent variable: Decline of mothers' engagement (base outcome), no change, increase of mothers' engagement
Method: Multinomial logistic regression. Average marginal effects; z-statistic in parentheses
Sample: Females only

	Decline	No change	Increase
Employment status			
Employed, no short-time work	Ref.	Ref.	Ref.
Employed, short-time work	0.053	-0.039	-0.013
	(0.91)	(-0.61)	(-0.30)
Not working	-0.119***	0.064*	0.055*
	(-4.29)	(1.66)	(1.69)
Educational status			
Low or Medium education	Ref.	Ref.	Ref.
High education	-0.013	0.024	-0.011
	(-0.47)	(0.72)	(-0.44)
Region			
Western Germany	Ref.	Ref.	Ref.
Eastern Germany	-0.025	0.039	-0.014
	(-0.72)	(0.94)	(-0.45)
Age oft he youngest child	-0.006	0.002	0.004
	(-1.54)	(0.52)	(0.99)
Migration background			
No migration background	Ref.	Ref.	Ref.
Migration background	0.077**	0.006	-0.083**
	(2.39)	(0.12)	(-1.99)
Employment status partner			
Not working	Ref.	Ref.	Ref.
Working	-0.100*	-0.085	0.185*
	(-1.74)	(-0.88)	(1.91)
Interview month	-0.026**	-0.007	0.033***
	(-2.27)	(-0.52)	(3.38)
N (person-months)	925	925	925

Source: IAB-HOPP wave 2-5, own estimations.
Note; * p<0.10, ** p<0.05, *** p<0.01

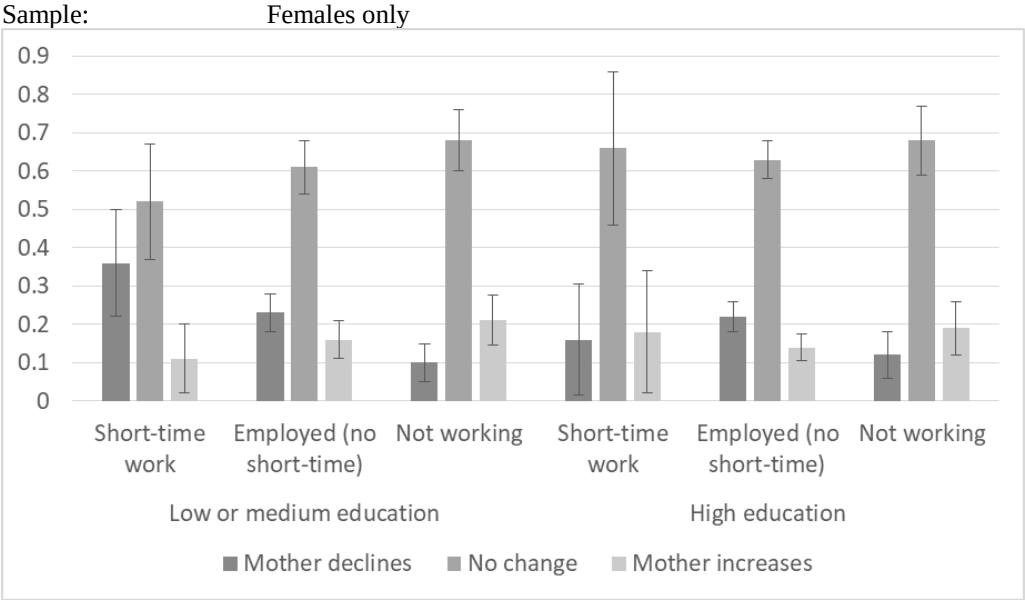
Figure 2.1
Dependent variable: Decline of mothers' engagement (base outcome), no change, increase of mothers' engagement
Method: Multinomial logistic regression. Average predicted probabilities
Sample: Females only



Note: Further control variables are education, migration background, age of the youngest child, interview month, region (East/West), partner's employment status.
Source: IAB-HOPP wave 2-5, own estimations.

2.2 Interaction model

Figure 2.2
Dependent variable: Decline of mothers' engagement (base outcome), no change, increase of mothers' engagement
Method: Multinomial logistic regression. Average predicted probabilities from interaction model
Sample: Females only



Note: Further control variables are education, migration background, age of the youngest child, region (East/West), interview month.
Source: IAB-HOPP wave 2-5, own estimations.

2.3 Exclusion of mothers who did care work "completely" before Corona

Table 2.3

Dependent variable:	Decline of mothers' engagement (base outcome), no change, increase of mothers' engagement
Method:	Multinomial regression model. Average marginal effects; z-statistic in parentheses
Sample:	Females only, exclusion of mothers doing care work "entirely" before Corona

	Decline	No change	Increase
Employment status			
Employed, no short-time work	Ref.	Ref.	Ref.
Employed, short-time work	0.015	-0.047	0.032
	(0.23)	(-0.50)	(0.39)
Not working	-0.104***	-0.048	0.152***
	(-3.23)	(-0.88)	(2.86)
Educational status			
Low or medium education			
High education	0.019	0.024	-0.043
	(0.60)	(0.53)	(-1.08)
Region			
Western Germany	Ref.	Ref.	Ref.
Eastern Germany	0.027	0.019	-0.046
	(0.74)	(0.36)	(-0.93)
Age of the youngest child	-0.008*	0.001	0.007
	(-1.73)	(0.18)	(1.32)
Migration background			
No migration background	Ref.	Ref.	Ref.
Migration background	0.105***	0.023	-0.128**
	(2.94)	(0.35)	(-1.99)
Employment status partner			
Not working	Ref.	Ref.	Ref.
Working	-0.191***	-0.122	0.313**
	(-4.05)	(-0.91)	(2.27)
Interview month	-0.024*	-0.039**	0.063***
	(-1.74)	(-2.08)	(4.07)
N (person-months)	515	515	515

Source: IAB-HOPP wave 2-5, own estimations.
Note: * p<0.10, ** p<0.05, *** p<0.01

2.4 Including "division of care before Corona" as additional covariate

Table 2.4

Dependent variable: Decline of mothers' engagement (base outcome), no change, increase of mothers' engagement
Method: Multinomial regression model. Average marginal effects; z-statistic in parentheses
Sample: Females only

	Decline	No change	Increase
Division of care pre-Corona			
Entirely mother	Ref.	Ref.	Ref.
Mostly mother	-0.123***	-0.154***	0.277***
	(-4.27)	(-4.50)	(12.42)
50/50 or mostly/entirely father	-0.167***	-0.192***	0.360***
	(-5.26)	(-4.31)	(9.53)
Employment status			
Employed, no short-time work			
Employed, short-time work	0.035	-0.058	0.023
	(0.65)	(-0.90)	(0.53)
Not working	-0.130***	0.043	0.087***
	(-4.78)	(1.14)	(2.93)
Educational status			
Low or medium education	Ref.	Ref.	Ref.
High education	-0.011	0.035	-0.025
	(-0.40)	(1.09)	(-1.13)
Region			
Western Germany	Ref.	Ref.	Ref.
Eastern Germany	-0.016	0.046	-0.030
	(-0.49)	(1.16)	(-1.06)
Age of the youngest child	-0.007	0.002	0.004
	(-1.62)	(0.52)	(1.33)
Migration background			
No migration background			
Migration background	0.072**	0.001	-0.074**
	(2.26)	(0.03)	(-2.07)
Employment status partner			
Not working	Ref.	Ref.	Ref.
Working	-0.108*	-0.096	0.204***
	(-1.79)	(-1.11)	(2.71)
Interview month	-0.027**	-0.009	0.036***
	(-2.41)	(-0.65)	(4.18)
N (person-months)	925	925	925

Source: IAB-HOPP wave 2-5, own estimations.
Note: * p<0.10, ** p<0.05, *** p<0.01

2.5 The role of home-office for mothers

Table 2.5
Dependent variable: Decline of mothers' engagement (base outcome), no change, increase of mothers' engagement
Method: Multinomial regression model. Average marginal effects; z-statistic in parentheses
Sample: Females only

	Decline	No change	Increase
Short-time work			
No	Ref.	Ref.	Ref.
Yes	0.023	-0.016	-0.006
	(0.37)	(-0.22)	(-0.12)
Home office			
No	Ref.	Ref.	Ref.
Yes	0.015	-0.040	0.026
	(0.31)	(-0.71)	(0.65)
Educational status			
Low or medium education	Ref.	Ref.	Ref.
High education	-0.066*	0.034	0.032
	(-1.67)	(0.67)	(0.83)
Region			
Western Germany	Ref.	Ref.	Ref.
Eastern Germany	-0.016	0.077	-0.061
	(-0.35)	(1.41)	(-1.55)
Age of the youngest child	-0.004	0.001	0.003
	(-0.63)	(0.17)	(0.54)
Migration background			
No migration background	Ref.	Ref.	Ref.
Migration background	0.169***	-0.039	-0.130**
	(4.05)	(-0.57)	(-2.17)
Employment status partner			
Not working	Ref.	Ref.	Ref.
Working	-0.619***	-1.233***	1.852***
	(-7.36)	(-6.92)	(9.89)
Interview month	-0.021	-0.006	0.027*
	(-1.29)	(-0.29)	(1.87)
N (person-months)	426	426	426

Source: IAB-HOPP wave 2-5, own estimations.
Note: * p<0.10, ** p<0.05, *** p<0.01

3 Determinants of the division of care before Corona

3.1 Father sample

Table 3.1
Dependent variable: Care patterns before Corona. Entirely mother (base outcome), mostly mother, 50/50 and father contributes mostly or entirely.
Method: Multinomial regression model. Average marginal effects; z-statistic in parentheses
Sample: Males only

	Entirely mother	Mostly mother	50/50 or mostly/entirely father
Educational status			
Low or medium education	Ref.	Ref.	Ref.
High education	-0.023	0.031	-0.008
	(-0.57)	(0.57)	(-0.16)
Region			
Western Germany	Ref.	Ref.	Ref.
Eastern Germany	-0.104	0.033	0.072
	(-1.64)	(0.46)	(1.17)
Age of the youngest child	0.001	-0.005	0.004
	(0.24)	(-0.66)	(0.50)
Migration background			
No migration background	Ref.	Ref.	Ref.
Migration background	-0.014	-0.010	0.024
	(-0.23)	(-0.13)	(0.31)
Employment status partner			
Not working	Ref.	Ref.	Ref.
Working	-0.178***	0.067	0.111
	(-4.15)	(0.93)	(1.61)
N	333	333	333

Source IAB-HOPP wave 2, own estimations.
Note: * p<0.10, ** p<0.05, *** p<0.01

3.2 Mother sample

Table 3.2
Dependent variable: Care patterns before Corona: Entirely mother (base outcome), mostly mother, 50/50 and father contributes mostly or entirely.
Method: Multinomial regression model. Average marginal effects; z-statistic in parentheses
Sample: Males only

	Entirely mother	Mostly mother	50/50 or mostly/entirely father
Educational status			
Low or medium education	Ref.	Ref.	Ref.
High education	0.011	-0.003	-0.008
	(0.20)	(-0.05)	(-0.18)
Region			
Western Germany	Ref.	Ref.	Ref.
Eastern Germany	-0.056	-0.005	0.061
	(-0.87)	(-0.08)	(1.26)
Age of the youngest child	-0.002	0.001	0.001
	(-0.29)	(0.09)	(0.26)
Migration background			
No migration background	Ref.	Ref.	Ref.
Migration background	0.014	-0.024	0.010
	(0.19)	(-0.34)	(0.17)
Employment status partner			
Not working	Ref.	Ref.	Ref.
Working	0.031	0.036	-0.067
	(0.21)	(0.24)	(-0.61)
N	357	357	357

Source IAB-HOPP wave 2, own estimations.
Note: * p<0.10, ** p<0.05, *** p<0.01

4 Determinants of the division of care during Corona

4.1 Father sample

Table 4.1

Dependent variable: Care patterns before Corona: Entirely mother (base outcome), mostly mother, 50/50 and father contributes mostly or entirely.
Method: Multinomial regression model. Average marginal effects; z-statistic in parentheses
Sample: Males only

	Entirely mother	Mostly mother	50/50 or mostly/entirely father
Educational status			
Low or medium education	Ref.	Ref.	Ref.
High education	-0.062**	0.024	0.038
	(-2.55)	(0.69)	(1.12)
Region			
Western Germany	Ref.	Ref.	Ref.
Eastern Germany	-0.029	-0.048	0.077*
	(-0.87)	(-1.10)	(1.87)
Age of the youngest child	0.003	-0.001	-0.002
	(0.75)	(-0.13)	(-0.41)
Migration background			
No migration background	Ref.	Ref.	Ref.
Migration background	-0.021	0.006	0.014
	(-0.58)	(0.13)	(0.29)
Employment status partner			
Not working	Ref.	Ref.	Ref.
Working	-0.171***	0.035	0.135***
	(-6.50)	(0.80)	(3.06)
Interview month	-0.002	0.048***	-0.046***
	(-0.15)	(3.23)	(-3.18)
N (person-months)	822	822	822

Source: IAB-HOPP wave 2-5, own estimations.
Note: * p<0.10, ** p<0.05, *** p<0.01

4.2 Mother sample

Table 4.2
Dependent variable: Care patterns before Corona: Entirely mother (base outcome), mostly mother, 50/50 and father contributes mostly or entirely.
Method: Multinomial regression model. Average marginal effects; z-statistic in parentheses
Sample: Males only

	Entirely mother	Mostly mother	50/50 or mostly/entirely father
Educational status			
Low or medium education	Ref.	Ref.	Ref.
High education	-0.036	0.006	0.030
	(-1.09)	(0.19)	(1.07)
Region			
Western Germany	Ref.	Ref.	Ref.
Eastern Germany	-0.058	-0.016	0.074**
	(-1.41)	(-0.40)	(2.32)
Age of the youngest child	-0.004	0.004	-0.000
	(-0.90)	(0.98)	(-0.02)
Migration background			
No migration background	Ref.	Ref.	Ref.
Migration background	-0.080*	0.012	0.068*
	(-1.69)	(0.28)	(1.82)
Employment status partner			
Not working	Ref.	Ref.	Ref.
Working	0.090	0.133	-0.223***
	(0.97)	(1.45)	(-3.98)
Interview month	0.043***	-0.011	-0.031**
	(3.08)	(-0.83)	(-2.55)
N	925	925	925

Source: IAB-HOPP wave 2-5, own estimations.
Note: * p<0.10, ** p<0.05, *** p<0.01

5 Determinants of short-time work

5.1 Cross-tabulation employment status by socio-demographic characteristics

Table 5.1

Cross-tabulation employment status by socio-demographic characteristics, row %

	Short-time work	Employed (no short-time work)	Not working
Region			
Western Germany	13	60	27
Eastern Germany	8	80	12
Migration background			
No migration background	12	62	26
Migration background	11	71	18
Level of education			
Low or medium education	14	58	28
High education	8	72	20
Employment status partner			
Not working	17	66	17
Working	11	63	26
Person-waves	217	1,387	355

Source: IAB-HOPP wave 2-5, own weighted estimates.

5.2 Logit model. Determinants of short-time work

Table 5.2

Dependent variable: Short-time work (yes: 1, no: 0)
Method: Binary logistic regression. Average marginal effects; z-statistic in parentheses
Sample: Male and female sample

	Men	Women
Educational status		
Low or medium education	0.229	0.141
High education	0.135	0.065
Region		
Western Germany	0.188	0.105
Eastern Germany	0.128	0.076
Migration background		
No migration background	0.179	0.087
Migration background	0.155	0.156

Source: IAB-HOPP wave 2-5, own estimations.
Note: * p<0.10, ** p<0.05, *** p<0.01