Gender and livelihoods in Southeast Asia

How does domestic work affect women's access to productive work?

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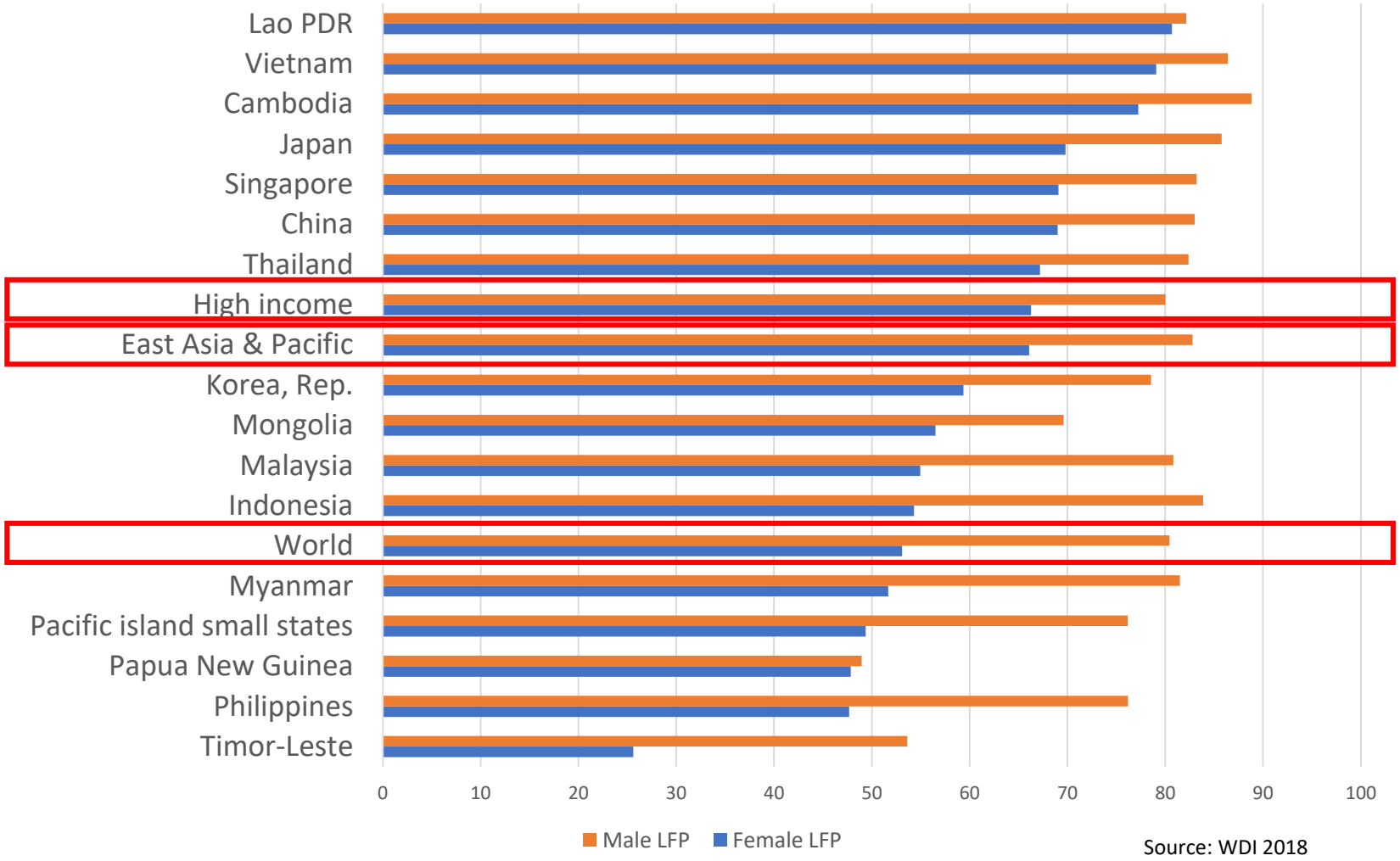
Women are less likely to participate in the labor force than men in EAP

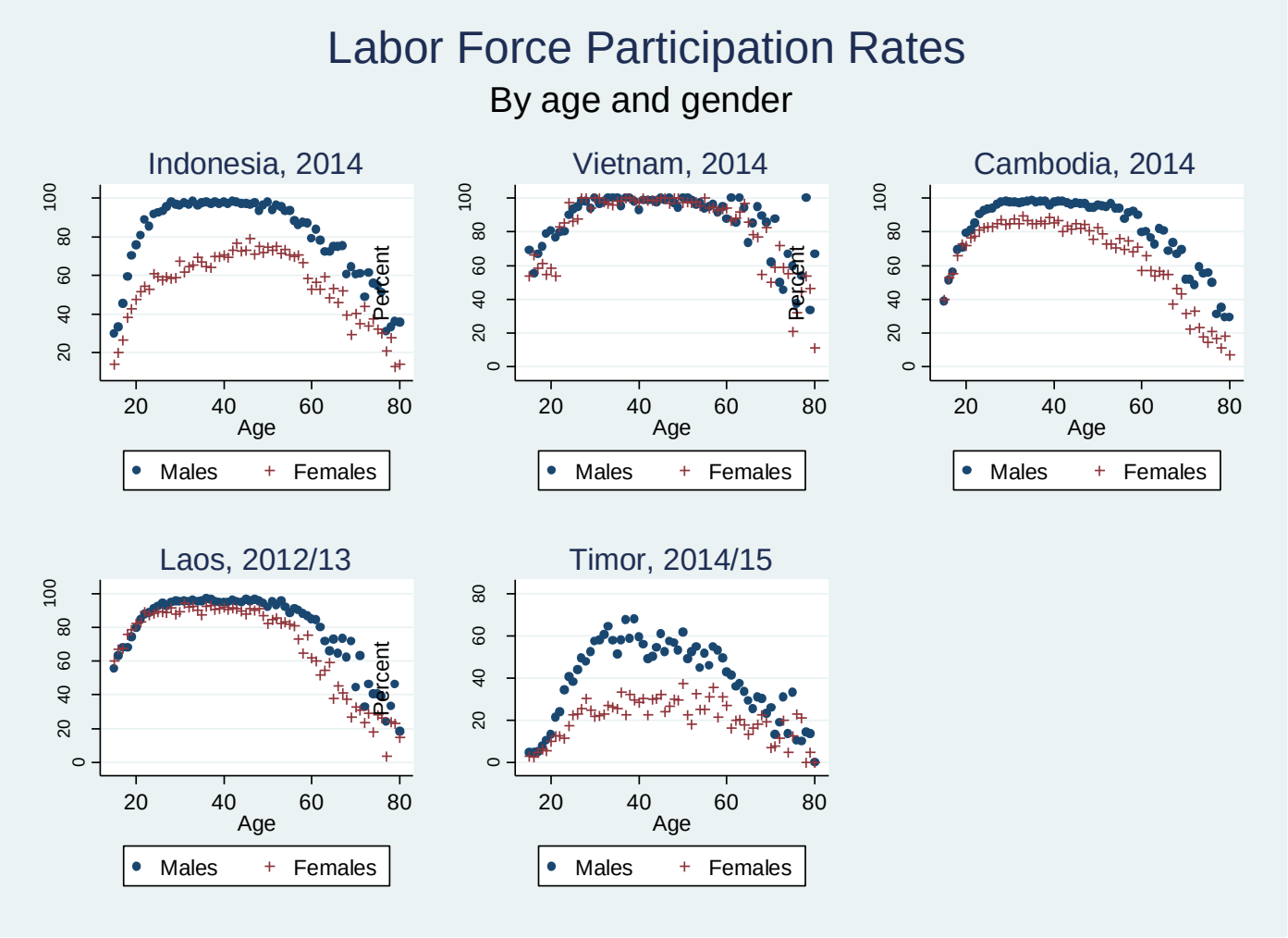


Source: WDI 2018

- LFP among women is lower than LFP among men in every country in EAP
- Significant heterogeneities exist
- Average FLFP in EAP is above the world average and similar to the average in high-income countries

Note: Labor force participation is the percentage of the male/female population that is active in the labor market. These figures represent LFP in each country/country group for the population aged 15-64.

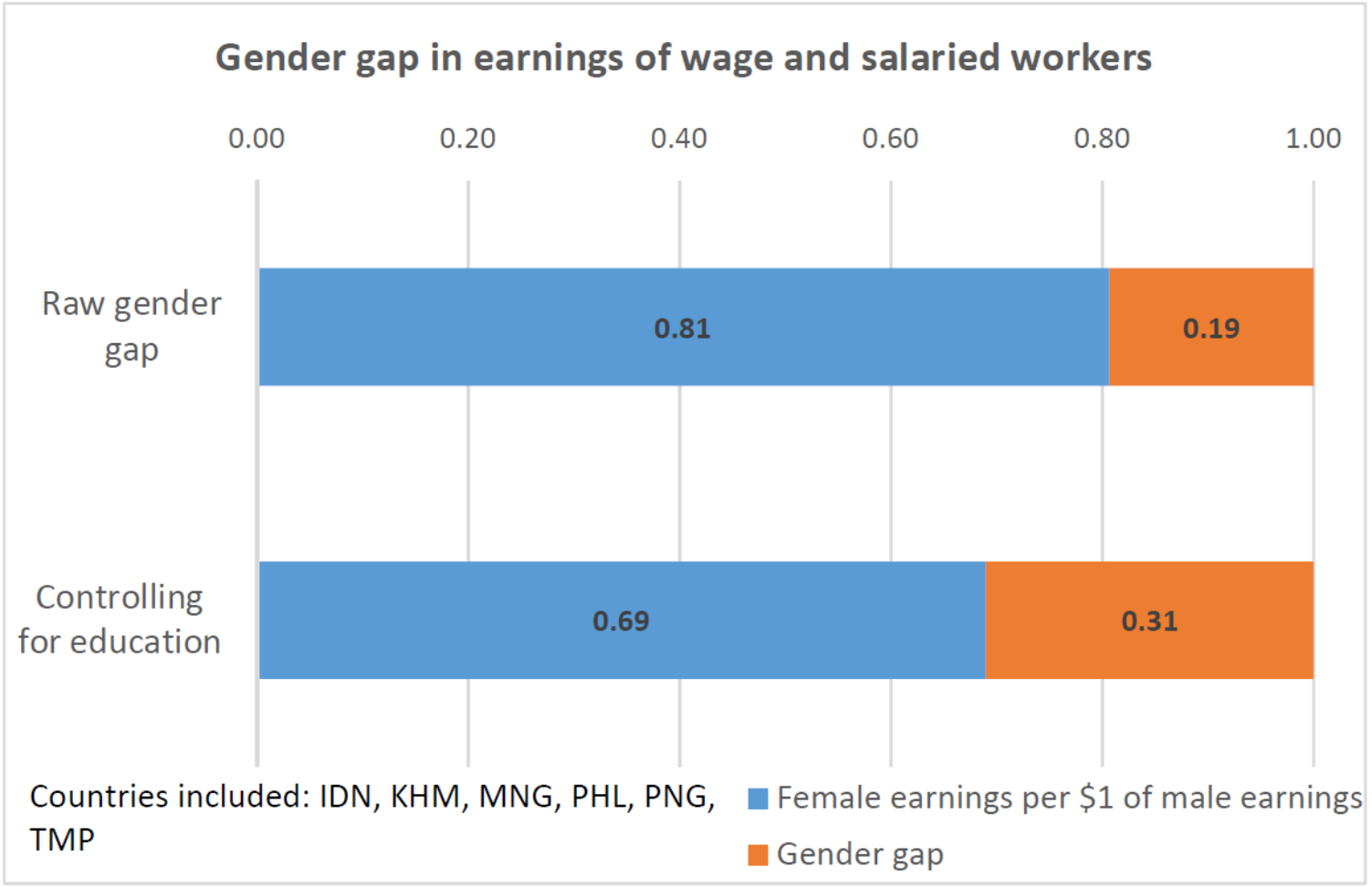
For countries with lower LFP rates there is a sharp drop in LFP in early 20s…



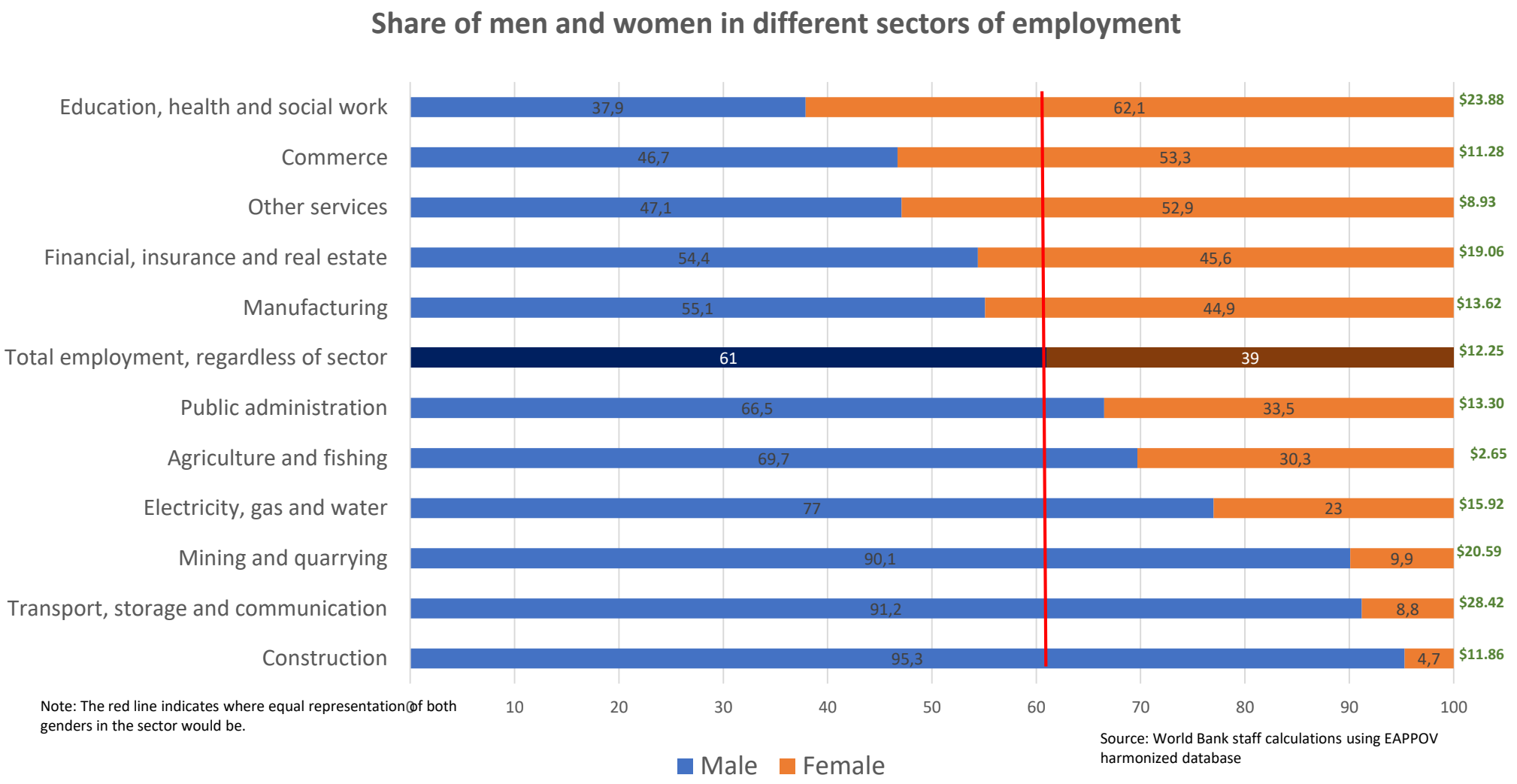
After marriage and childbearing?

Motivation

- Women earn less than men on average in EAP.
- The gender gap widens as education is taken into account



Women and men work in different sectors



Note: The red line indicates where equal representation of both genders in the sector would be.

Source: World Bank staff calculations using EAPPOV harmonized database

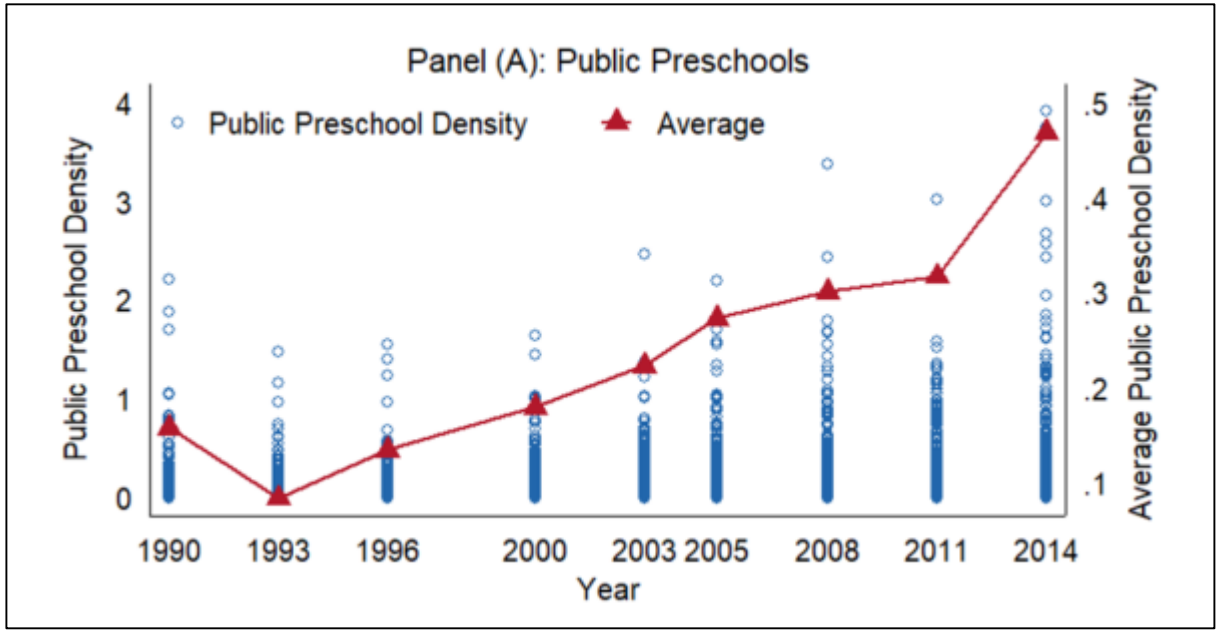
How does domestic work affect women's access to productive work?

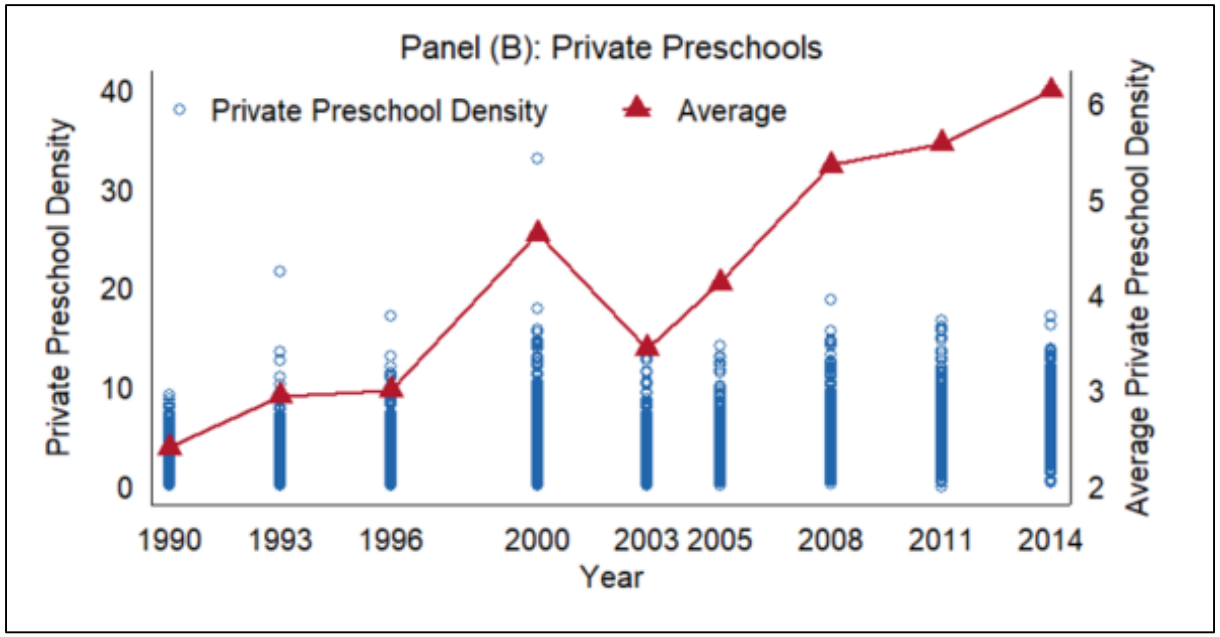
- Domestic work affects women's employment:
  - Estimate impact of childcare availability on women's employment in Indonesia

- Domestic work affects women's occupational choice:
  - Test alternative hypothesis of when and why occupational segregation emerges in Vietnam

Does access to preschool affect women's employment in Indonesia?

Context:



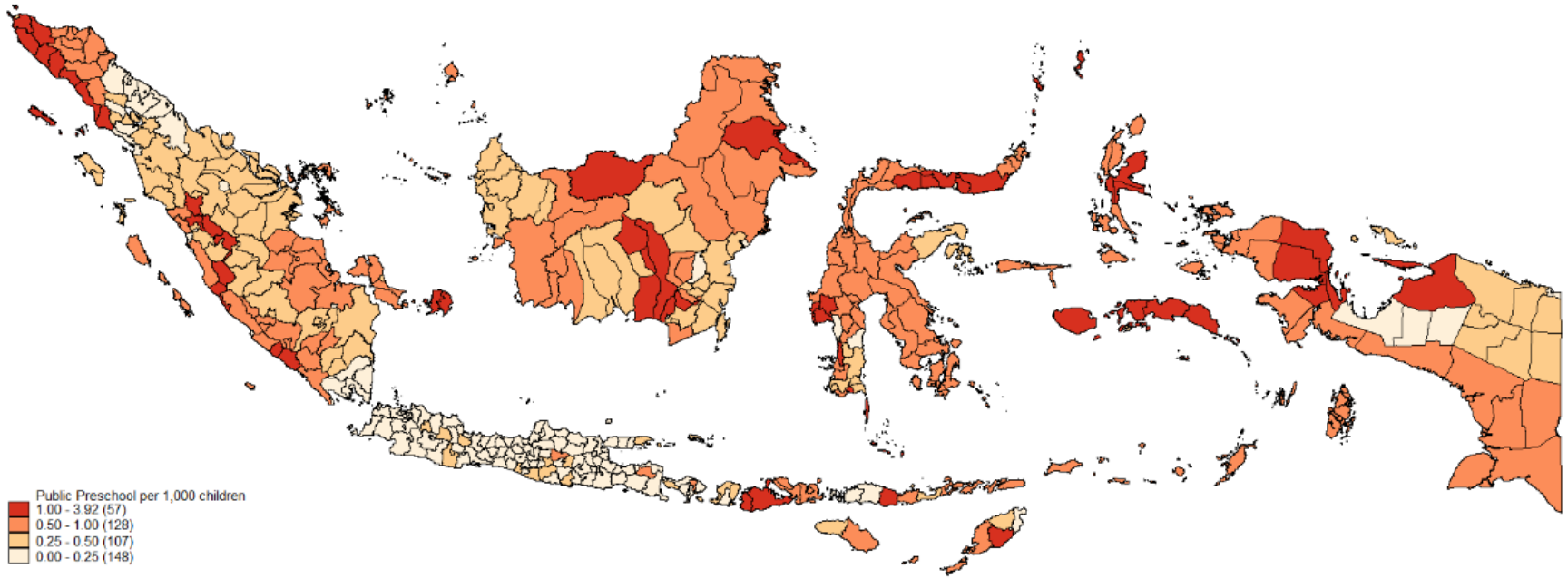


- Pre-primary education was recognized as part of the national education system only in 2003
- Enrollment rate increased from 25% in 2003 to 60.3% by 2016 (WDI)
- Several types of ECED services available, focus on preschools due to data availability

Context:

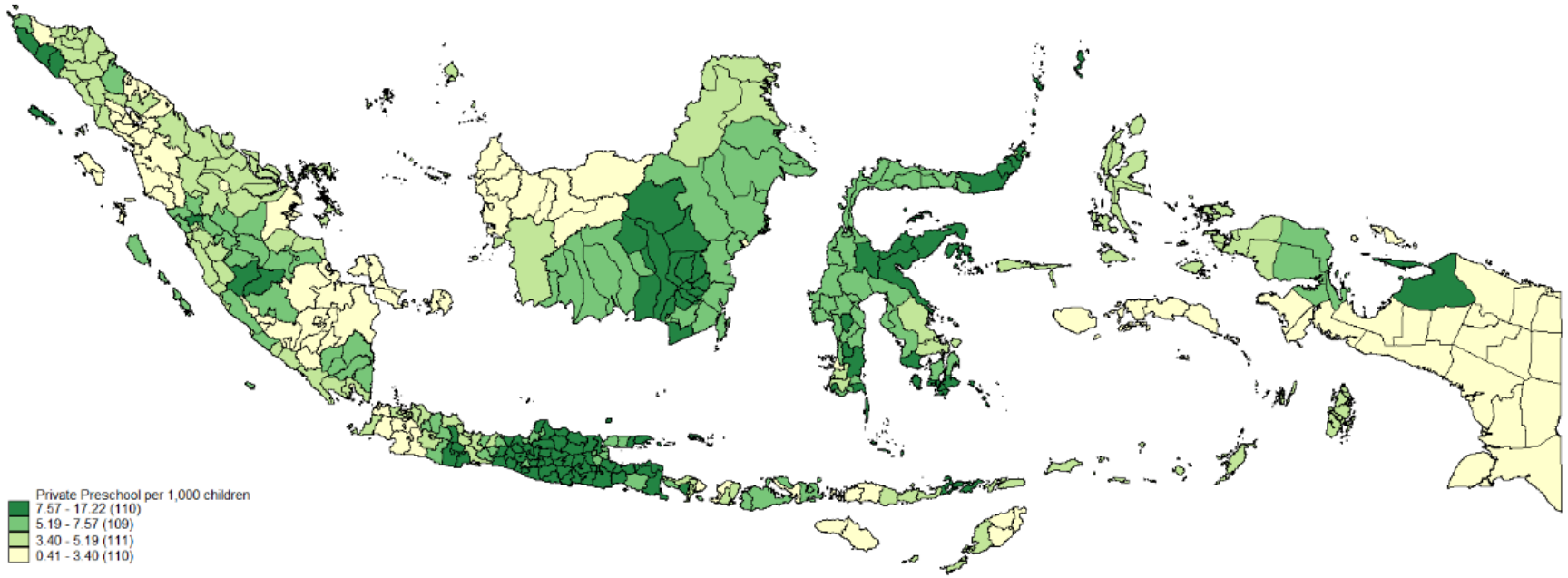
There is substantial geographical variation in the density of preschools in Indonesia

Public Preschool per 1,000 children age 3-6 in 2014



Source: Podes 2014 and Pooled Susenas 2014

Private Preschool per 1,000 children age 3-6 in 2014



Source: Podes 2014 and Pooled Susenas 2014

Context:

Private preschools are significantly more expensive to attend, and are likely to vary in quality more than public preschools

Annual cost of attending private and public preschools

	Private		Public		Private-Public
	Mean	SD	Mean	SD	
Registration fee	15.47	(38.58)	6.19	(13.53)	9.27***
Other scheduled fees	12.92	(33.79)	4.80	(8.86)	8.12***
Exam fees	0.23	(1.66)	0.01	(0.05)	0.22**
Books/writing supplies	5.57	(11.16)	2.61	(5.24)	2.95***
Uniform and sports supplies	5.54	(10.35)	5.16	(8.35)	0.38
Transportation costs	3.87	(18.50)	0.25	(1.57)	3.63***
Food/housing costs	13.96	(29.43)	9.40	(15.98)	4.57
Special courses	0.93	(13.70)	0.00	(0.00)	0.93
Other school expenses	1.22	(7.14)	0.00	(0.00)	1.22***
Observations	430		76		506

Notes: Sample is obtained from IFLS 3 (2000) conditional on enrollment in indicated public or private preschools. Means are reported in IDR 10,000 increments and are adjusted for inflation using national CPI with 2010 base year (FRED). The exchange rate in 2010 was 1 USD for 9,090 IDR (FRED).

Data:

The Indonesia Family Life Survey (IFLS)

- 5 rounds between 1993 – 2014
- Representative of 83% of Indonesian population
- 87.8% found in 1993 were tracked in 2014
- Restricted to female who were age 19-45 in at least 2 rounds
- Detailed account of employment, incidence of pregnancies, and number of children in each age category for each year, based on a combination of current and recall modules

Village Census (PODES)

- Fielded roughly once in 3 years
  - 1990, 1993, 1996, 2000, 2003, 2005, 2008, 2011 and 2014
- Obtain number of preschools
- Aggregated to districts, as they existed in 1993

Identification strategy: overview

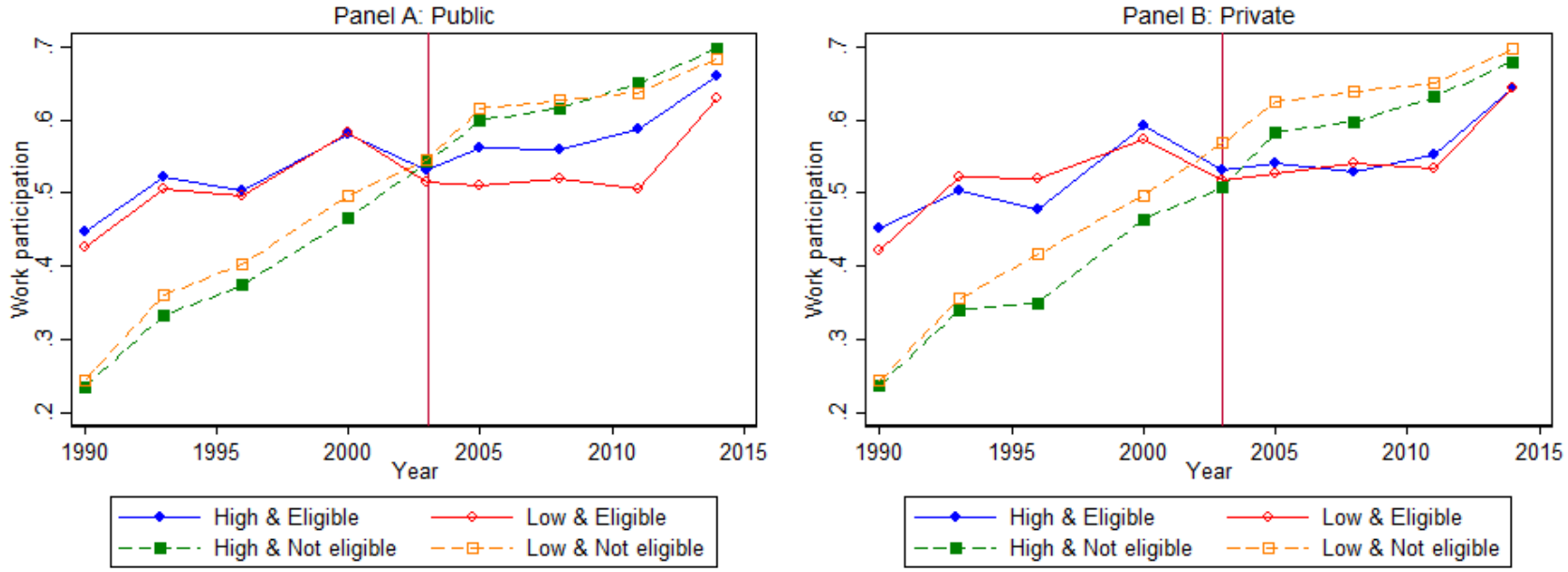
- Employ three different methods to check robustness:
  - difference-in-difference (DD)
  - triple-difference (DDD)
  - **triple difference with individual fixed effects (DDD-FE)**

- Check if results are consistent across different specifications

- Explore robustness of results to:
  - modifications in preschool data;
  - differences in definition of eligibility;
  - modification in comparison group.

Empirical strategy 2: DDD

Required identifying assumption: absent variations in preschool access, do eligible mothers and non-eligible mothers face similar employment trends?



What about women's unobserved preferences for work and leisure, abilities, family circumstances, fertilities and fecundities?

Empirical strategy 3: DDD-FE

Take advantage of variation across time, space, age eligibility of children and panel dimension of the data, and estimate impact of preschools using a triple-difference framework with individual fixed effects:

$$y_{ijt} = \alpha + \beta\, TK_{jt} \cdot Eligible_{it} + \gamma\, TK_{jt} + \delta\, Eligible_{it} + \mu_j + \phi_t + \theta_i + \psi\, \boldsymbol{X_{ijt}} + \varepsilon_{ijt}$$

y_{ijt} is the employment outcome of preschooler-mother *i* in district *j* in year *t*
TK_{jt} is the number of preschools per 1,000 children in district *j* in year *t*
$Eligible_{it}$ is a dummy equal to 1 if mother *I* in year *t* has any preschool-aged eligible children (3-6)
μ_j, ϕ_t, θ_i: district, year and individual fixed effects
$\boldsymbol{X_{ijt}}$ is a vector of time-variant individual characteristics, such as urban residence and female *i*'s age
Standard errors are clustered at district-level

Inclusion of an individual fixed effect helps account for important omitted variables such as career and family time-invariant preferences

Results:

Comparison of effects of preschool availability on maternal employment across econometric strategies

	Work participation					
Econometric strategy:	DD		DDD		DDD-FE	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Public						
Preschool * Eligible			0.048**	0.050**	0.080***	0.079***
			(0.021)	(0.021)	(0.022)	(0.022)
Preschool density	-0.014	0.013	-0.011	0.005	-0.017	-0.008
	(0.026)	(0.031)	(0.015)	(0.018)	(0.015)	(0.018)
Eligible child			-0.051***	-0.052***	-0.034***	-0.034***
			(0.008)	(0.007)	(0.007)	(0.007)
Panel B: Private						
Preschool * Eligible			-0.000	-0.000	0.001	0.001
			(0.002)	(0.002)	(0.002)	(0.002)
Preschool density	-0.010***	-0.008***	-0.003	-0.003*	-0.001	-0.004**
	(0.003)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
Eligible child			-0.042***	-0.044***	-0.025**	-0.025**
			(0.012)	(0.011)	(0.010)	(0.010)
Observations	22,737	22,737	76,951	76,951	76,951	76,951
Mean	0.538	0.538	0.534	0.534	0.534	0.534
District Trend		X		X		X

Note: Sample in column 1-2 is restricted to mothers with preschool-aged children (age 3-6). Sample in column 3-6 includes mothers with and without preschool-aged children (age 3-6). Column 1-2 regress work participation on preschool density in a difference-in-differences (DD) strategy (Section 4.1). Column 3-4 regress work participation on preschool density, a dummy for having a preschool-aged child, and the interaction between the two in a difference-in-difference-in-differences (DDD) strategy (Section 4.2). Column 5-6 builds on the DDD strategy and adds individual fixed effect (DDD-FE) to allow comparison within-mothers (Section 4.3). Column 2, 4, 6 add district-specific trends. All regressions include district, year, mother's age fixed effects and an urban residence dummy. Panel A and B look at the effect of public and private preschool densities separately. Standard errors clustered at the district-level is shown in parentheses; *, **, and *** indicate statistical significance at 10, 5, and 1 percent, respectively. Observations, work participation means, and inclusion of district trends are indicated in the last three rows.

Results:

Table 6. Effect of preschool availability on female's work status

	(1) Has a second job	(2) Self-employed	(3) Government worker	(4) Private worker	(5) Unpaid family worker
Panel A: Public					
Public * Eligible	0.008	0.017	0.006*	0.011	0.041***
	(0.010)	(0.010)	(0.004)	(0.011)	(0.011)
Public Preschools	-0.015*	0.001	-0.004	-0.020*	0.006
	(0.009)	(0.007)	(0.005)	(0.010)	(0.010)
Eligible Child	0.001	-0.001	0.000	-0.040***	0.007**
	(0.003)	(0.003)	(0.001)	(0.004)	(0.003)
FDR q-value	0.435	0.299	0.299	0.435	0.002
Panel B: Private					
Private * Eligible	0.001*	0.002**	-0.000	-0.000	0.000
	(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Private Preschools	-0.000	-0.003**	-0.000	-0.000	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
Eligible Child	-0.004	-0.007	0.002	-0.038***	0.012*
	(0.004)	(0.005)	(0.002)	(0.006)	(0.006)
FDR q-value	0.204	0.204	0.992	0.992	0.992
Observations	225,985	226,400	226,400	226,400	226,400
Mean	0.077	0.172	0.037	0.185	0.125

Notes: Sample is restricted to females aged 19-45 in at least two IFLS rounds. We infer preschool data in-between PODES years. Each column regresses the dependent variable indicated in column heading on the density of public (Panel A) or private (Panel B) preschools, defined as the number of preschools divided by the population of children aged 3-6 in each district, a dummy for having a preschool-aged eligible child, and their interaction. Comparison group includes all mothers of children of the wrong ages and non-mothers. All regressions include mother's age fixed effect, urban dummy, district, year, and individual fixed effects. Robust standard errors clustered at district level. Stars denote statistical significance at 1, 5, and 10 percent levels based on unadjusted p-values. FDR q-values for the interaction coefficient of preschool density and eligible child are computed over all 5 outcomes and are shown in the last row of each panel.

Results:

Table 7. Effect of preschool availability on female's occupation

	(1) Professional	(2) Manager	(3) Clerk	(4) Sales	(5) Service	(6) Agricultural	(7) Production
Panel A: Public							
Public * Eligible	-0.002	-0.001	-0.001	-0.007	0.013	0.023**	0.006
	(0.005)	(0.001)	(0.004)	(0.008)	(0.009)	(0.010)	(0.007)
Public Preschools	-0.003	-0.000	-0.004	-0.007	-0.012	0.022*	0.002
	(0.004)	(0.001)	(0.004)	(0.007)	(0.007)	(0.013)	(0.007)
Eligible Child	-0.003*	0.000	-0.009***	-0.004	-0.011***	0.007**	-0.005**
	(0.001)	(0.001)	(0.001)	(0.003)	(0.002)	(0.003)	(0.002)
FDR q-value	0.884	0.884	0.884	0.884	0.821	0.108	0.884
Panel B: Private							
Private * Eligible	-0.000	0.000*	0.000	0.001	-0.001	-0.001	0.002***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)
Private Preschools	0.000	-0.000	-0.000	0.000	-0.004***	0.003**	-0.000
	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)	(0.002)	(0.001)
Eligible Child	-0.002	-0.001**	-0.010***	-0.008	-0.006	0.013**	-0.011***
	(0.002)	(0.001)	(0.002)	(0.005)	(0.004)	(0.006)	(0.003)
FDR q-value	0.860	0.399	0.860	0.860	0.860	0.860	0.055
Observations	226,400	226,400	226,400	226,400	226,400	226,400	226,400
Mean	0.046	0.001	0.030	0.143	0.104	0.177	0.073

Notes: Sample is restricted to females aged 19-45 in at least two IFLS rounds. We infer preschool data in-between PODES years. Each column regresses the dummy for being employed in a certain occupation category indicated in column heading on the density of public (Panel A) or private (Panel B) preschools, defined as the number of preschools divided by the population of children aged 3-6 in each district, a dummy for having a preschool-aged eligible child, and their interaction. Comparison group includes all mothers of children of the wrong ages and non-mothers. All regressions include mother's age fixed effect, urban dummy, district, year, and individual fixed effects. Robust standard errors clustered at district level. Stars denote statistical significance at 1, 5, and 10 percent levels based on unadjusted p-values. FDR q-values for the interaction coefficient of preschool density and eligible child are computed over all 7 outcomes and are shown in the last row of each panel. FDR q-values indicate the probability of false positives among *significant* tests. Number of female-year observations and means of dependent variables are indicated in the last two rows. See Table 6 for a list of top-3 occupations per category.

Results:

No impact on **intensive margin**:

- monthly salary, net profit, and income, or on work hours per week
- Likelihood of working and job searching as main activity in lieu of housekeeping

Summary:

- Estimate elasticity of maternal employment to preschool access
- Public preschools increase employment at extensive margin by 11-16 percent
- This finding is highly robust to modifications in the sample size and variations in identification strategy
- Notably, availability of preschools induces mothers to work in informal sector (unpaid family worker, in agriculture or in production) – not a full-time commitment – compatible with the number of hours preschools operate
- No impacts on intensive margin – salary, work hours, etc.

Why do women sort into lower paid occupations in Vietnam?

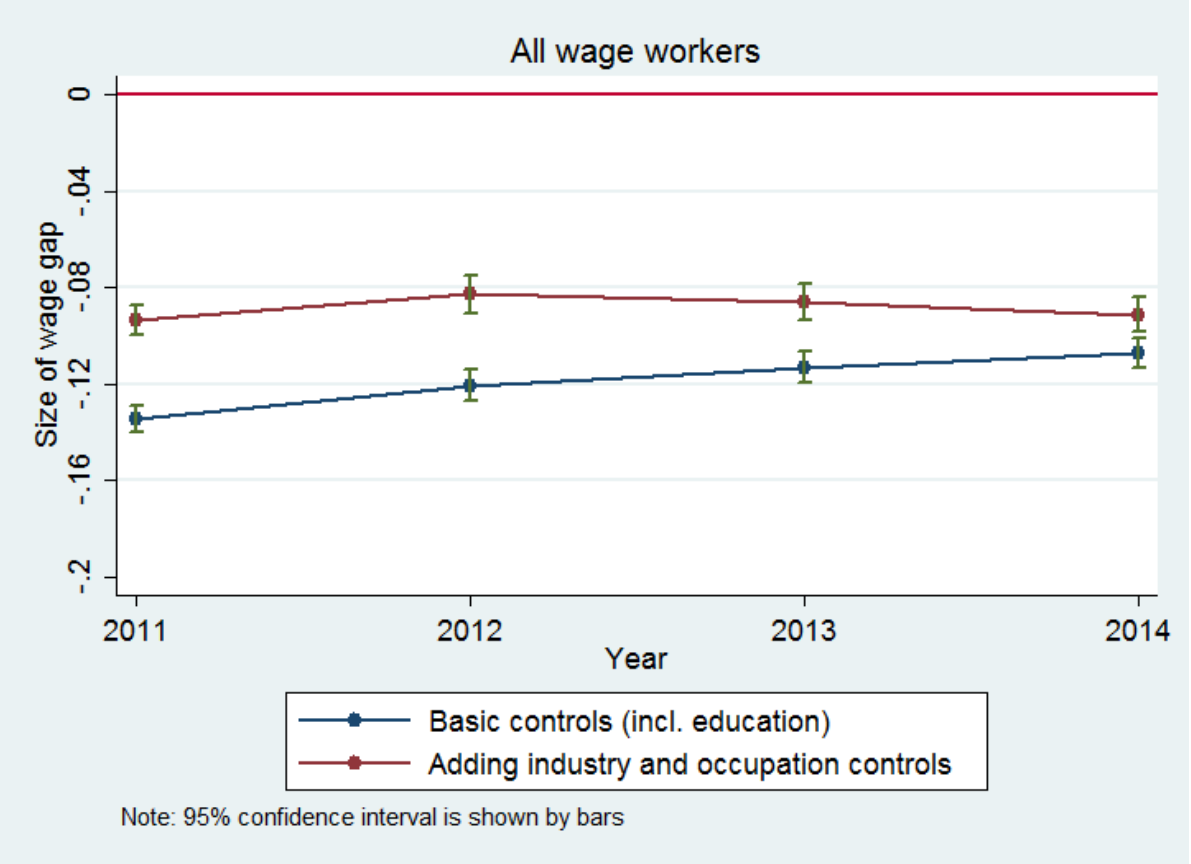
Gender wage gap and occupational segregation

If women sort into lower paying occupations than men, we expect **the gender gap to narrow when we control for occupation and industry**.

1) $LnY_i = \alpha + \beta_2 Female_i + \gamma X_i + \Sigma_{p=1}^{P} \tau_p Edu_{ip} + \varepsilon_i$

2) $LnY_i = \alpha + \beta_3 Female_i + \gamma X_i + \Sigma_{p=1}^{P} \tau_p Edu_{ip} + \Sigma_{q=1}^{Q} \rho_q Occ_{iq} + \Sigma_{r=1}^{R} \omega_r Ind_{ir} + \varepsilon_i$

- Y_i a measure of hourly compensation.
- X_i includes basic demographic controls: province, ethnic minority, rural area and age.



What explains occupational segregation?

Three Hypotheses:

1. **Social norms:** Norms about appropriate jobs for men and women, learned at an early age, drive occupational segregation.
2. **Gender specific barriers in school to work transition:** Sorting into different occupations occurs during transition to work. Specifically, women in male dominated fields of study find it more difficult to find jobs within their field of study.
3. **Sorting over non-monetary characteristics:** Women have stronger preferences for having a formal contract, paid leave and insurance (and are therefore more willing to forego monetary compensation for job security or leave).

Data:

Test 3 hypotheses using data from,

- **Labor Force Surveys:** Carried out by General Statistics Office (GSO) on adults aged 15 and sample intended to be nationally representative.
  - Use data from 2011-2014 (~380,000 - 580,000 unique individuals per year) .
  - Information on basic demographics, educational attainment, wages, industry and occupation.

- **Young Lives project:** Longitudinal cohort study of 12,000 children in 4 countries – Ethiopia, Peru, Vietnam, India. Two cohorts of children – aged either 1 (Younger Cohort) or 8 (Older Cohort) in 2002 followed in surveys in 2003, 2006, 2009 and 2013. Poor households are oversampled.
  - Use data on Younger Cohort (2000 children) from Round 4 (2013) when they are between 11 and 12 years old.
  - Use information on aspirations and measures of cognitive ability.

- **Skills Towards Employability and Productivity (STEP) surveys:** Carried out by WBG, includes both employer and employee modules. Intended to be representative of urban working age population.
  - Use data from first STEP survey in Vietnam from 2012 (3,405 adults).
  - Use data on field of study and occupation and industry of first job.

Hypothesis 1: Social Norms

- We focus on the social norms internalized at an early age that affect human capital accumulation in boys and girls.

- Use Young Lives data on aspirations of 11-12 year olds (Younger Cohort, Round 4 (2013))
- Estimate, for children aged 11-12,
  - $LnY_i = \alpha + \beta Female_i + \varepsilon_i$
  - $LnY_i = \alpha + \beta Female_i + \gamma Ability_i + \varepsilon_i$
  - $LnY_i = \alpha + \beta Female_i + \gamma Ability_i + \rho(Female * Ability) + \varepsilon_i$

  - Y_i is a measure of the wage aspiration constructed using data on wages for occupations from LFS 2013.
  - $Ability$ measured using performance on Peabody Vocabulary Test.

- If our hypothesis is correct, we expect girls to aspire to lower paying jobs than boys, mirroring actual labor market outcomes.

Social Norms
Do girls aspire to lower paying jobs?

No.

- Aspirational gender wage gap favors girls,
- But this gap closes at higher levels of ability.

	Log Median Wage		
	(1)	(2)	(3)
Female	0.084	0.083	0.272
	(0.011)***	(0.011)***	(0.082)***
PPVT		0.002	0.004
		(0.001)***	(0.001)***
Female*PPVT			-0.003
			(0.001)**
R^2	0.04	0.05	0.05
N	1,409	1,398	1,398

* $p<0.1$; ** $p<0.05$; *** $p<0.01$

Hypothesis 2: School to work transition

- If girls aspire to better paid jobs and jobs with better non-monetary characteristics, do they find it more difficult to find these jobs?
  - Do women find it more difficult to find jobs within their field of study?
  - World Bank STEP survey (Vietnam, 2012) includes data on field of education.

- Are women are more likely to working outside field of study,
  - $Pr(Mismatch) = \alpha + \beta Female_i + \gamma X_i + \varepsilon_i$
  - $Mismatch$ is a dummy variable that takes the value of 1 when a person is working outside their field of education.
  - Restrict sample to workers who have at least upper secondary level of education.

School to work transition

Are women more likely to work outside their field of study?

- No.

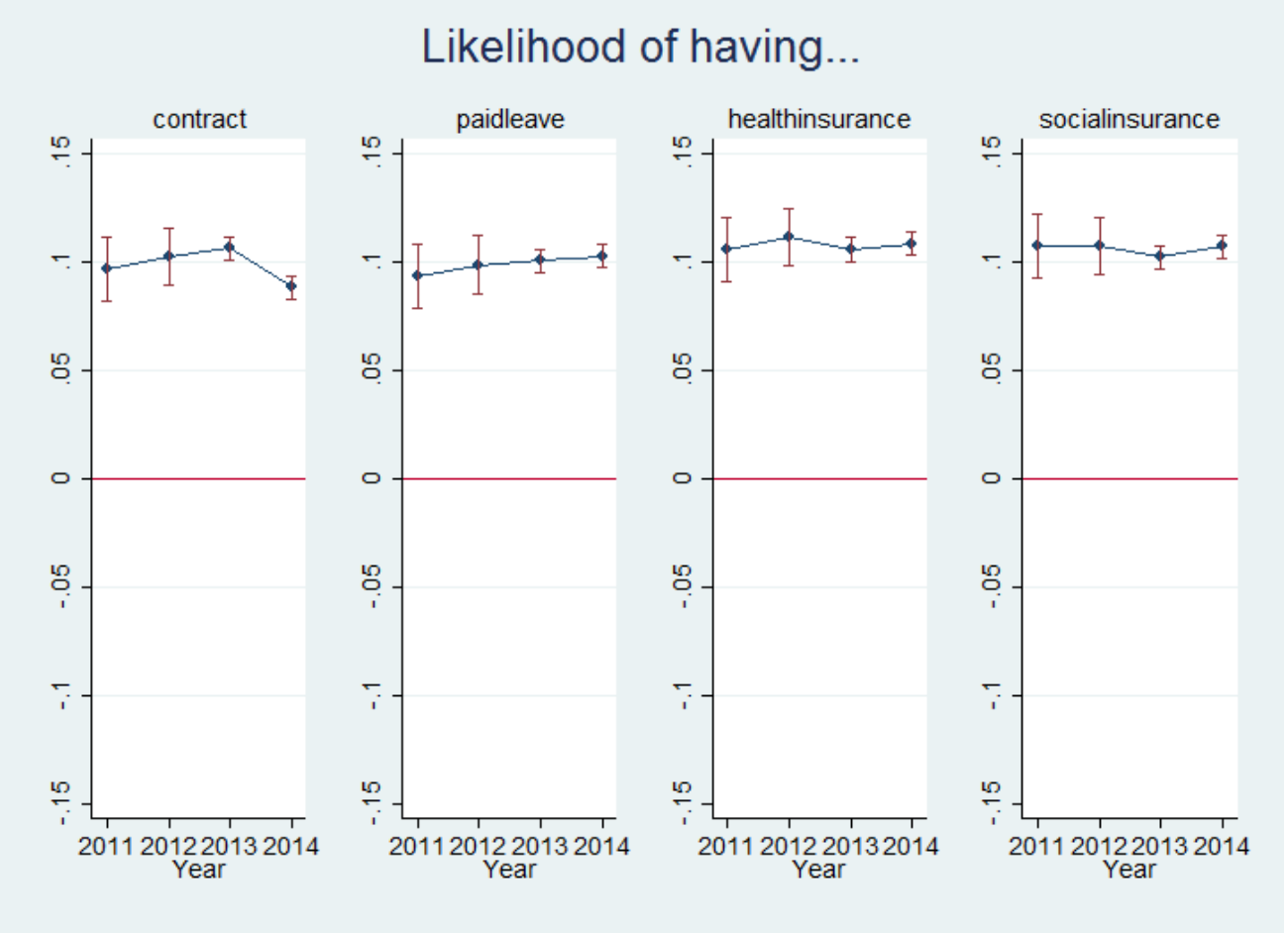
	…mismatch in current job		…mismatch in first job	
Marginal effect of each variable on likelihood of…	m1	m2	m3	m4
Female	-0.071*	-0.073*	-0.071*	-0.072*
	(0.034)	(0.034)	(0.035)	(0.036)
Age		-0.0010		-0.00055
		(0.0016)		(0.0017)
Province		*Yes*		*Yes*
Observations	850	850	764	764

* p<0.05, ** p<0.01, *** p<0.001

Hypothesis 3: Non-monetary characteristics

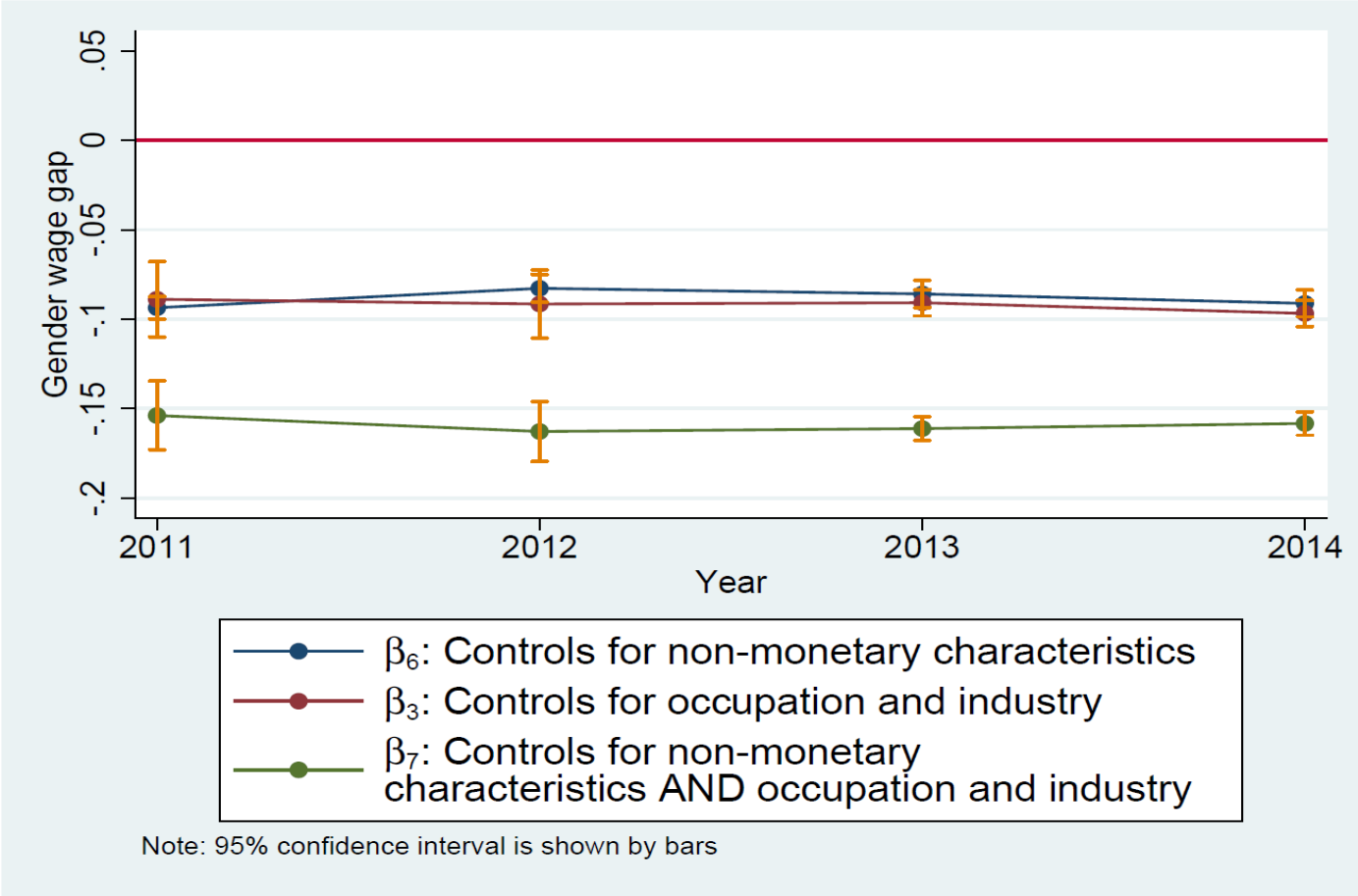
- Does sorting over non-monetary characteristics such as formal contract or paid leave or insurance contribute to the observed gender wage gap?

- Women in the LFS data are on average, more likely to have a formal contract, paid leave, health insurance and social insurance.



Non-monetary characteristics

- Sorting over non-monetary characteristics reduces gender wage gap
- But this is largely explained by occupational segregation
- Moreover, within occupation and industry cell, women actually face a wage penalty for better non-monetary characteristics



Summary

- Establish using LFS data that,
  a) Gender wage gaps persist despite narrowing gap in education.
  b) Occupational segregation explains a portion of the wage gap.

- Offer three hypotheses about emergence of occupational segregation and test empirically using data from LFS, Young Lives, and STEP surveys,
  a) Social Norms: No evidence that at age 11 or 12, girls aspire to lower paying jobs than boys.
  b) Non-monetary characteristics: Find evidence for preference for better non-monetary characteristics in LFS.
  c) School to work transition: No evidence that women are more likely to be working outside their field of education.

Policy discussion

Policy discussion:

1. Domestic work plays an important role in women's labor force participation, as well as quality of their participation
2. Provision of public preschools increases women's LFP in Indonesia – more expensive private preschools do not appear to alleviate childcare constraint on employment
3. However, public preschools do not seem to improve quality of employment – women work in unpaid family jobs and low-productivity sectors. Short hours of operation may be a culprit
4. Selection into occupations and industries more compatible with domestic work is an important contributor to gender wage gap in Vietnam
5. Change in social norms about distribution of household work may facilitate women's entry into higher productivity occupations

Thank you!

Data:

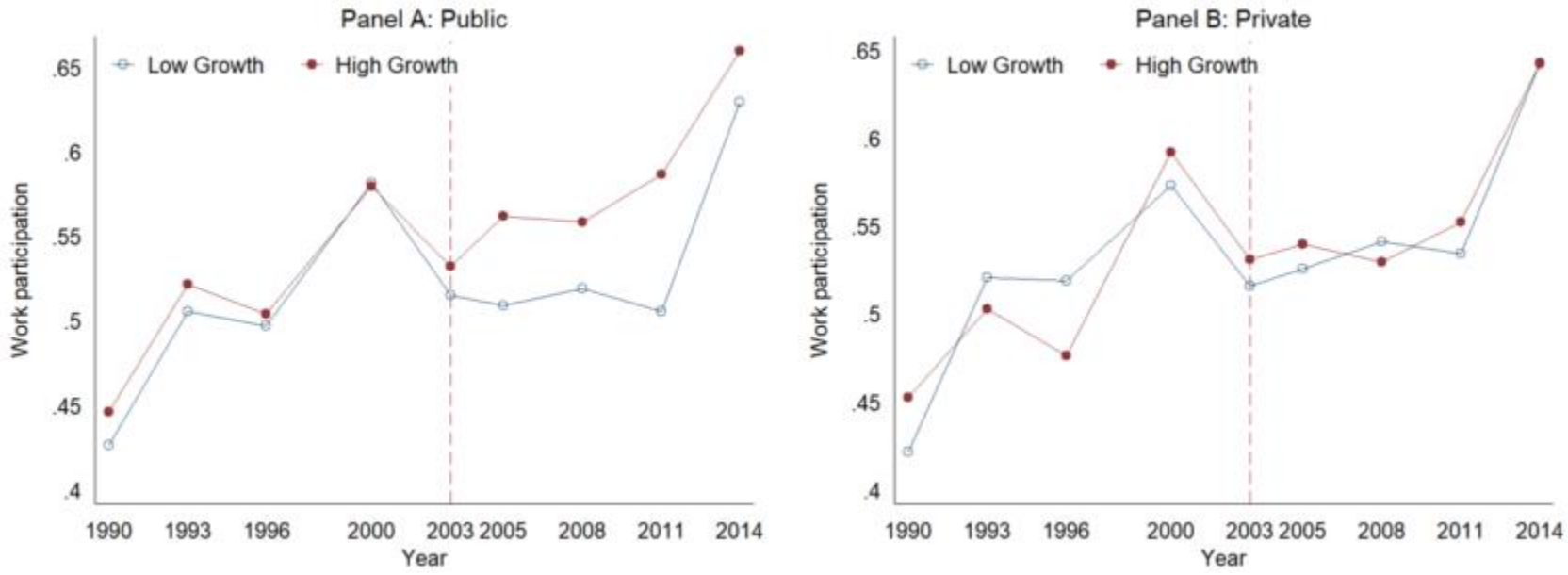
Summary statistics

Summary statistics

	Obs	Mean	SD
Panel A: Individual-year means			
Age	227,579	31.57	11.20
Have preschool-aged child	227,579	0.30	0.46
Work participation	227,559	0.52	0.50
Public preschool density (Inferred in-between)	226,420	0.16	0.22
Private preschool density (Inferred in-between)	226,420	4.60	3.25
Public preschool density (Linear projection)	227,579	0.15	0.21
Private preschool density (Linear projection)	227,579	4.45	3.16
Urban	227,579	0.51	0.50
Panel B: Individual-year means (PODES years only)			
Age	77,318	31.98	11.22
Have preschool-aged child	77,318	0.30	0.46
Work participation	77,312	0.53	0.50
Public preschool density	76,957	0.16	0.22
Private preschool density	76,957	4.52	3.22
Urban	77,318	0.51	0.50
Panel C: Individual means			
Number of surveys	10,340	3.54	1.13
Number of years	10,340	22.01	5.00
Number of PODES years	10,340	7.48	1.46
Age of first marriage	10,329	20.23	4.59
Age of first birth	10,337	22.13	4.52
Number of children	10,340	2.74	1.59
Years of education	10,140	7.75	4.39
Panel D: District-year means (PODES years only)			
Number of districts	290		
Public preschool density	2,559	0.24	0.35
Private preschool density	2,559	4.18	3.24
Public preschool count	2,592	10.27	14.11
Private preschool count	2,592	227.48	243.76
Child age 3-6 population	2,566	61,206	56,815

Empirical strategy 1: DD

Required identifying assumption: absent variations in preschool access, do mothers of preschoolers face similar employment trends?



However, the government may be targeting areas with increasing or decreasing FLFP… or additional programs may be rolled out at the same time.

Empirical strategy 1: DD

Take advantage of variation across time and space and estimate impact of preschools using a difference-in-difference framework

$$y_{ijt} = \alpha + \gamma\, TK_{jt} + \mu_j + \phi_t + \psi\, \boldsymbol{X_{ijt}} + \varepsilon_{ijt}$$

y_{ijt} is the employment outcome of preschooler-mother *i* in district *j* in year *t*
TK_{jt} is the number of preschools per 1,000 children in district *j* in year *t*
μ_j and ϕ_t: district and year fixed effects
$\boldsymbol{X_{ijt}}$ is a vector of time-variant individual characteristics, such as urban residence and female *i*'s age
Standard errors are clustered at district-level

Requires a strong assumption: absent variations in preschool access, mothers of preschoolers would face similar employment trends

Results:

Effect of preschool availability on maternal employment with various preschool data

	Work participation								
Preschool data:	PODES years only			Infer in-between			Linear projection		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Public									
Preschool *		0.048**	0.080***		0.057***	0.074***		0.062***	0.082***
Eligible		(0.021)	(0.022)		(0.017)	(0.016)		(0.020)	(0.019)
Preschool	-0.014	-0.011	-0.017	0.002	-0.016	-0.015	-0.007	-0.021	-0.019
density	(0.026)	(0.015)	(0.015)	(0.023)	(0.013)	(0.012)	(0.027)	(0.016)	(0.014)
Eligible child		-0.051***	-0.034***		-0.051***	-0.034***		-0.052***	-0.035***
		(0.008)	(0.007)		(0.007)	(0.005)		(0.007)	(0.005)
Panel B: Private									
Preschool *		-0.000	0.001		0.001	0.002		0.001	0.003*
Eligible		(0.002)	(0.002)		(0.002)	(0.001)		(0.002)	(0.001)
Preschool	-0.010***	-0.003	-0.001	-0.007**	-0.003*	-0.001	-0.008**	-0.002	0.000
density	(0.003)	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.004)	(0.002)	(0.002)
Eligible child		-0.042***	-0.025**		-0.046***	-0.032***		-0.047***	-0.034***
		(0.012)	(0.010)		(0.011)	(0.008)		(0.011)	(0.008)
Method	DD	DDD	DDD-FE	DD	DDD	DDD-FE	DD	DDD	DDD-FE
Observations	22,737	76,951	76,951	67,431	226,400	226,400	67,788	227,559	227,559
Mean	0.538	0.534	0.534	0.529	0.520	0.520	0.530	0.521	0.521

Note: Column 1-3 are restricted to PODES years only. Column 4-6 infer preschool data in-between PODES years using the closest upper year available, e.g. year 1992 sandwiched between PODES 1990 and 1993 will use 1993 round. Column 7-9 predict preschool density using linear projection with the closest two data points available, e.g. year 1992 fits a linear projection using preschool density data in PODES 1990 and 1993. Column 1, 4, 7 regress work participation on preschool density in DD method. Column 2, 5, 8 regress work participation on the interaction of preschool density and preschool eligibility dummy in DDD method. Column 3, 6, 9 add individual fixed effect to the DDD method. All regressions include district, year, mother's age fixed effects and an urban residence dummy; and do not include district-specific trends. Panel A and B look at the effect of public and private preschool densities separately. Standard errors clustered at the district-level is shown in parentheses; *, **, and *** indicate statistical significance at 10, 5, and 1 percent, respectively. Observations and dependent variable means are indicated in the last two rows.

Results:

Effect of preschool availability on maternal employment depending on which child is preschool-aged eligible

Eligible Child	Work participation					
	Any		Oldest		Youngest	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Public						
Preschool *	0.057***	0.074***	0.041*	0.075***	0.035	0.055**
Eligible	(0.017)	(0.016)	(0.025)	(0.020)	(0.025)	(0.023)
Preschool	-0.016	-0.015	-0.004	-0.003	-0.003	-0.000
density	(0.013)	(0.012)	(0.013)	(0.012)	(0.014)	(0.012)
Eligible child	-0.051***	-0.034***	-0.042***	-0.046***	-0.001	-0.004
	(0.007)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)
Panel B: Private						
Preschool *	0.001	0.002	-0.000	0.002	-0.001	0.001
Eligible	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)
Preschool	-0.003*	-0.001	-0.003	-0.001	-0.002	-0.001
density	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Eligible child	-0.046***	-0.032***	-0.035***	-0.046***	0.008	-0.000
	(0.011)	(0.008)	(0.010)	(0.009)	(0.010)	(0.009)
Method	DDD	DDD-FE	DDD	DDD-FE	DDD	DDD-FE

Note: Sample includes all mothers with and without a preschool-aged eligible child (age 3-6). Comparison group includes non-mothers and mothers of children with the wrong ages. Definition of eligibility varies across columns. Column 1-2 define eligibility pertaining to any child, column 3-4 to the oldest child, and column 5-6 to the youngest child. All columns regress work participation on preschool density, preschool eligibility dummy, and their interaction. All regressions include district, year, and an urban residence dummy. Odd-numbered columns are estimated using DDD method. Even-numbered columns add individual fixed effects in DDD-FE method. Standard errors clustered at the district-level is shown in parentheses; *, **, and *** indicate statistical significance at 10, 5, and 1 percent, respectively. There are 226,400 observations in all columns.

Results:

Effect of preschool availability on maternal employment with different comparison groups

	Work participation					
Eligible Child	Oldest			Youngest		
Comparison Cohort	0-2	7-12	All	0-2	7-12	All
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Public						
DDD	0.063**	-0.022	0.041*	-0.020	0.001	0.035
	(0.028)	(0.027)	(0.025)	(0.029)	(0.022)	(0.025)
DDD-FE	0.075***	0.023	0.075***	-0.037	0.023	0.055**
	(0.026)	(0.026)	(0.020)	(0.027)	(0.018)	(0.023)
Panel B: Private						
DDD	0.004**	-0.002	-0.000	0.006***	-0.004***	-0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
DDD-FE	0.004*	-0.001	0.002	0.004**	0.000	0.001
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.001)
Observations	49,067	69,329	226,400	54,661	58,653	226,400
Mean	0.445	0.520	0.520	0.548	0.640	0.520

Note: Sample includes eligible mothers whose first/last child are aged 3-6 (preschool-aged) and comparison mothers whose first/last child are aged as indicated in the column heading. Ages 0-2 are too young for preschools and ages 7-12 are primary school ages. The 'All' columns include mothers of children aged 0-2, 7-12, 13+, and non-mothers in the comparison group. Column 1-3 define eligibility pertaining to the oldest child only and column 4-6 to the youngest child only. All columns regress work participation on preschool density, preschool eligibility dummy, and their interaction; only interacted coefficients are reported. All regressions include district and year fixed effects, and an urban residence dummy. Estimation strategy used is indicated at each row. Standard errors clustered at the district-level is shown in parentheses; *, **, and *** indicate statistical significance at 10, 5, and 1 percent, respectively. Number of observations and means of work participation for each column are indicated in the last two rows.