

Supplemental Table 1. Multivariate linear and logistic regression model replicas of Table 2 with '5 year paternal age intervals'

		Paternal age (years)															
		<20		20 - 24		25 - 29		30 - 34		35 - 39		40 - 44		45 - 50		> 50	
Gestational Age (weeks)		-0.10	[-.11, -.09]	-0.02	[-.02, -.01]	reference		-0.05	[-.06, -.05]	-0.08	[-.09, -.08]	-0.13	[-.13, -.12]	-0.15	[-.16, -.14]	-0.18	[-.20, -.16]
Birth Weight (g)		-54.7	[-57.1, -52.2]	-16.3	[-17.6, -15.1]	reference		4.0	[3.0, 4.9]	6.0	[4.8, 7.1]	-3.6	[-5.3, -2.0]	-15.3	[-17.9, -12.7]	-33.8	[-37.5, -30.0]
Apgar (5 minute)		-0.04	[-.05, -.04]	-0.01	[-.01, -.01]	reference		0.01	[0.01, 0.01]	0.01	[.01, .01]	0.00	[.00, .01]	-0.01	[-.01, .00]	-0.01	[-.02, -.01]
		Paternal age (years)															
		<20		20 - 24		25 - 29		30 - 34		35 - 39		40 - 44		45 - 50		> 50	
Premature Birth (< 37 weeks)		1.14	[1.13, 1.16]	1.03	[1.02, 1.04]	reference		1.04	[1.03, 1.05]	1.06	[1.06, 1.07]	1.12	[1.11, 1.13]	1.16	[1.15, 1.18]	1.22	[1.20, 1.25]
Low Birth Weight (< 2500 g)		1.15	[1.13, 1.17]	1.05	[1.04, 1.06]	reference		1.03	[1.03, 1.04]	1.05	[1.04, 1.06]	1.10	[1.09, 1.11]	1.15	[1.13, 1.17]	1.23	[1.21, 1.26]
Low 5 Minute Apgar Score (< 8)		1.24	[1.21, 1.27]	1.07	[1.06, 1.08]	reference		0.96	[.95, .97]	0.94	[.93, .95]	0.98	[.97, 1.00]	1.01	[.99, 1.03]	1.06	[1.03, 1.09]
Assisted Ventilation		1.11	[1.09, 1.14]	1.03	[1.01, 1.04]	reference		1.00	[.99, 1.01]	0.99	[.98, 1.00]	1.02	[1.01, 1.04]	1.06	[1.03, 1.08]	1.09	[1.05, 1.12]
NICU		1.08	[1.06, 1.10]	1.01	[1.00, 1.02]	reference		1.03	[1.02, 1.04]	1.03	[1.02, 1.04]	1.10	[1.09, 1.11]	1.16	[1.14, 1.17]	1.23	[1.21, 1.26]
Antibiotics		1.12	[1.09, 1.15]	1.02	[1.01, 1.04]	reference		0.98	[.97, .99]	0.94	[.92, .95]	0.97	[.95, .99]	1.01	[.98, 1.04]	1.04	[1.00, 1.09]
Seizures		0.97	[.75, 1.25]	1.08	[.94, 1.23]	reference		1.02	[.92, 1.13]	1.01	[.89, 1.14]	1.03	[.87, 1.21]	1.23	[.98, 1.55]	1.15	[.83, 1.59]
Adverse Event		1.10	[1.08, 1.11]	1.02	[1.01, 1.03]	reference		1.02	[1.01, 1.02]	1.01	[1.01, 1.02]	1.07	[1.06, 1.08]	1.12	[1.11, 1.14]	1.20	[1.17, 1.22]
		Paternal age (years)															
		<20		20 - 24		25 - 29		30 - 34		35 - 39		40 - 44		45 - 50		> 50	
Gestational Diabetes		0.59	[.57, .61]	0.91	[.90, .92]	reference		1.16	[1.15, 1.17]	1.25	[1.24, 1.26]	1.34	[1.32, 1.35]	1.42	[1.40, 1.44]	1.44	[1.41, 1.47]
Pre-eclampsia		1.12	[1.10, 1.15]	1.04	[1.02, 1.05]	reference		0.96	[.96, .97]	0.94	[.93, .95]	0.97	[.96, .99]	0.97	[.95, .99]	0.99	[.96, 1.01]
Eclampsia		1.21	[1.11, 1.32]	1.07	[1.02, 1.13]	reference		0.95	[.92, .99]	0.95	[.91, 1.00]	1.00	[.94, 1.06]	0.99	[.91, 1.08]	1.01	[.90, 1.13]

Supplemental Table 2. Multivariate linear and logistic regression model replicas of Table 2 with only 'term births,' defined as births at least 37 weeks into gestation.

		Paternal age (years)								
		< 25		25 - 34	35 - 44		45 - 54		55+	
Birth Weight (g)		-22.4	[-23.4, -23.4]	reference	5.38	[4.6, 6.2]	-9.3	[-11.2, -7.4]	-30.0	[-35.7, -24.4]
Apgar (5 minute)		-0.02	[-.02, -.02]	reference	0.01	[.01, .01]	0.00	[-.01, .01]	-0.01	[-.02, -.01]

		Paternal age (years)								
		< 25		25 - 34	35 - 44		45 - 54		55+	
Low Birth Weight (< 2500 g)		1.07	[1.05, 1.08]	reference	1.04	[1.02, 1.05]	1.18	[1.15, 1.20]	1.36	[1.28, 1.43]
Low 5 Minute Apgar Score (< 8)		1.15	[1.13, 1.17]	reference	0.95	[.94, .96]	1.01	[.99, 1.04]	1.15	[1.07, 1.23]
Assisted Ventilation		1.05	[1.04, 1.07]	reference	0.98	[.97, .99]	1.05	[1.02, 1.07]	1.09	[1.02, 1.18]
NICU		1.02	[1.00, 1.03]	reference	1.01	[1.00, 1.02]	1.16	[1.14, 1.18]	1.37	[1.31, 1.44]
Antibiotics		1.08	[1.06, 1.10]	reference	0.91	[.90, .93]	1.00	[.97, 1.04]	1.06	[.96, 1.17]
Seizures		1.08	[.94, 1.25]	reference	0.99	[.88, 1.11]	1.08	[.85, 1.37]	1.18	[.61, 2.27]
Adverse Event		1.04	[1.03, 1.05]	reference	0.99	[.99, 1.00]	1.11	[1.10, 1.13]	1.27	[1.22, 1.33]

		Paternal age (years)								
		< 25		25 - 34	35 - 44		45 - 54		55+	
Gestational Diabetes		0.82	[.81, .83]	reference	1.16	[1.15, 1.16]	1.28	[1.27, 1.30]	1.34	[1.29, 1.39]
Pre-eclampsia		1.06	[1.05, 1.08]	reference	0.96	[.95, .97]	0.97	[.96, .99]	0.97	[.92, 1.02]
Eclampsia		1.12	[1.06, 1.19]	reference	0.98	[.93, 1.02]	1.00	[.91, 1.10]	1.09	[.83, 1.41]

Supplemental Table 3. Multivariate linear and logistic regression model replicas of Table 2 with only 'maternal first births'

		Paternal age (years)									
		< 25		25 - 34		35 - 44		45 - 54		55+	
Gestational Age (weeks)		-0.03	[-.03, -.02]	reference		-0.08	[-.09, -.07]	-0.14	[-.16, -.12]	-0.17	[-.23, -.11]
Birth Weight (g)		-8.5	[-19.4, -6.6]	reference		-17.4	[-19.4, -15.5]	-30.0	[-34.9, -25.0]	-47.2	[-60.8, -33.6]
Apgar (5 minute)		-0.01	[-.01, .00]	reference		0.00	[.00, .00]	0.00	[-.01, .01]	0.00	[-.02, .02]

		Paternal age (years)									
		< 25		25 - 34		35 - 44		45 - 54		55+	
Premature Birth (< 37 weeks)		1.02	[1.01, 1.03]	reference		1.10	[1.09, 1.11]	1.16	[1.13, 1.19]	1.23	[1.16, 1.32]
Low Birth Weight (< 2500 g)		0.99	[.97, 1.00]	reference		1.10	[1.09, 1.12]	1.15	[1.12, 1.19]	1.20	[1.12, 1.29]
Low 5 Minute Apgar Score (< 8)		1.02	[1.01, 1.04]	reference		0.99	[.97, 1.01]	0.98	[.94, 1.02]	0.98	[.88, 1.09]
Assisted Ventilation		0.98	[.96, 1.00]	reference		1.01	[.99, 1.02]	1.02	[.98, 1.06]	0.99	[.89, 1.10]
NICU		0.93	[.92, .95]	reference		1.06	[1.05, 1.07]	1.11	[1.08, 1.14]	1.15	[1.07, 1.23]
Antibiotics		0.96	[.94, .98]	reference		0.98	[.95, 1.00]	0.97	[.92, 1.02]	1.00	[.88, 1.15]
Seizures		0.89	[.75, 1.07]	reference		0.92	[.78, 1.10]	1.07	[.73, 1.58]	0.71	[.19, 2.67]
Adverse Event		0.95	[.94, .96]	reference		1.05	[1.04, 1.06]	1.08	[1.05, 1.11]	1.12	[1.05, 1.19]

		Paternal age (years)									
		< 25		25 - 34		35 - 44		46 - 54		55+	
Gestational Diabetes		0.80	[.78, .81]	reference		1.12	[1.11, 1.14]	1.21	[1.18, 1.25]	1.38	[1.27, 1.49]
Pre-eclampsia		0.97	[.95, .98]	reference		0.97	[.96, .98]	0.91	[.88, .94]	0.93	[.85, 1.01]
Eclampsia		0.98	[.92, 1.05]	reference		1.02	[.96, 1.09]	0.94	[.81, 1.09]	1.10	[.77, 1.57]

Supplemental Table 4a. Multivariate linear and logistic regression model replicas of Table 2 with 'births from 2007'

		Paternal age (years)					
		< 25	25 - 34	35 - 44	45 - 54	55+	
Gestational Age (weeks)	-0.03	[-.05, -.02]	reference	-0.04	[-.05, -.02]	-0.04	[-.15, .08]
Birth Weight (g)	-31.4	[-35.3, -27.5]	reference	4.5	[1.2, 7.9]	-14.2	[-16.1, 4.1]
Apgar (5 minute)	-0.01	[-.02, -.01]	reference	0.01	[-.01, .01]	-0.01	[-.02, .00]
		Paternal age (years)					
		< 25	25 - 34	35 - 44	45 - 54	55+	
Premature Birth (< 37 weeks)	1.07	[1.05, 1.09]	reference	1.03	[1.01, 1.05]	1.1	[1.06, 1.15]
Low Birth Weight (< 2500 g)	1.09	[1.06, 1.11]	reference	1.03	[1.01, 1.06]	1.07	[1.02, 1.12]
Low 5 Minute Apgar Score (< 8)	1.15	[1.10, 1.20]	reference	0.95	[.91, .99]	1.04	[.96, 1.14]
Assisted Ventilation	1.05	[1.03, 1.07]	reference	1.02	[1.00, 1.04]	1.20	[1.13, 1.19]
NICU	1.02	[1.00, 1.04]	reference	1.05	[1.03, 1.07]	1.15	[1.12, 1.17]
Antibiotics	1.03	[.99, 1.04]	reference	0.95	[.91, .99]	1.08	[1.03, 1.15]
Seizures	1.13	[.94, 1.46]	reference	0.96	[.68, 1.14]	1.32	[.95, 1.78]
Adverse Event	1.29	[1.15, 1.44]	reference	1.07	[.97, 1.18]	1.12	[.91, 1.38]
		Paternal age (years)					
		< 25	25 - 34	35 - 44	45 - 54	55+	
Gestational Diabetes	0.81	[.78, .85]	reference	1.15	[1.12, 1.18]	1.33	[1.26, 1.40]
Pre-eclampsia	1.10	[1.06, 1.14]	reference	0.9	[.87, .93]	0.95	[.88, 1.01]
Eclampsia	1.29	[1.15, 1.44]	reference	1.07	[.97, 1.18]	1.12	[.91, 1.38]

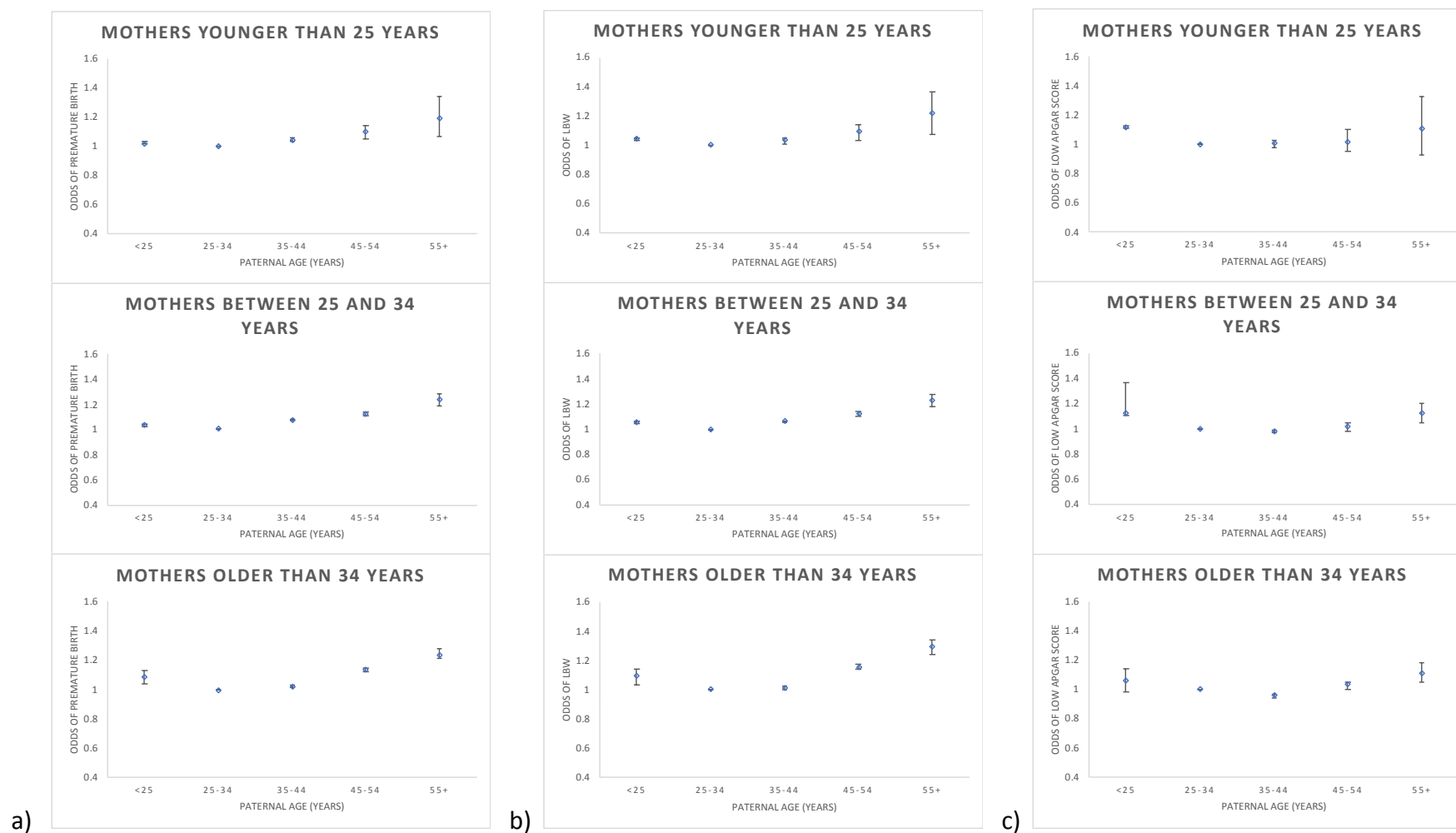
Supplemental Table 4b. Multivariate linear and logistic regression model replicas of Table 2 with 'births from 2016'

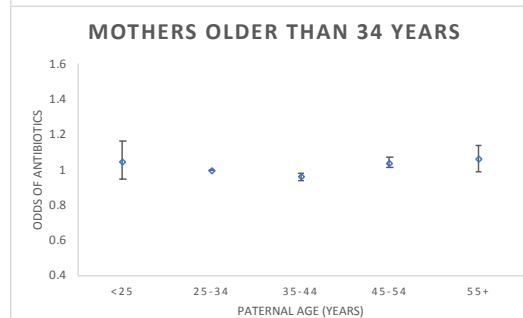
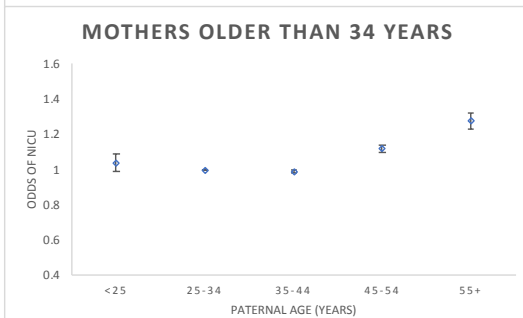
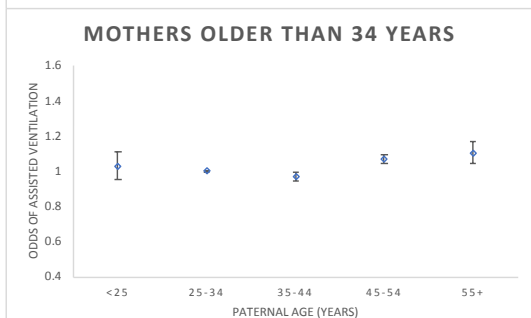
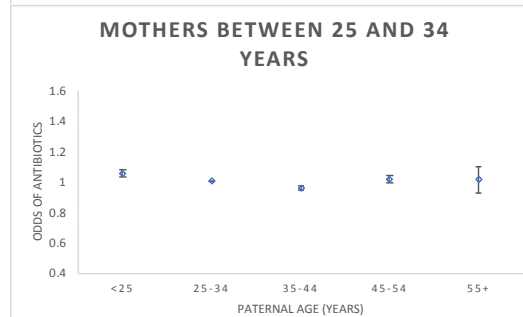
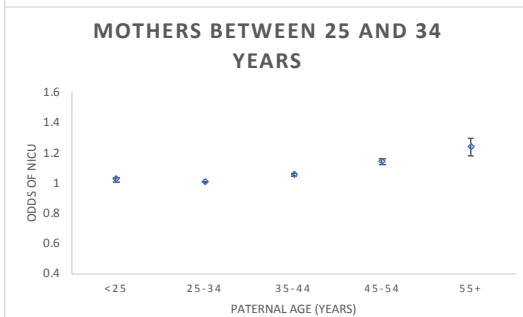
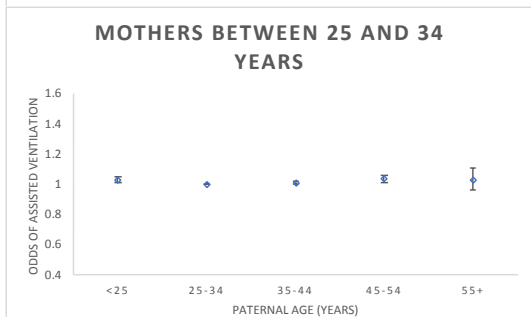
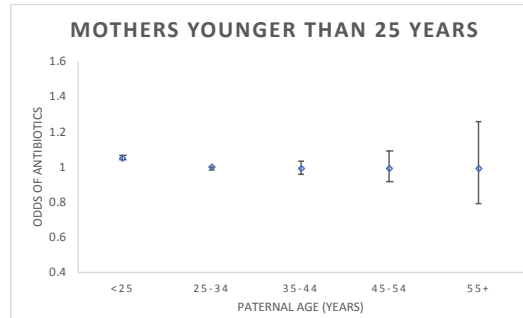
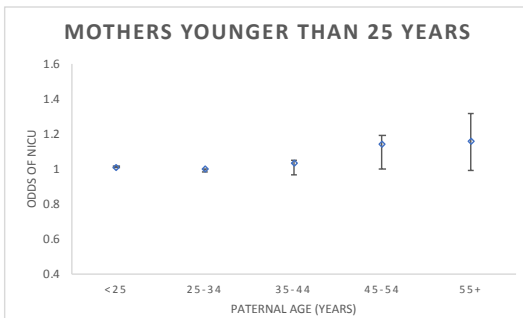
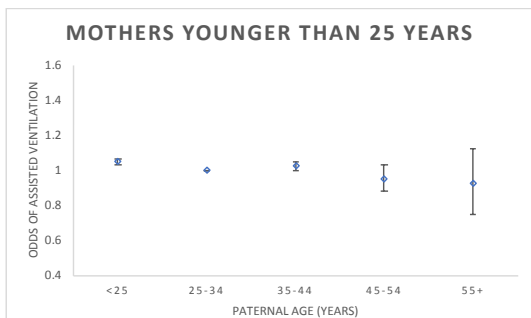
		Paternal age (years)					
		< 25	25 - 34	35 - 44	45 - 54	55+	
Gestational Age (weeks)	-0.03	[-.05, -.02]	reference	-0.05	[-.06, -.05]	-0.12	[-.14, -.10]
Birth Weight (g)	-24.3	[-27.2, -21.4]	reference	2.5	[.26, 4.7]	-17.2	[-22.2, -12.1]
Apgar (5 minute)	-0.02	[-.02, -.01]	reference	0.01	[.01, .01]	-0.01	[-.01, .00]
		Paternal age (years)					
		< 25	25 - 34	35 - 44	45 - 54	55+	
Premature Birth (< 37 weeks)	1.03	[1.02, 1.05]	reference	1.06	[1.05, 1.07]	1.15	[1.12, 1.18]
Low Birth Weight (< 2500 g)	1.05	[1.03, 1.07]	reference	1.04	[1.02, 1.05]	1.13	[1.09, 1.16]
Low 5 Minute Apgar Score (< 8)	1.09	[1.06, 1.12]	reference	0.96	[.94, .98]	1.01	[.96, 1.05]
Assisted Ventilation	1.04	[1.02, 1.06]	reference	1.05	[1.03, 1.05]	1.10	[1.09, 1.13]
NICU	1.01	[.99, 1.03]	reference	1.03	[1.01, 1.04]	1.14	[1.11, 1.18]
Antibiotics	1.02	[.98, 1.05]	reference	0.95	[.92, .97]	1.06	[1.01, 1.12]
Seizures	1.17	[.89, 1.55]	reference	0.98	[.79, 1.21]	1.37	[.93, 2.04]
Adverse Event	1.02	[1.00, 1.04]	reference	1.01	[1.00, 1.02]	1.11	[1.09, 1.14]
		Paternal age (years)					
		< 25	25 - 34	35 - 44	45 - 54	55+	
Gestational Diabetes	0.82	[.80, .84]	reference	1.16	[1.14, 1.17]	1.28	[1.25, 1.32]
Pre-eclampsia	1.06	[1.04, 1.08]	reference	0.97	[.95, .99]	0.99	[.96, 1.03]
Eclampsia	1.15	[1.04, 1.27]	reference	0.99	[.92, 1.07]	1.11	[.96, 1.29]

Supplementary Table 5. Multivariate linear and logistic regression model replicas of Table 2 limited to 'births with complete paternal data.'

		Paternal age (years)									
		< 25		25 - 34		35 - 44		45 - 54		55+	
Gestational Age (weeks)		-0.01	[-.01, .00]	reference		-0.06	[-.07, -.06]	-0.12	[-.13, -.12]	-0.18	[-.21, -.16]
Birth Weight (g)		-21.8	[-23.0, -20.6]	reference		0.56	[-.38, 1.50]	-22.0	[-24.1, -19.9]	-52.0	[-58.0, -46.0]
Apgar (5 minute)		-0.02	[-.02, -.02]	reference		0.01	[.00, .01]	-0.01	[-.01, .00]	-0.02	[-.03, -.01]
		Paternal age (years)									
		< 25		25 - 34		35 - 44		45 - 54		55+	
Premature Birth (< 37 weeks)		1.03	[1.02, 1.04]	reference		1.06	[1.05, 1.06]	1.15	[1.14, 1.16]	1.27	[1.23, 1.31]
Low Birth Weight (< 2500 g)		1.05	[1.04, 1.06]	reference		1.05	[1.04, 1.05]	1.15	[1.13, 1.16]	1.28	[1.24, 1.33]
Low 5 Minute Apgar Score (< 8)		1.11	[1.10, 1.12]	reference		0.97	[.96, .98]	1.03	[1.01, 1.05]	1.13	[1.07, 1.19]
Assisted Ventilation		1.04	[1.03, 1.05]	reference		0.99	[.98, 1.00]	1.06	[1.04, 1.08]	1.11	[1.05, 1.17]
NICU		1.00	[.99, 1.02]	reference		1.05	[1.03, 1.08]	1.10	[1.08, 1.12]	1.24	[1.20, 1.30]
Antibiotics		1.04	[1.03, 1.06]	reference		0.95	[.94, .96]	1.03	[1.00, 1.05]	1.06	[.99, 1.14]
Seizures		1.07	[.95, 1.21]	reference		1.00	[.90, 1.10]	1.18	[.97, 1.43]	1.27	[.75, 2.17]
Adverse Event		1.03	[1.02, 1.03]	reference		1.02	[1.01, 1.02]	1.12	[1.11, 1.13]	1.25	[1.21, 1.29]
		Paternal age (years)									
		< 25		25 - 34		35 - 44		45 - 54		55+	
Gestational Diabetes		0.83	[.82, .84]	reference		1.15	[1.15, 1.16]	1.28	[1.27, 1.30]	1.34	[1.30, 1.39]
Pre-eclampsia		1.06	[1.05, 1.07]	reference		0.96	[.96, .97]	0.99	[.98, 1.01]	1.01	[.96, 1.05]
Eclampsia		1.11	[1.06, 1.16]	reference		0.99	[.96, 1.03]	1.04	[.96, 1.12]	1.06	[.87, 1.30]

Supplemental Figure 1. Scatter plots of the odds of all outcomes by paternal age stratified by maternal age group. Error bars indicate the 95% confidence intervals based on the distribution of births within each paternal age group. a) Premature Birth, b) Low Birth Weight, c) Low Apgar Score, d) Assisted Ventilation, e) NICU, f) Antibiotics, g) Seizures, h) Gestational Diabetes, i) Pre-eclampsia, j) Eclampsia



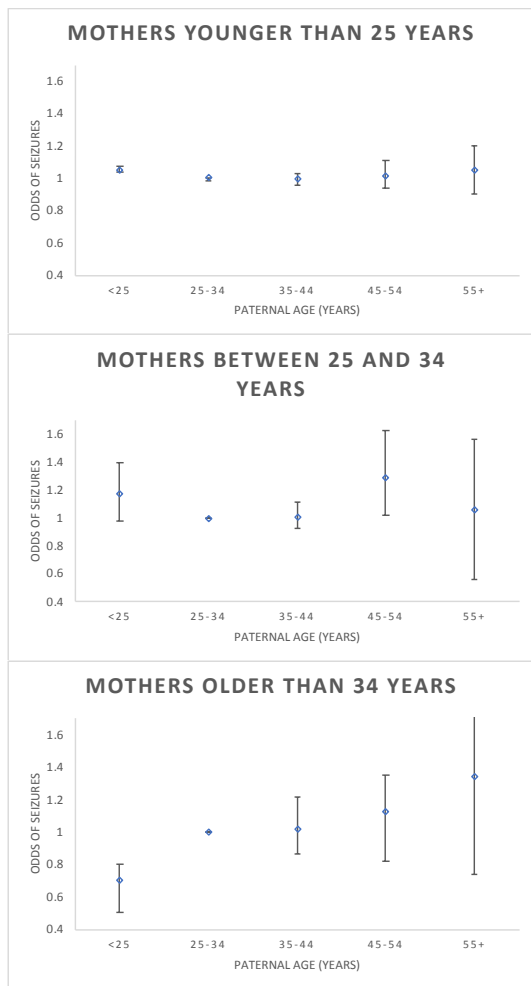


d)

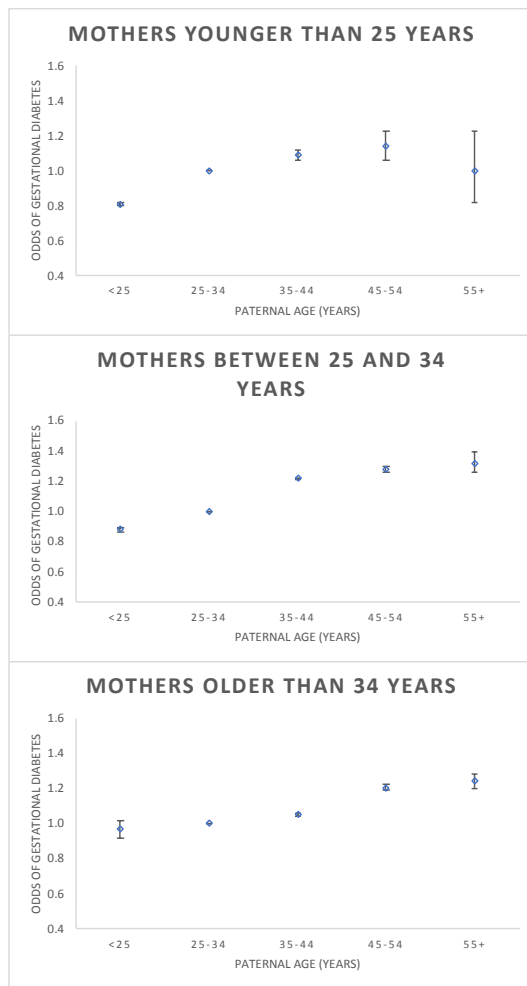
e)

f)

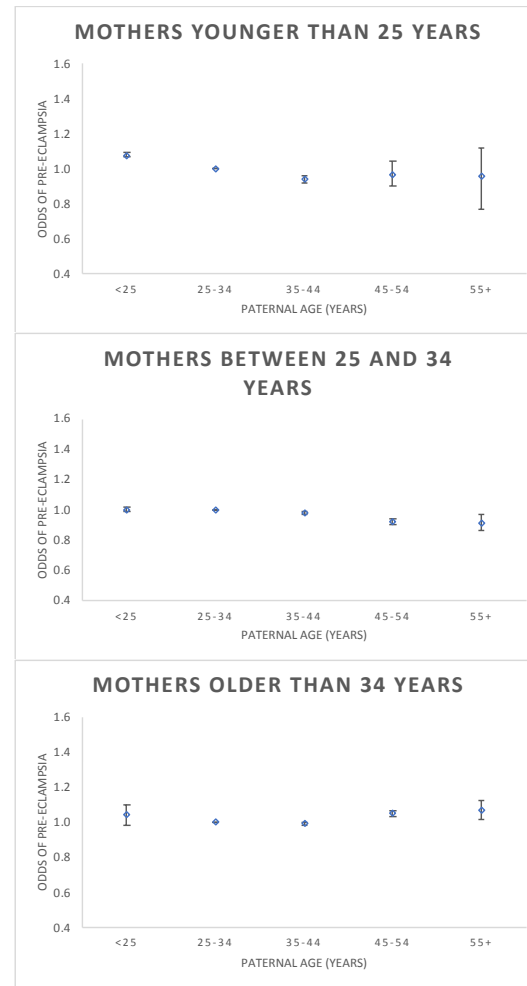
g)



h)



i)



j)

