Appendix 1. ICD-9-CM Diagnosis Codes Included For Maternal Co-morbidity Composite

Medical Condition of Procedure	ICD-9-CM
Pulmonary Hypertension	416.0x, 416.8x, 416.9x
Sickle cell disease	282.4x, 282.6x
Placenta Previa	641.0x, 641.1x
Gestational Hypertension	642.3x (without preeclampsia/eclampsia or pre-existing hypertension)
Mild or unspecified preeclampsia	642.4x, 642.7x (without severe preeclampsia/eclampsia)
Severe preeclampsia/eclampsia	642.5x, 642.6x
Chronic renal disease	581.x-583.x, 587.x, 588.x, 646.2x
Preexisting hypertension	401.x-405.x, 642.0x-642.2x, 642.7x
Chronic ischemic heart disease	412.x – 414.x
Congenital heart disease	745.0x – 747.4x, 648.5x
Systemic lupus erythematosus	710.0x
Human immunodeficiency virus	042.x, V08.x
Cardiac valvular disease	394.x – 397.x , 424.x
Chronic congestive heart failure	428.22, 428.23, 428.32, 428.33, 428.42, 428.43
Asthma	493.x
Preexisting diabetes mellitus	250.x, 648.0x

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Gestational diabetes mellitus	648.x (without pre-existing diabetes)
Obesity	278.0x, 649.1x, V85.3, V85.4
Cystic fibrosis	277.0x
Previous cesarean delivery	654.2x

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Appendix 2. ICD-9-CM Diagnosis and Procedure Codes Included in the Severe Maternal Morbidity Composite, as per the Centers for Disease Control and Prevention

Medical Condition of Procedure	Diagnosis (DX) or Procedure (PR)	ICD-9-CM
Acute myocardial infarction	DX	410.xx
Aneurysm	DX	441.xx
Acute renal failure	DX	584.5, 584.6, 584.7, 584.8, 584.9, 669.3x
Adult Respiratory Distress Syndrome	DX	518.5x, 518.81, 518.82, 518.84, 799.1
Amniotic Fluid Embolism	DX	673.1x
Cardiac arrest/ventricular fibrillation	DX	427.41, 427.42, 427.5
Conversion of cardiac rhythm	PR	99.6x
Disseminated intravascular coagulation	DX	286.6, 286.9, 666.3x
Eclampsia	DX	642.6x
Heart failure/arrest during surgery of procedure	DX	997.1
Puerperal cerebrovascular disorders	DX	430.xx, 431.xx, 432.xx, 433.xx, 434.xx, 436.xx, 437.xx, 671.5x, 674.0x, 997.02

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Pulmonary edema/Acute Heart Failure	DX	518.4, 428.1, 428.0, 428.21, 428.23, 428.31, 428.33, 428.41, 428.43
Severe anesthesia complications	DX	668.0x, 668.1x, 668.2x
Sepsis	DX	038.xx, 995.91, 995.92, 670.2x
Shock	DX	669.1x, 785.5x, 995.0, 995.4, 998.0x
Sickle cell disease with crisis	DX	282.42, 282.62, 282.64, 282.69
Air and thrombotic embolism	DX	415.1x, 673.0x, 673.2x, 673.2x, 673.3x, 673.8x
Blood transfusion	PR	99.0x
Hysterectomy	PR	68.3x-68.9x
Temporary tracheostomy	PR	31.1
Ventilation	PR	93.90, 96.01, 96.02, 96.03, 96.05

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Appendix 3. Comparison of Characteristics Among Women With Missing Race–Ethnicity Data Who Delivered a Stillborn Fetus ≥ 23 Weeks Gestation versus a a Liveborn infant, Stratified by Maternal Medical Comorbidities Coded During Delivery Hospitalization

	Without Maternal Medical Comorbidities			With Maternal Medical Comorbidities		
	Stillborn fetus ≥ 23 weeks (n=104)	Liveborn infant (n=13,322)	<i>P</i> value	Stillborn fetus ≥ 23 weeks (n=35)	Liveborn infant (n=5205)	<i>P</i> value
Maternal age at delivery (n (%))						
< 18 years	-- ¹	532 (4.0)	0.03	0 (0.0)	104 (2.0)	0.5
18-34 years	76 (73.1)	11,069 (83.1)		25 (71.4)	3885 (74.6)	
35-39 years	16 (1.1)	1399 (10.5)		-- ¹	916 (17.6)	
≥ 40 years	-- ¹	322 (2.4)		-- ¹	300 (5.8)	
Insurance Type (n (%))						
Private Insurance	-- ¹	7055 (53.0)	0.2	-- ¹	2713 (52.2)	0.8
Public Insurance	-- ¹	5775 (43.4)		-- ¹	2245 (43.1)	
Other	-- ¹	492 (3.7)		-- ¹	247 (4.8)	
Income Quartile, based on Zip code (n (%))²						

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Quartile 1 (Poorest)	32 (34.1)	3347 (28.9)	0.5		12 (38.7)	1289 (29.0)	0.6
Quartile 2	30 (31.9)	3424 (29.6)			-- ¹	1363 (30.6)	
Quartile 3	21 (22.3)	3213 (27.8)			-- ¹	1175 (26.4)	
Quartile 4 (Wealthiest)	11 (11.7)	1583 (13.7)			-- ¹	624 (14.0)	
Mode of Delivery (n (%))							
Spontaneous Vaginal	85 (85.9)	9181 (68.9)	0.0002		23 (67.7)	1792 (34.4)	0.0003
Operative Vaginal	-- ¹	725 (5.4)			-- ¹	154 (3.0)	
Cesarean	-- ¹	3416 (25.7)			-- ¹	3259 (62.6)	

¹ Unable to report (<11 women). For insurance type, unable to report any values for patient privacy (could extrapolate a value of <11)

² For women without comorbidities, missing data from 10 women with stillbirth and 1755 women with livebirth. For women with comorbidities, missing data from 4 women with stillbirth and 754 women with livebirth.

Appendix 4: Comparison of Characteristics Among Women With Missing Data on Income Quartile by Zip Code Who Delivered a Stillborn Fetus ≥ 23 Weeks Singleton Versus Liveborn Infant, Stratified by Maternal Medical Comorbidities Coded During Delivery Hospitalization

	Without Maternal Medical Comorbidities			With Maternal Medical Comorbidities		
	Stillborn Fetus ≥ 23 weeks (n=969)	Liveborn infant (n=143,597)	<i>P</i> value	Stillborn fetus≥ 23 weeks (n=414)	Liveborn infant (n=64,176)	<i>P</i> value
Maternal age at delivery (n (%))						
< 18 years	53 (5.5)	6211 (4.3)	<0.0001	11 (2.6)	1294 (2.0)	0.3
18-34 years	751 (77.5)	120,125 (83.7)		305 (73.7)	49,321 (76.9)	
35-39 years	126 (13.0)	14,108 (9.8)		81 (19.6)	10,597 (16.5)	
≥ 40 years	39 (4.0)	3153 (2.2)		17 (4.1)	2964 (4.6)	
Race/Ethnicity (n (%))¹						
White	400 (41.7)	76,442 (53.9)	<0.0001	146 (35.6)	33,191 (51.7)	<0.0001
Black	368 (38.3)	30,839 (21.7)		180 (43.9)	14,882 (23.2)	
Hispanic	154 (16.1)	27,109 (19.1)		63 (15.4)	12,251 (19.1)	
Other	37 (3.9)	7452 (5.3)		21 (5.1)	3098 (4.8)	
Insurance Type (n (%))						

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Private Insurance	446 (46.0)	70,078 (48.8)	0.1		165 (39.9)	33,479 (52.8)	<0.0001
Public Insurance	500 (51.6)	69,587 (48.5)			231 (55.8)	28,167 (44.4)	
Other	23 (2.4)	3932 (2.7)			18 (4.3)	1776 (2.8)	
Mode of Delivery (n (%))							
Spontaneous Vaginal	783 (85.8)	103,628 (72.2)	<0.0001		228 (57.3)	19,851 (30.9)	<0.0001
Operative Vaginal	27 (3.0)	7737 (5.4)			11 (2.8)	1635 (2.6)	
Cesarean	103 (11.3)	32,232 (22.5)			159 (40.0)	42,690 (66.5)	

¹ For women without comorbidities, missing data from 10 women with stillbirth and 1755 women with livebirth. For women with comorbidities, missing data from 4 women with stillbirth and 754 women with livebirth.