

Appendix 1. Coding for Inclusion, Exposure, Outcomes, and Subgroups

	ICD-10 code starts with	ICD-10 procedure code equals	Standard charge code equals
COVID-19	U07.1		
Viral pneumonia	J12.8		
	J12.9		
Pregnancy	O		
Delivery of infant		10D00Z0	
		10D00Z1	
		10D00Z2	
		10D07Z3	
		10D07Z4	
		10D07Z5	
		10D07Z6	
		10D07Z7	
		10D07Z8	
		10E0XZZ	
Mechanical ventilation		5A1935Z	
		5A1945Z	
		5A1955Z	
ICU admission			110173000030000
			110173000190000
			110174000050000
			110174000190000
			110200000090000
			110200000190000
			110200000420000
			110201000080000
			110201000260000
			110202000070000
			110202000120000
			110203000210000
			110203000440000
			110204000860000
			110204000870000
			110204000880000
			110204000890000
			110204000900000
			110204000910000
			110209000910000
			110210000010000
			110210000020000
			110210000030000
			110210000060000
			110210000190000

Appendix 2. Comparison Between Principal Diagnosis of Coronavirus Disease 2019 (COVID-19) and Viral Pneumonia Diagnosis Among Patients With COVID-19 and in-Hospital Mortality

	Pregnant (n=26)	Non-pregnant (n=865)
Principal diagnosis of COVID-19^a	21 (80.8%)	473 (54.7%)
Viral pneumonia diagnosis	24 (92.3%)	748 (86.5%)

^a To define patients hospitalized for the treatment of COVID-19, we compared a principal diagnosis of COVID-19 based on CDC ICD-10 coding guidelines versus a diagnosis of viral pneumonia and any diagnosis of COVID-19.¹ The Premier Database categorizes diagnoses as admitting, primary, or secondary. Consistent with guidelines, non-pregnant patients with an admitting or primary diagnosis of “U07.1 – COVID-19” were classified as having a principal diagnosis of COVID-19. For pregnant patients, the guidelines advise the use of “O98.5 - Other viral diseases complicating pregnancy, childbirth and the puerperium” as the principal diagnosis, in addition to a secondary diagnosis of “U07.1 – COVID-19.” Thus, pregnant patients with a primary or admitting diagnosis of "O98.5" and any admitting, primary, or secondary diagnosis of "U07.1" or with an admitting or primary diagnosis of "U07.1" were classified as having a principal diagnosis of COVID-19.

1. ICD-10-CM Official Coding and Reporting Guidelines April 1, 2020 through September 30, 2020. Atlanta, GA: U.S. Centers for Disease Control and Prevention.
<https://www.cdc.gov/nchs/data/icd/COVID-19-guidelines-final.pdf1/28/21>.

Appendix 3. Characteristics of Pregnant Patients With Coronavirus Disease 2019 (COVID-19) Viral Pneumonia and in-Hospital Mortality

Age (years)	Gestational age (weeks)	Race / ethnicity	Payor	Discharge season ^a	Hospital region	Hospital day of death	Hospital day of delivery	Mode of delivery	Live or stillbirth	Hospital day of ICU admission	Hospital day of mechanical ventilation initiation	ECMO	Elixhauser comorbidities	Complications ^b
34	23	Hispanic	Private	Spring 2020	Northeast	28	NA	Not delivered	NA	11	8	-	Hypothyroidism, Obesity, Chronic blood loss anemia, Deficiency anemias	Acute renal failure, Cardiac arrest, Sepsis, Shock
36	37	Other	Public	Spring 2020	Northeast	1	1	Cesarean	Livebirth	1	1	-	None	Acute renal failure, Sepsis
40	39	Black	Public	Spring 2020	South	5	1	Cesarean	Livebirth	5	5	-	Chronic pulmonary disease	Acute renal failure, Cardiac arrest, Sepsis, Shock, Conversion of cardiac rhythm, Air and thrombotic embolism
31	15	Hispanic	Private	Spring 2020	West	15	NA	Not delivered	NA	5	6	-	Diabetes without chronic complications, Coagulopathy, Obesity, Fluid and electrolyte disorders, Chronic blood loss anemia, Deficiency anemias	Sepsis, Shock
38	38	Hispanic	Public	Spring 2020	Northeast	53	2	Cesarean	Livebirth	3	17	-	Other neurological disorders, Coagulopathy, Obesity, Fluid and electrolyte	Acute renal failure, Disseminated intravascular coagulopathy, Sepsis, Shock

Pineles BL, Goodman KE, Pineles L, O’Hara LM, Nadimpalli G, Magder LS, et al. Pregnancy and the risk of in-hospital coronavirus disease 2019 (COVID-19) mortality. Obstet Gynecol 2022;139.
The authors provided this information as a supplement to their article.
©2022 American College of Obstetricians and Gynecologists.

Age (years)	Gestational age (weeks)	Race / ethnicity	Payor	Discharge season ^a	Hospital region	Hospital day of death	Hospital day of delivery	Mode of delivery	Live or stillbirth	Hospital day of ICU admission	Hospital day of mechanical ventilation initiation	ECMO	Elixhauser comorbidities	Complications ^b
													disorders, Deficiency anemias	
35	28	Hispanic	Public	Summer 2020	South	6	4	Cesarean	Livebirth	1	2	Yes	None	Puerperal cerebrovascular disorders
23	30	Black	Private	Summer 2020	Midwest	4	1	Cesarean	Livebirth	4	1	Yes	Other neurological disorders, Chronic pulmonary disease, Coagulopathy, Obesity, Fluid and electrolyte disorders	Acute renal failure, Pulmonary edema/Acute heart failure, Sepsis, Shock, Conversion of cardiac rhythm
30	23	Hispanic	Public	Summer 2020	South	13	2	Vaginal	Stillbirth	3	1	-	None	Acute renal failure, Disseminated intravascular coagulopathy, Shock
32	24	White	Private	Summer 2020	West	7	4	Cesarean	Livebirth	7	0	Yes	Obesity, Weight loss, Fluid and electrolyte disorders	Acute renal failure, Disseminated intravascular coagulopathy, Pulmonary edema/Acute heart failure, Sepsis, Shock

Pineles BL, Goodman KE, Pineles L, O’Hara LM, Nadimpalli G, Magder LS, et al. Pregnancy and the risk of in-hospital coronavirus disease 2019 (COVID-19) mortality. Obstet Gynecol 2022;139.
The authors provided this information as a supplement to their article.
©2022 American College of Obstetricians and Gynecologists.

Age (years)	Gestational age (weeks)	Race / ethnicity	Payor	Discharge season ^a	Hospital region	Hospital day of death	Hospital day of delivery	Mode of delivery	Live or stillbirth	Hospital day of ICU admission	Hospital day of mechanical ventilation initiation	ECMO	Elixhauser comorbidities	Complications ^b
44	37	Black	Public	Summer 2020	South	9	1	Cesarean	Livebirth	1	1	Yes	Obesity	Acute myocardial infarction, Acute renal failure, Cardiac arrest, eclampsia, Shock, Air and thrombotic embolism, Conversion of cardiac rhythm, hysterectomy
44	36	White	Public	Fall 2020	South	15	1	Cesarean	Livebirth	1	2	-	Liver disease	Acute renal failure, Cardiac arrest, Disseminated intravascular coagulopathy, Sepsis, Shock, Conversion of cardiac rhythm
26	37	Hispanic	Private	Fall 2020	South	7	1	Cesarean	Livebirth	2	2	-	Other neurological disorders, Diabetes without chronic complications, Coagulopathy, Fluid and electrolyte disorders, Chronic blood loss anemia	Acute renal failure, Amniotic fluid embolism, Cardiac arrest, Shock, Conversion of cardiac rhythm
45	21	Hispanic	Private	Winter 2020-21	West	4	NA	Not delivered	NA	1	1	-	Other neurological disorders, Coagulopathy, Chronic blood loss	Acute renal failure, Puerperal cerebrovascular disorders, Shock

Pineles BL, Goodman KE, Pineles L, O’Hara LM, Nadimpalli G, Magder LS, et al. Pregnancy and the risk of in-hospital coronavirus disease 2019 (COVID-19) mortality. Obstet Gynecol 2022;139.

The authors provided this information as a supplement to their article.

©2022 American College of Obstetricians and Gynecologists.

Age (years)	Gestational age (weeks)	Race / ethnicity	Payor	Discharge season ^a	Hospital region	Hospital day of death	Hospital day of delivery	Mode of delivery	Live or stillbirth	Hospital day of ICU admission	Hospital day of mechanical ventilation initiation	ECMO	Elixhauser comorbidities	Complications ^b
													anemia, Deficiency anemias	
33	31	White	Private	Winter 2020-21	South	4	5	Cesarean	Livebirth	1	2	Yes	Complicated hypertension, Obesity, Fluid and electrolyte disorders, Depression	Cardiac arrest, Shock, Conversion of cardiac rhythm
33	34	Hispanic	Public	Winter 2020-21	West	1	1	Cesarean	Livebirth	.	1	-	Diabetes with chronic complications, Coagulopathy, Obesity, Fluid and electrolyte disorders, Chronic blood loss anemia, Deficiency anemias	Sepsis, Shock, Conversion of cardiac rhythm
33	36	Hispanic	Public	Winter 2020-21	Midwest	21	3	Vaginal	Livebirth	1	3	-	None	No unique complications
29	37	Hispanic	Public	Winter 2020-21	South	17	1	Cesarean	Livebirth	2	3	-	Other neurological disorders, Obesity, Fluid and electrolyte disorders, Chronic blood loss anemia	Acute renal failure, Cardiac arrest, Sepsis, Shock, Conversion of cardiac rhythm
30	18	Black	Public	Winter 2020-21	Northeast	23	22	Hysterotomy	NA	3	3	-	Chronic pulmonary disease, Diabetes with chronic	Acute renal failure, Cardiac arrest, Sepsis, Shock,

Pineles BL, Goodman KE, Pineles L, O’Hara LM, Nadimpalli G, Magder LS, et al. Pregnancy and the risk of in-hospital coronavirus disease 2019 (COVID-19) mortality. Obstet Gynecol 2022;139.
 The authors provided this information as a supplement to their article.
 ©2022 American College of Obstetricians and Gynecologists.

Age (years)	Gestational age (weeks)	Race / ethnicity	Payor	Discharge season ^a	Hospital region	Hospital day of death	Hospital day of delivery	Mode of delivery	Live or stillbirth	Hospital day of ICU admission	Hospital day of mechanical ventilation initiation	ECMO	Elixhauser comorbidities	Complications ^b
													complications, Coagulopathy	Conversion of cardiac rhythm
27	31	White	Public	Winter 2020-21	Midwest	34	6	Cesarean	Livebirth	10	10	-	LYMPH, Coagulopathy, Fluid and electrolyte disorders, Chronic blood loss anemia, Deficiency anemias	Sepsis, Shock, Air and thrombotic embolism
31	35	White	Public	Winter 2020-21	West	2	2	Cesarean	Livebirth	2	0	Yes	Other neurological disorders, Obesity, Chronic blood loss anemia	Acute renal failure, Sepsis, Shock
41	21	Asian	Private	Winter 2020-21	Northeast	34	11	Vaginal	Stillbirth	4	8	Yes	None	Acute renal failure, Disseminated intravascular coagulopathy, Sepsis, Shock
30	30	Black	Private	Winter 2020-21	Midwest	16	4	Vaginal	Livebirth	11	11	-	Coagulopathy, Obesity	Acute renal failure, Cardiac arrest, Sepsis, Shock, Air and thrombotic embolism
42	33	Asian	Other	Winter 2020-21	West	10	4	Vaginal	Livebirth	7	8	-	Pulmonary circulation disease, Coagulopathy, Obesity, Fluid and electrolyte disorders, Chronic blood loss anemia,	Acute renal failure, Sepsis, Shock, Conversion of cardiac rhythm

Pineles BL, Goodman KE, Pineles L, O’Hara LM, Nadimpalli G, Magder LS, et al. Pregnancy and the risk of in-hospital coronavirus disease 2019 (COVID-19) mortality. Obstet Gynecol 2022;139.

The authors provided this information as a supplement to their article.

©2022 American College of Obstetricians and Gynecologists.

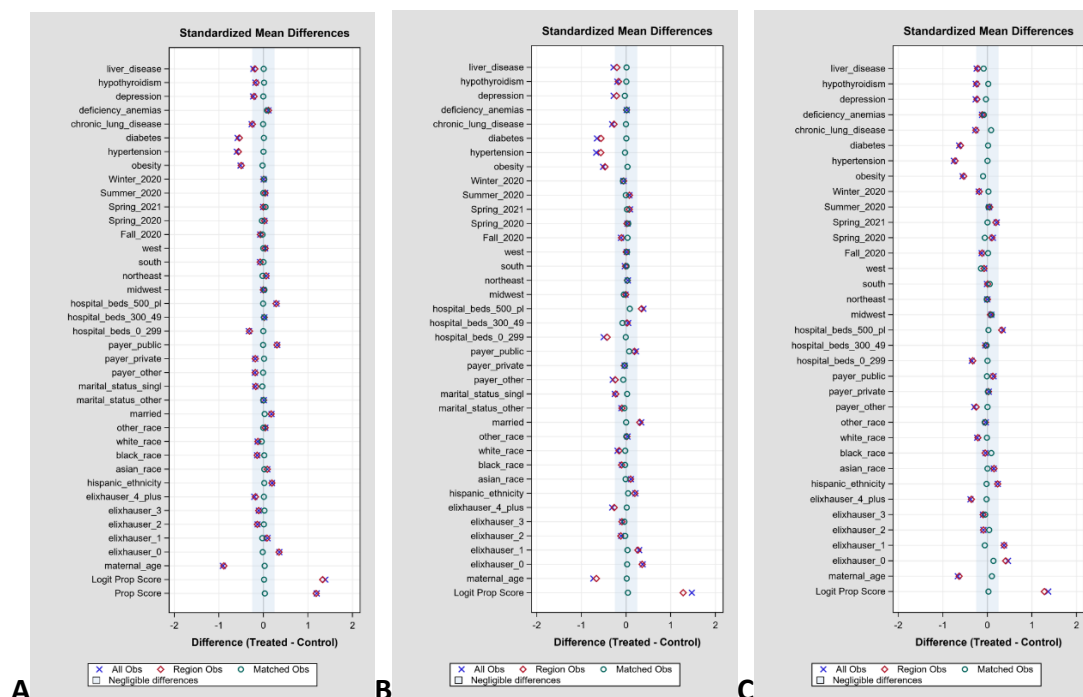
Age (years)	Gestational age (weeks)	Race / ethnicity	Payor	Discharge season ^a	Hospital region	Hospital day of death	Hospital day of delivery	Mode of delivery	Live or stillbirth	Hospital day of ICU admission	Hospital day of mechanical ventilation initiation	ECMO	Elixhauser comorbidities	Complications ^b
													Deficiency anemias, Depression	
41	30	Hispanic	Private	Spring 2021	South	25	19	Cesarean	Livebirth	1	19	-	Uncomplicated hypertension, Weight loss	Cardiac arrest, Shock

Abbreviations: NA, Not Applicable; ICU, Intensive Care Unit; ECMO, Extracorporeal Membrane Oxygenation

^a Spring: March, April, May; Summer: June, July, August; Fall: September, October, November; Winter: December, January, February

^b CDC Severe Maternal Morbidity Indicators. All patients had Acute Respiratory Distress Syndrome and Mechanical Ventilation

Appendix 4. Covariate balance, measured by absolute standardized mean difference, for pregnant (treated) and nonpregnant (control) patients, before and after 1:1 matching on propensity score for the viral pneumonia group (unmatched controls: n=19,253, matched cases and controls: n=2,250) (A), the intensive care unit admission subgroup (unmatched controls: n=3,304, matched cases and controls: n=496) (B), and the mechanical ventilation subgroup (unmatched controls: n=1,676, matched cases and controls: n=196) (C). *Blue x* indicates before matching, *red diamond* indicates before matching in the support region, and *green circle* indicates after matching.

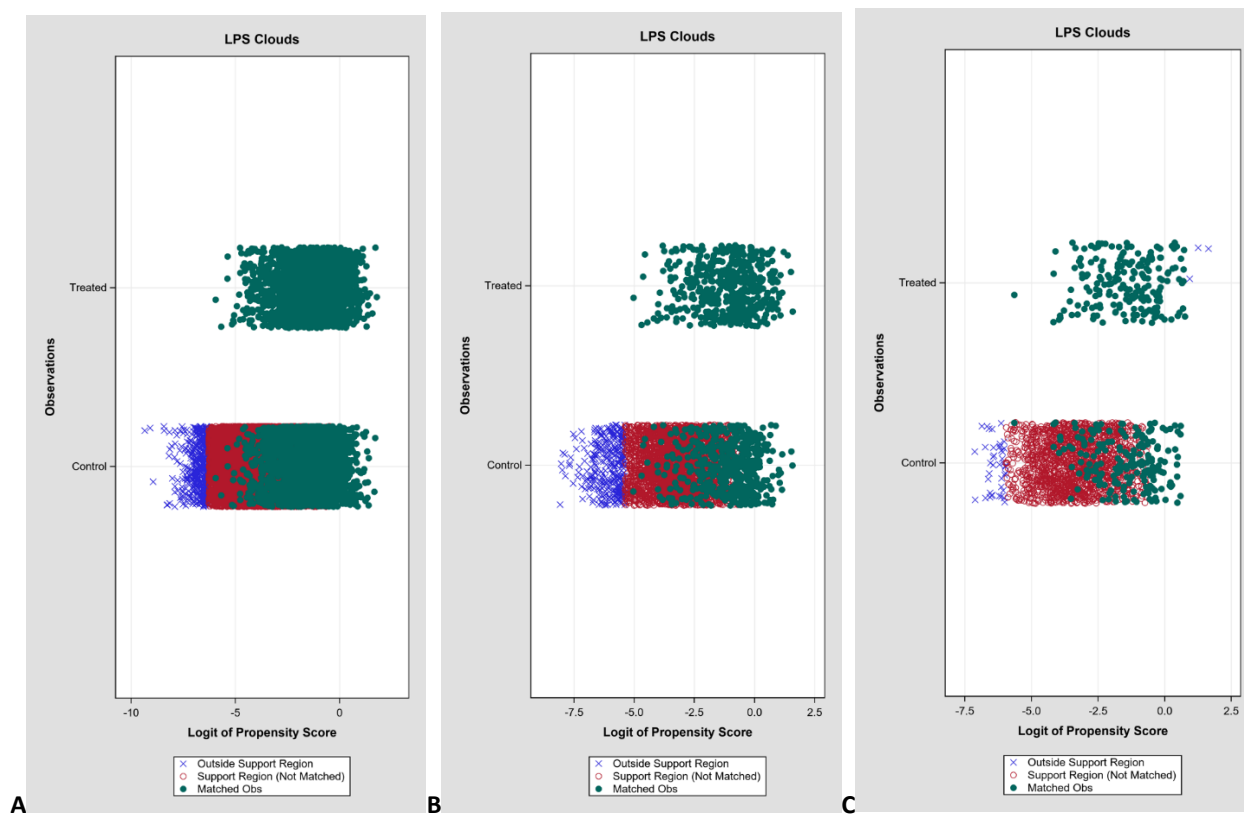


Pineles BL, Goodman KE, Pineles L, O'Hara LM, Nadimpalli G, Magder LS, et al. Pregnancy and the risk of in-hospital coronavirus disease 2019 (COVID-19) mortality. *Obstet Gynecol* 2022;139.

The authors provided this information as a supplement to their article.

©2022 American College of Obstetricians and Gynecologists.

Appendix 5. Distribution of log propensity scores among pregnant patients (treatment) and nonpregnant patients (control), before and after 1:1 matching on propensity score for the viral group (unmatched controls: n=19,253, matched cases and controls: n=2,250) (A), the intensive care unit admission subgroup (unmatched controls: n= 3,304, matched cases and controls: n=496) (B), and the mechanical ventilation subgroup (unmatched controls: n=1,676, matched cases and controls: n=196) (C). *Blue x* indicates outside the support region, *red circle* indicates within the support region but not matched, and *green circles* indicate matched observations.



Pineles BL, Goodman KE, Pineles L, O'Hara LM, Nadimpalli G, Magder LS, et al. Pregnancy and the risk of in-hospital coronavirus disease 2019 (COVID-19) mortality. *Obstet Gynecol* 2022;139.

The authors provided this information as a supplement to their article.

©2022 American College of Obstetricians and Gynecologists.