

Supplemental Table 1: Linkage rules for maternal Medicaid enrollee linkage to the birth record, Maine, Jan 2016-Dec 2020

Weight	Points of linkage	Rules
#1	3	Full DOB, Name, Medicaid ID
#2	3	Full DOB, Name, 4 Digits for SSN
#3	3	Full DOB, 4 Digits for SSN, Medicaid ID
#4	3	DOB = Month & Year only, Name, Medicaid ID
#5	3	DOB = Month & Year only, Name, 4 Digits for SSN
#6	3	Full DOB, First Name First Letter, Last Name = last Name or Last Name = Maiden or Last Name of mom = child's last name, Medicaid ID
#7	3	Full DOB, First Name First Letter, Last Name = last Name or Last Name = Maiden or Last Name of mom = child's last name, 4 Digits for SSN
#8	3	Full DOB, Last Name = last Name or Last Name = Maiden or Last Name of mom = child's last name, 4 Digits of SSN
#9	3	Full DOB, First Name, Middle Initial and Medicaid ID
#10	3	Full DOB, First Name, Middle Initial and 4 Digits for SSN
#11	2	Last Name = last Name or Last Name = Maiden or Last Name of mom = child's last name, Medicaid ID, 4 Digits for SSN
#12	2	Full DOB, Name
#20	varies	Manually check of possible linkages (said Medicaid would pay for delivery or reported Medicaid ID, but didn't link) based on date of delivery
#30	varies	Manual maternal linkages based on infant linkages

*"Name" means: First Name= First Name AND (Last Name =Last Name OR Last Name = Maiden Name OR Last Name of mom = child's last name)

†DOB= Date of birth

‡SSN= Social Security Number

Supplemental Table 2: Rule-based deterministic linkage results for maternal Medicaid enrollee linkage to the birth record, Maine, Jan 2016-Dec 2020, N=58,584

	2016	2017	2018	2019	2020	Total
Weight						
No match	3785	3683	3709	3698	3761	18636 (32%)
#1	4000	3834	3903	3549	3639	18925 (32%)
#2	3831	3732	3638	3536	3187	17924 (31%)
#3	239	205	158	173	175	950 (2%)
#4	7	14	19	8	4	52 (0%)
#5	10	7	10	8	14	49 (0%)
#6	7	5	7	11	12	42 (0%)
#7	67	64	54	53	49	287 (0%)
#8	4	2	6	3	4	19 (0%)
#9	3	6	3	3	2	17 (0%)
#10	103	96	77	78	78	515 (1%)
#11	14	18	8	8	10	58 (0%)
#12	187	194	213	165	124	883 (2%)
#20	15	19	20	28	37	119 (0%)
#30	36	40	34	42	39	191 (0%)
Total	12308	11919	11859	11363	11135	58584 (100%)

*See Supplemental Table 1 for explanation of rules.

Supplemental Table 3. List of ICD-9-CM and ICD-10-CM codes used to identify maternal substance use disorder

	ICD-9	ICD-10
Alcohol	303.xx	F10.xxx, O99.31x
Opioid	304.0x	F11.xxx
Cannabis	304.3x	F12.xxx
Sedatives, hypnotics, anxiolytics	304.1x	F13.xxx
Cocaine	304.2x	F14.xxx
Other stimulants, including caffeine	304.4x	F15.xxx
Hallucinogens	304.5x	F16.xxx
Nicotine	305.1x	F17.xxx
Inhalants	No code available	F18.xxx
Other substances and multiple drug use	304.6x, 304.7x, 304.8x, 304.9x	F19.xxx, F55.xxx, O35.5xx, O99.32x

Supplemental Table 4: Results for maternal Medicaid enrollee linkage to the birth record, Maine, Jan 2016-Dec 2020, N=58,584

	Year of live birth				
	2016	2017	2018	2019	2020
Total	12,308	11,919	11,859	11,363	11,135
Linked to Medicaid at any point since 2010	8,523	8,236	8,150	7,665	7,374
% of total	69%	69%	69%	67%	66%
Enrolled in full benefit Medicaid at month of delivery	5,772	5,637	5,590	5,271	5,178
% of total	47%	47%	47%	46%	47%
Delivery-related claim identified in Medicaid data	5,291	5,214	5,192	4,924	4,813
% of total	43%	44%	44%	43%	43%

Supplemental Table 5. Maine birth records for in-state resident live births among women Medicaid enrolled at month of delivery by drug dependency checkbox and specific substance use disorder in medical claims during pregnancy, 2016-2020 (n=27,448)

Substance use disorder*	Drug Dependence = Yes on Birth Certificate	Drug Dependence = No on Birth Certificate
Opioid	1821 (56.4)	874(3.6)
Cannabis	1578 (48.9)	2511 (10.4)
Alcohol	246 (7.6)	421 (1.7)
Cocaine	233 (7.2)	103 (0.4)
Nicotine	2138 (66.2)	4589 (19.0)
Sedatives, hypnotics, anxiolytics	60 (1.9)	47 (0.2)
Other stimulants, including caffeine	154 (4.8)	117 (0.5)
Hallucinogen	†	†
Inhalant	16 (0.5)	†
Other substances and multiple drugs	2615 (81.01)	3006 (12.4)

*These included mental and behavioral disorders due to use of alcohol (ICD-9 CM 303.xx; ICD-10-CM F10.xxx, O99.31x), use of opioids (304.0x; F11.xxx), use of cannabis (304.3x; F12.xxx), use of sedatives, hypnotics, anxiolytics (304.1x; F13.xxx), use of cocaine (304.2x; F14.xxx), use of other stimulants, including caffeine (304.4x; F15.xxx), use of hallucinogens (304.5x; F16.xxx), use of nicotine (305.1x; F17.xxx), use of inhalants (no ICD-9 code; F18.xxx), use of other substances and multiple drug use (304.6x, 304.7x, 304.8x, 304.9; F19.xxx, F55.xxx, O35.5xx, O99.32x). Substance use disorders shown in this table are not mutually exclusive. Disorders due to use of hallucinogens and inhalants suppressed from presentation because counts between 1 and 9 per year.

†Data counts between 1 and 9 were suppressed for privacy reasons.

Supplemental Table 6. Medication for opioid use disorder in Medicaid claims for 2,695 Maine births among women enrolled in Medicaid at the month of delivery with opioid use disorder, 2016-2020

MOUD* in Medicaid claims	Drug Dependence = Yes on Birth Certificate						Drug Dependence = No on Birth Certificate					
	Opioid use disorder documented in Medicaid Claims						Opioid use disorder documented in Medicaid Claims					
	2016-2020 (n= 1,821)	2016 (n=381)	2017 (n=394)	2018 (n=352)	2019 (n=366)	2020 (n=328)	2016-2020 (n= 874)	2016 (n=184)	2017 (n=179)	2018 (n=187)	2019 (n=167)	2020 (n=157)
MOUD Procedure	395 (21.7)	102 (26.8)	97 (24.6)	62 (17.6)	70 (19.1)	64 (19.5)	94 (10.8)	28 (15.4)	17 (9.5)	17 (9.1)	14 (8.4)	18 (11.5)
MOUD Prescription	1,175 (64.6)	244 (64.4)	262 (66.5)	238 (67.6)	227 (62.0)	204 (62.2)	347 (39.7)	73 (39.7)	74 (41.3)	74 (39.6)	63 (37.7)	63 (40.1)
Either MOUD procedure or prescription	1,472 (80.8)	323 (84.8)	333 (84.5)	280 (79.5)	284 (77.6)	252 (76.8)	422 (48.3)	98 (53.3)	88 (49.2)	88 (47.1)	72 (43.1)	76 (48.4)

*MOUD = Medication for opioid use disorder

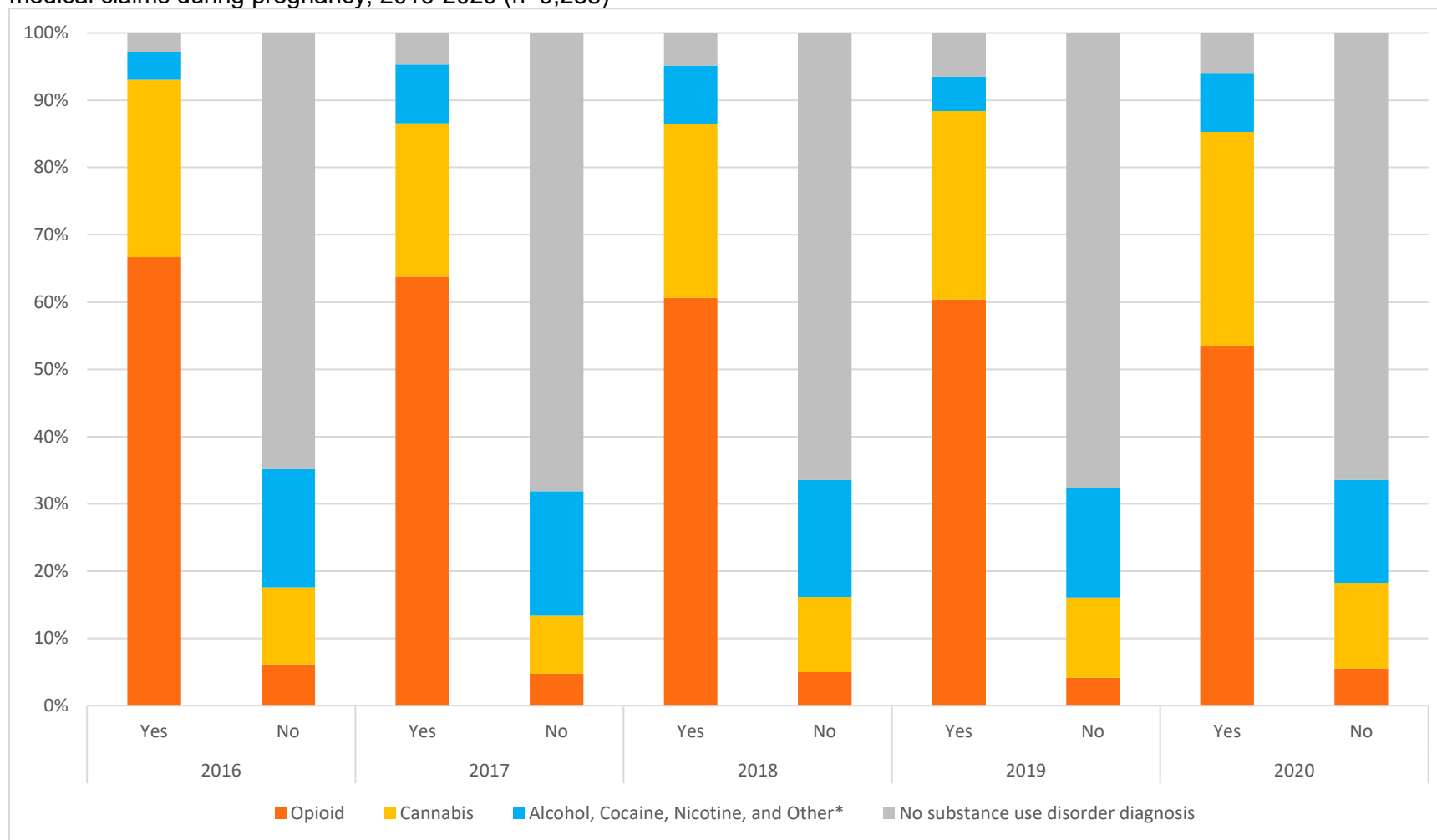
Supplemental Table 7. Medicaid linkage to Maine birth records by drug dependency checkbox on birth record, among women enrolled in full-benefit Medicaid for entire pregnancy and not dual enrolled in Medicare or with a private payer, 2016-2020

Primary Payer Reported on Birth Record	Medicaid Enrolled at Month of Delivery, N	Medicaid Enrolled for Entire Pregnancy, N	Drug Dependency on Birth Record		Any Substance Use Disorder Diagnosis in Medicaid Claims*	
			Among Medicaid Enrolled for Entire Pregnancy		Among Medicaid Enrolled for Entire Pregnancy	
			Yes, n (%)	No, n (%)	Yes, n (%)	No, n (%)
Medicaid	22,837	8,932	1,326 (14.9)	7,606 (85.2)	3,816 (42.7)	5,116 (57.3)
Private Insurance	3,426	178	†	169 (94.9)	32 (18.0)	146 (82.0)
Self-Pay	862	141	16 (11.4)	125 (88.7)	39 (27.7)	102 (72.3)
Indian Health Service	14	†	†	†	†	†
Champus/Tricare	64	†	†	†	†	†
Other Government	67	†	†	†	†	†
Other/Unknown	178	22	†	21 (95.5)	†	16 (72.7)
Total	27,488	9,288	1,354 (14.6)	7,934 (85.4)	3,899 (42.0)	5,389 (58.0)

*Substance use disorders include alcohol-related disorders; opioid-related disorders; cannabis-related disorders; sedative-, hypnotic-, or anxiolytic-related disorders; cocaine-related disorders; other stimulant-related disorders; hallucinogen-related disorders; nicotine dependence; inhalant-related disorders; and other substance use and multiple drug use disorders.

†Counts between 1 and 9 were suppressed for privacy purposes.

Supplemental Figure 1: Maine birth records for in-state resident live births among women Medicaid enrolled at month of delivery and for entire duration of pregnancy by drug dependency checkbox and hierarchical categorization of substance use disorder in medical claims during pregnancy, 2016-2020 (n=9,288)



*Other SUD diagnoses include sedative-, hypnotic-, or anxiolytic-related disorders; other stimulant-related disorders; hallucinogen-related disorders; inhalant-related disorders; and other substance use and multiple drug use disorders.

Supplemental Figure 2: Screenshot of electronic entry screen for Maine birth records "Pregnancy Factors", which contains the 2021 revised drug dependency checkboxes for Alcohol Use Disorder and Substance Use Disorder. These checkboxes will be further revised in late 2022

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Pregnancy Factors

Risk Factors for this Pregnancy (Check all that apply)

<input type="checkbox"/> Pre-pregnancy Diabetes	<input checked="" type="checkbox"/> Gestational Hypertension (PIH, Preeclampsia)	<input type="checkbox"/> Multifetal Gestation
<input type="checkbox"/> Gestational Diabetes	<input type="checkbox"/> Hypertension-Eclampsia	<input type="checkbox"/> Pregnancy Resulted From Infertility Treatment (If yes, check all that apply.)
<input type="checkbox"/> Alcohol Use Disorder	<input type="checkbox"/> Previous Preterm Birth	<input type="checkbox"/> Fertility-enhancing drugs, artificial insemination or intrauterine insemination
<input type="checkbox"/> Substance Use Disorder	<input type="checkbox"/> Other Previous Poor Pregnancy Outcomes	<input type="checkbox"/> Assisted reproductive technology (e.g., in vitro fertilization (IVF), gamete intrafallopian transfer (GIFT))
<input checked="" type="checkbox"/> Group B strep	<input type="checkbox"/> Mother Had A Previous Cesarean Delivery	<input type="checkbox"/> None Of The Above
<input type="checkbox"/> Pre-pregnancy Hypertension (Chronic)		

Infections Present and / or Treated During this Pregnancy (Check all that apply)

<input type="checkbox"/> Gonorrhea	<input type="checkbox"/> Chlamydia	<input type="checkbox"/> Measles	<input type="checkbox"/> Varicella
<input checked="" type="checkbox"/> Group B strep	<input type="checkbox"/> Hepatitis B	<input type="checkbox"/> Rubella	<input type="checkbox"/> Unknown
<input type="checkbox"/> Syphilis	<input type="checkbox"/> Hepatitis C	<input type="checkbox"/> Toxoplasmosis	<input type="checkbox"/> None Of The Above
<input type="checkbox"/> Herpes Simplex Virus (HSV)	<input type="checkbox"/> HIV/AIDS	<input type="checkbox"/> Tuberculosis	

Obstetric Procedures (Check all that apply)

<input type="checkbox"/> Cervical cerclage	<input type="checkbox"/> External cephalic version-successful	<input type="checkbox"/> Unknown
<input type="checkbox"/> Tocolysis	<input type="checkbox"/> External cephalic version-failed	<input checked="" type="checkbox"/> None Of The Above

During Pregnancy Did Mother Contract Covid-19?
