

## Appendix A. The Kaiser-Permanente Claims Algorithm for Opioid Abuse

### Abuse

The presumptive opioid abuse definition from Kaiser-Permanente involves calculating 53 variables. These were drawn from PharMetrics Plus claims data during the 18 months following first opioid use in 2012. Each variable was assigned a multiplier and all the products of variable\*multiplier were summed into a score, which was transformed onto a 0-1 scale using a reverse logit transform. A cut-point on the transformed score was then taken, with persons having a transformed score above the cut-point counted as presumptive opioid abuse cases. See the main text for differences between the development setting for this claims algorithm and the current setting in which it was applied. In addition, variables that were defined based on calendar quarter in the Kaiser-Permanente setting were implemented as quarters (91-day periods) following the patient’s first (index) dispensing in PharMetrics Plus setting.

The variables are given in the first column of Table A1. The coefficient associated with each is in the third column. An assignment of each variable to a class appears in the fourth column: Diagnosis of opioid use disorder (OUD) or a closely related entity (D); Risk factor for opioid use disorder, including disorders frequently associated with OUD (R); Evidence of possible drug seeking behavior (B). Volume of opioid use (V). In creating the score from Yes/No variables, a “Yes” value in the table below translates to a variable value of “1”; a “No” translates to “0.”

**Table A1. Components of the KPWA score for abuse/addiction, as applied to the PharMetrics Plus Claims data.**

<b>Table A1</b>		
<b>Characteristic definition</b>	<b>Coef- ficient</b>	<b>Class</b>
Intercept	-3.6795	
Yes/no: is age as of Index Date >=65.	-0.3681	R
Ever diagnosed w/ ICD9 303.90 [Alcoholism, unspecified]	0.9225	R
Yes/no: >=2 quarters with >=1 anti-anxiety medication dispensing during the quarter	0.2040	R
Ever diagnosed with Anxiety disorder dx ICD9: "300.0X", "300.2X", "300.3X", "300.5X", "308.3X"	0.1237	R
Yes/no: >=4 benzodiazepine dispensings AND >=1 opioid dispensing during a quarter	0.3174	R
Yes/no: >=21 opioid dispensings (ER/LA or SA/IR) with 1-14 days’ supply during the observation period	0.0982	B

<b>Table A1</b>		
<b>Characteristic definition</b>	<b>Coef- ficient</b>	<b>Class</b>
Yes/no: $\geq 7$ opioid dispensings (ER/LA or SA/IR) with 1-14 days' supply during a quarter	0.0918	B
Ever/never $\geq 1$ ER/LA opioid dispensing with 8-14 days' supply during a quarter	0.1367	B
Yes/no: $\geq 6$ ER/LA opioid dispensing with 1-14 days' supply during the observation period	0.0508	B
Ever/never $\geq 1$ ER/LA opioid dispensing with 1-14 days' supply during a quarter	0.0896	B
Yes/no: $\geq 2$ ER/LA opioid dispensing with 1-14 days' supply during a quarter	-0.0435	B
Yes/no: $\geq 30$ ER/LA dispensings with 1-28 days' supply during the observation period	0.1278	B
Ever diagnosed with specific non-opioid substance abuse/dependence codes 1) Drug dependence NOS (ICD9: 304.[90/91/92]) or 2) Non-dependent drug abuse (ICD9:305.[90/91/92])	0.2716	D
Yes/no: $\geq 4$ dispensings with the same NDC code overlap by $\geq 1$ day during a quarter Calculate the run-out date of each dispensing based on dispensing date and days' supply (=intnx('day',RXDATE,RXSUP)). For each dispensing with the same NDC code, if the dispensing date falls before the run-out date of another dispensing with the same NDC code, then it is considered overlapping. (From review of GH SAS code: Dispensings filled on the last day of previous fill are not considered overlapping. Their logic only counts those where rx_runout_date> the next Rxdate) Count the number of overlapping dispensings with the same NDC code during the quarter. If $\geq 4$ then set the flag to 1, else 0.	0.1421	B
Yes/no: $\geq 2$ dispensings with the same NDC code overlap by $\geq 2$ days during a quarter	0.3312	B
Yes/no: $\geq 16$ total days of supply overlap for a single NDC code during a quarter	0.4809	B
Yes/no: average daily MEQ $\geq 55$ during a quarter with $\geq 1$ ER encounter, and age $\leq 45$ .	0.6710	B
Yes/no: $\geq 2$ opioids (ER/LA or SA/IR) dispensed on the same date as an ER encounter during a quarter	0.4445	B
Yes/no: $\geq 2$ SA/IR opioids dispensed on the same date as an ER encounter anytime during the observation period	0.0663	B
Ever diagnosed w/ Alcoholism (Any diagnosis of ICD9 303.9x, V11.3; this is a modification of codes in the KPWA algorithm)	0.5214	R

<b>Table A1</b>		
<b>Characteristic definition</b>	<b>Coef- ficient</b>	<b>Class</b>
Ever diagnosed with and/or receive treatment and/or medication related to Substance Abuse -Non-Opioid Substance abuse diagnosis ICD9 included: Alcoholism: 303.XX, V11.3,303.X Specified Drug Dependence: 304.1X,304.2X,304.4X,304.5X,304.6X Cannabis drug dependence: 304.3X,305.2X Combination of drug dependence: 304.X8,304.9X Non-dependent Drug abuse: 305.3x, 305.4X, 305.6x, 305.7X, 305.8X, 305.9X(Study 3033-8 adjustment: We added the “x” following 305.x and 305.6) Tobacco use disorder: 305.1X -Use the opioid abuse treatment procedure codes (HCPCS):'H0001', 'H0002', 'H0003', 'H0005', 'H0006', 'H0007', 'H0008', 'H0009', 'H0010', 'H0011', 'H0012', 'H0013', 'H0014', 'H0015', 'H0016', 'H0020', 'H0021', 'H0022', 'H0026', 'H0027', 'H0028', 'H0033', 'H0047', 'H2035', 'H2036', 'S9475', 'T1007', 'T1008', 'T1009', 'T1010', 'T1011', 'T1012', 'T1013' -Use the list of opioid abuse treatment medications that follows in Table 2	0.3692	D
Yes/no: >=2 overlapping dispensings (ER/LA or SA/IR) and >=2 Urine Drug Screens in the same quarter	0.0510	B
Gender (numeric, 0=male, 1=female)	-0.1735	R
Ever change in location of pain(headache/migraine to any other pain type (other than headache) such as Low back pain, Other back/neck disorder, Neuropathic pain, Fibromyalgia, Arthritis ) location within 30 days' Low Back Pain: "721.3X", "722.10", "722.32", "722.52", "722.93", "724.02", "724.2XX", "724.3X", "724.5X", "724.6X", "724.7X", "738.5X", "739.3X", "739.4", "846.0X", "846.1", "846.2X", "846.X3", "846.8X", "846.9X", "847.2X" Other back Pain: "720.XX", "721.0X", "721.1X", "721.2X", "721.4X", "721.5X", "721.6X", "721.7X", "721.8X", "721.9X", "722.X0", "722.11", "722.2X", "722.30", "722.31", "722.39", "722.4", "722.51", "722.6", "722.7x", "722.8X", "722.90", "722.91", "722.92", "723.XX", "724.01", "724.09", "724.1", "724.4X", "724.8X", "724.9X", "729.2X", "737.0X", "737.1X", "737.2X", "737.3X", "737.9X", "738.4X", "739.1", "739.2", "741.0x", "741.9x", "742.5X", "847.0X", "847.1X", "847.3X", "847.4X",	0.3080	B

<b>Table A1</b>		
<b>Characteristic definition</b>	<b>Coef- ficient</b>	<b>Class</b>
<p>"847.9X"            Headache/ Migraine: "339.xx", "784.0x", "346.xx", "307.81"            Neuropathic Pain : "053.10", "053.12", "053.13", "053.19",            "053.2x", "053.7x", "053.9x", "250.6x", "300.89", "333.84",            "336.9X", "337.0X", "337.9X", "350.xx", "351.XX", "352.XX",            "353.xx", "354.XX", "355.XX", "356.XX", "357.XX", "377.30",            "385.89", "388.50", "388.71", "511.0X", "607.90", "608.89",            "608.90", "625.90", "788.00", "788.10", "897.2", "897.4",            "897.6X", "950.XX", "951.XX", "951.XX", "953.XX", "954.XX",            "955.XX", "956.XX", "957.XX", "997.6X"            Fibromyalgia: "729.1"            Arthritis: "710.XX", "711.9X", "714.XX", "715.XX", "716.1X",            "716.2X", "716.5X", "716.6X", "719.XX", "725.XX", "726.XX",            "727.XX", "728.XX", "729.XX"            Adjustment: We removed 346.20 from Neuropathic Pain since it            overlaps with Headache/Migraine definition. Also, we added the            "xx" following 339 and 346)</p>		
<p>Interaction term            1. Age 46-64            2. Ever/never &gt;=120 days' supply of ER/LA opioids AND &gt;=80            days' supply of SA/IR opioids during a quarter</p>	0.2408	V
<p>Interaction term            1. Age 46-64            2. Ever diagnosed with alcohol dx codes ICD9: 303.9x, V11.3            Adjustment: Changed ICD9 list from: 303.90, 303.91, 303.92,            303.93, V11.3 to: 303.9x, V11.3</p>	0.1630	R
<p>Interaction term            1. Age 46-64            2. Ever diagnosed with specific non-opioid substance            abuse/dependence codes            Drug dependence NOS (ICD9: 304.[90/91/92]) or            Non-dependent drug abuse (ICD9:305.[90/91/92])</p>	0.4771	D
<p>Interaction term            1. Age &lt;=45            2. Ever &gt;=6 quarters w/ 1+ visits related to Non-Opioid Substance            Abuse (alcoholism, Specified drugs, Combination drugs, Cannabis,            Tobacco dependence)            ICD9 codes:            Non-Opioid Substance abuse diagnosis ICD9 included:            Alcoholism: 303.XX, V11.3,303.X</p>	0.0593	R

<b>Table A1</b>		
<b>Characteristic definition</b>	<b>Coef- ficient</b>	<b>Class</b>
Specified Drug Dependence: 304.1X,304.2X,304.4X,304.5X,304.6X Cannabis drug dependence: 304.3X,305.2X Combination of drug dependence: 304.X8,304.9X Non-dependent Drug abuse: 305.3, 305.4X,305.6",305.7X,305.8X,305.9X Tobacco use disorder: 305.1X		
Maximum number of overlapping dispensings for a single NDC code from index date through index date +548 days. (Study 3033-8 Adjustment made to time period: KPWA variable was defined from 6 months before index through 12 months after.) Early fills are defined as ones where the runout date of an NDC is after the next dispensing date of that same NDC. The runout date is defined as: Rx_runout_date=intnx('day', rxdate, rxsup), so that the rxdate is incremented by the days' supply.	0.0366	B
Max of Percent of opioid dispensings that are early for a single NDC code during a quarter. Early fills are described above	0.0052	B
Maximum percentage of ER/LA dispensings during a quarter that have 1-14 days' supply	0.0040	B
Maximum days' supply of Lithium dispensed during a quarter	0.0006	R
Maximum visits in any quarter related to Combination of drug dependence dx ICD9: 304.8x, 305.9x Variable value was top coded at 2	0.1249	D
Maximum visits in any quarter related to Nondependent Drug Abuse dx ICD9: 305.3*-305.9* (except 305.5*) Variable value was top coded at 2, meaning max # visits were coded as 0, 1, or 2+ using values of 0, 1, 2.	0.6733	D
Five or more quarters (coded as 1/0) w/ 1 or more visits related to Anxiety disorder dx ICD9: "300.0x","300.2x","300.3x","300.5x","308.3x"	0.4236	R
Ever diagnosed w/ ICD9 305.50 [Opioid Abuse, Unspecified]	0.5225	D
Ever diagnosed with w/ Opioid Dependence ICD9:"304.00", "304.01", "304.02", "304.03", "304.70", "304.71", "304.72"	0.1163	D
Yes/no: >=3 SA/IR opioids with 1-14 days' supply dispensed on Saturday, Sunday, or Monday that overlaps by >=1 day with an	0.1917	B

<b>Table A1</b>		
<b>Characteristic definition</b>	<b>Coef- ficient</b>	<b>Class</b>
adjacent SA/IR opioid dispensing (of any days supply) during a quarter		
Ever/never $\geq 1$ ER/LA opioid with 1-7 days' supply dispensed on Saturday, Sunday, or Monday that overlaps by $\geq 1$ day with an adjacent ER/LA opioid dispensing (of any days supply) during a quarter	0.1013	B
Yes/no: $\geq 5$ opioid dispensings (ER/LA or SA/IR) with 8-28 days' supply overlap by 1-27 days* with an adjacent dispensing (also with 8-28 days' supply) during a quarter (*in other words, these dispensings overlap by at least 1 day, but are not complete overlaps (i.e., not duplicate fills by opioid type, dispensing date, and days' supply))	0.2847	B
Ever had $\geq 17\%$ quarters w/ 1+ visits related to Mental Health diagnosis Depression: "296.2x", "296.3x", "296.82", "300.4x", "311" Bipolar Disorder: "296.0x", "296.1x", "296.4x", "296.5x", "296.6x", "296.7x", "296.80", "296.81", "296.89" Anxiety disorder: "300.0x", "300.2x", "300.3x", "300.5x", "308.x3" Other Mental Health disorders: "300.1", "300.5", "300.6", "300.7", "300.8", "300.9", "307.4", "309.81" Other Mood disorder: "296.9x", "300.4x", "308", "309.xx" Schizophrenia/Schizoaffective: "295.1x", "295.2x", "295.3x", "295.4x", "295.5x", "295.6x", "295.7x", "295.8x", "295.9x" Other Psychotic disorders: "297.xx", "298.xx" Hepatitis or Cirrhosis: "573.3x", "571.xx"	0.1972	R
At least 2 quarters w/ visits related to Opioid Dependence dx ICD9: "304.00", "304.01", "304.02", "304.03", "304.70", "304.71", "304.72" Adjustment: changed “ever had $\geq 18\%$ of quarters.” to “at least 2 quarters...” since we have 6 quarters total in our post index time period.	0.3113	D
Percentage of quarters w/ 1+ visits related to Problem Opioid Dx (ICD9: 304.XX-305.XX, 965.0X) Variable value was top coded at 8% Adjustment: Combined with variable below. See *	3.8303	D
Percentage of quarters w/ 1+ visits related to Non-Opioid Substance Abuse diagnosis (Alcoholism, specified drug dependence, Combination drug dependence, Non-dependent drug abuse, Cannabis dependence, Tobacco use disorder) Variable value was top coded at 25%	0.1765	R

<b>Table A1</b>		
<b>Characteristic definition</b>	<b>Coef- ficient</b>	<b>Class</b>
Note that Non-dependent drug abuse is also included in the variable. See next variable for code list.		
Ever had >=25% quarters w/ 1+ visits related to Non-Opioid Substance Abuse (Alcoholism, Specified drug dependence, Combination drug dependence, Non-dependent drug abuse, Cannabis dependence, Tobacco use disorder) Non-Opioid Substance abuse diagnosis ICD9 included: Alcoholism: 303.XX, V11.3,303.X Specified Drug Dependence: 304.1X,304.2X,304.4X,304.5X,304.6X Cannabis drug dependence: 304.3X,305.2X Combination of drug dependence: 304.X8,304.9X Non-dependent Drug abuse: 305.3, 305.4X,305.6",305.7X,305.8X,305.9X Tobacco use disorder: 305.1X	0.2016	R
Ever/never >=1 dispensing for medication used to treat opioid abuse/addiction during 548 days after index date. (548 days represents a Study 3033-8 adjustment to time period; KPWA definition had been during 24 months after index date) Used drug list from Ever_SubAbuse_Dx_Px_Rx	0.3131	D
Ever diagnosed with w/ Problem Opioid Dependence, Abuse, Poisoning, Heroin Dependence:"304.00", "304.01", "304.02", "304.03", "304.70", "304.71", "304.72"; Abuse:"305.50", "305.51", "305.52", "305.53"; Poisoning (excluding heroin):"965.00", "965.02", "965.09"; Heroin:"965.01" Adjustment: There was another KPWA variable Pct_QtrPOUDx, which has been combined with this one, as the two are logically aliased in the PharMetrics Plus data. The KPWA definition for Pct_QtrPOUDx was: Percentage of quarters w/ 1+ visits related to Problem Opioid Dx (ICD9:304.XX-305.XX, 965.0X), with the percentage top coded at 8%. If there was any problem opioid use disorder present in PharMetrics Plus, the percentage of quarters was necessarily greater than 8% and so always hit the top code. We took the KPWA coefficient associated with Pct_QtrPOUDx, multiplied it by 0.08 and added it to the KPWA coefficient for POUDx_Ever_YN to obtain a single predictor in the PharMetrics Plus data.)	0.5862	D
Ever/never >=1 CPT code for Urine Drug Screen, qualitative multiple drug class (CPT code 80100). Coded as 1/0.	0.4190	R

<b>Table A1</b>		
<b>Characteristic definition</b>	<b>Coef- ficient</b>	<b>Class</b>
Ever/never $\geq 1$ CPT code for Urine Drug Screen confirmation (CPT code 80102). Coded as 1/0.	0.1070	R
Total number of quarters with $\geq 1$ Urine Drug Screening (CPT codes: '80100','80101','80102','80154','80299','80300','83925','99408','99409') during the quarter	0.01221	R
Yes/no: $\geq 2$ quarters with at least one Urine Drug Screening (CPT codes: '80100','80101','80102','80154','80299','80300','83925','99408','99409') during the quarter	0.07485	R
Total number of quarters with at least one Urine Drug Screen (CPT codes: '80100','80101','80102','80154','80299','80300','83925','99408','99409') during non-routine screening (at Group Health, this is 2010 and earlier) Adjustment: The present study not have data in 2010 or before, so did not create this variable.	0.1000	R
Total number of Urine Drug Screens (CPT codes: '80100','80101','80102','80154','80299','80300','83925','99408','99409') during non-routine screening (at Group Health, this is 2010 and earlier) Adjustment: The present study not have data in 2010 or before, so did not create this variable.	0.04695	R

The ascertainment of presumptive opioid abuse proceeded as follows.

Computation of the logistic score

$a$  = sum of the products of each variable above multiplied by the corresponding coefficient, plus the intercept term

Computation of the transformed score ( $S$ )

$$S = \exp(a) / [1 + \exp(a)]$$

Kaiser-Permanente explored the implications of choosing different cut-points for  $S$  in a large commercial US health plan’s data that was not used for the algorithm development. There was clinician review of claims data and extracted EHR data in 500 individuals oversampled for being at high risk of having opioid abuse. 155 of the 500 cases were adjudicated as having opioid abuse. The population in the PharMetrics Plus data base resembles that of the commercial



insurer in that both are typically employed persons and their dependents. They differ in that the commercial insurance data used in this exercise consisted of persons who used ER/LA opioids for at least 60 days who were furthermore oversampled for having indicators of opioid abuse, whereas the PharMetrics Plus population included persons with two dispensings of any opioid in an 18-month period, with only about 6.5% having used ER/LA opioids at all. The PharMetrics Plus population was therefore expected to have a lower prevalence of true opioid abuse, putting a high premium on specificity in the algorithm. Accordingly, we chose a cut-point of 0.368 for the score, which corresponds to a specificity of 90%.

Calculation of presumptive opioid abuse, using a cutoff value of 0.368

If  $S > 0.368$ , presumptive opioid abuse = 1 (yes)

Otherwise, presumptive opioid abuse = 0 (no)

## Appendix B Covariates and their associated coefficients in the regression of opioid abuse

Appendix Table B1. Logistic Regression Analyses of Covariates and Shopping in the Prediction of Presumptive Opioid Abuse

<b>Table B1</b>		Covariates Only	Shopping and Covariates		
Characteristic	Level	OR	OR	95% Conf Limits	
				Lower	Upper
Shopping Behavior	None	-	Ref	-	-
	Minimal	-	1.56	1.28	1.89
	Moderate	-	1.56	1.20	2.02
	Extensive	-	1.95	1.51	2.52
Age Group	18-24	Ref	Ref	-	-
	25-34	0.46	0.46	0.35	0.60
	35-44	0.26	0.27	0.20	0.35
	45-54	0.26	0.27	0.21	0.36
	55-64	0.16	0.18	0.13	0.24
	65-74	0.04	0.04	0.02	0.10
	75-84	0.00	0.00	a	a
Gender	Female	Ref	Ref	-	-
	Male	2.21	2.21	1.89	2.59
Number of dispensings of					
Antidepressants	None	Ref	Ref	-	-
	1	1.88	1.85	1.34	2.54
	2-4	2.34	2.29	1.78	2.96
	5-9	2.31	2.27	1.77	2.91
	10-19	1.81	1.80	1.43	2.27
	20+	2.14	2.07	1.57	2.73
Antipsychotics	None	Ref	Ref	-	-
	1	2.21	2.11	1.42	3.13
	2-4	3.82	3.76	2.79	5.06
	5-9	2.82	2.73	1.85	4.01
	10-19	3.44	3.41	2.45	4.73
	20+	1.29	1.30	0.56	3.00

<b>Table B1 (cont)</b>		Covariates Only	Shopping and Covariates		
Characteristic	Level	OR	OR	95% Conf Limits	
				Lower	Upper
Anxiolytics	None	Ref	Ref	-	-
	1	1.62	1.57	1.20	2.05
	2-4	1.91	1.84	1.44	2.33
	5-9	2.51	2.40	1.86	3.10
	10-19	3.34	3.36	2.68	4.21
	20+	3.98	3.93	2.92	5.30
Opioid Type	ER/LA only	Ref	Ref	-	-
	IR only	0.59	0.52	0.32	0.84
	IR and ER/LA	1.24	1.04	0.66	1.64
Pain diagnoses specified by the FDA (present versus absent)					
Back pain		1.40	1.40	1.18	1.67
Malignancy		0.63	0.62	0.48	0.81
Wounds/injuries		1.89	1.81	1.51	2.17
Nonpain diagnoses by ICD-9 chapter (present versus absent)					
Infectious/parasitic diseases (001-139)		1.31	1.31	1.10	1.55
Blood / blood-forming organs (280-289)		1.36	1.36	1.10	1.67
Mental disorders (290-319)		15.35	15.64	10.68	22.92
Nervous system and sense organs (320-389)		1.40	1.39	1.18	1.64
Circulatory system (390-459)		1.43	1.43	1.21	1.70
Respiratory system (460-519)		0.79	0.79	0.68	0.93
Digestive system (520-579)		1.26	1.25	1.07	1.47
Congenital anomalies (740-759)		0.60	0.60	0.37	0.97
Symptoms, signs and ill-defined conditions (780-799)		1.27	1.25	0.99	1.58
Injury and poisoning (800-999)		1.91	1.86	1.58	2.18
Number of self-paid dispensings of opioids (from LRx)	0	Ref	Ref	-	-
	1	2.01	1.87	1.49	2.35
	2	3.18	2.86	2.05	3.99
	3	2.52	2.19	1.27	3.78
	4+	4.24	3.94	2.74	5.67

<b>Table B1 (cont)</b>		Covariates Only OR	Shopping and Covariates		
Characteristic	Level		OR	95% Conf Limits	
			OR	Lower	Upper
Total MME dispensed	<250	Ref	Ref	-	-
	250-499	1.39	1.23	0.96	1.58
	500-999	1.92	1.65	1.27	2.14
	1000-2499	3.39	2.82	2.13	3.73
	2500-4999	4.71	3.96	2.82	5.56
	5000-9999	5.70	4.84	3.25	7.21
	10000+	12.16	10.39	5.82	18.57

<sup>a</sup> Asymptotic limits not available (zero events at this level)

Results are adjusted for US Census Region of Residence

OR – Odds ratio

Conf – Confidence

ER/LA – Extended-release and long-acting

IR – Immediate release

MME – Morphine milligram equivalents

ICD-9 – International Classification of Diseases, 9<sup>th</sup> Revision

## Appendix C. Count and Prevalence of Presumed Opioid Abuse by Shopping Category within Levels of Covariates

Table C1

Characteristic	Presumed opioid abuse	Shopping							
		None		Minimal		Moderate		Extensive	
		N	%	N	%	N	%	N	%
<b>AGE</b>									
18-24	Y	66	0.6%	22	1.6%	18	3.0%	11	5.7%
	N	11,226	99.4%	1,377	98.4%	591	97.0%	182	94.3%
25-34	Y	59	0.3%	27	1.0%	10	0.9%	38	8.0%
	N	19,338	99.7%	2,811	99.0%	1,129	99.1%	438	92.0%
35-44	Y	62	0.2%	40	1.0%	21	1.5%	30	4.6%
	N	30,170	99.8%	3,871	99.0%	1,411	98.5%	621	95.4%
45-54	Y	128	0.3%	63	1.4%	25	1.6%	37	5.3%
	N	40,010	99.7%	4,536	98.6%	1,577	98.4%	662	94.7%
55-64	Y	75	0.2%	28	0.9%	15	1.5%	13	2.7%
	N	32,954	99.8%	3,147	99.1%	1,009	98.5%	476	97.3%
65-74	Y	1	0.0%	3	0.7%	1	0.7%	0	0.0%
	N	4,881	100.0%	428	99.3%	136	99.3%	48	100.0%
75-84	Y	0	0.0%	0	0.0%	0	0.0%	0	0.0%
	N	1,007	100.0%	78	100.0%	13	100.0%	3	100.0%
<b>GENDER</b>									
Female	Y	162	0.2%	71	0.8%	39	1.3%	65	4.8%
	N	71,490	99.8%	8,440	99.2%	3,038	98.7%	1,303	95.2%
Male	Y	229	0.3%	112	1.4%	51	1.8%	64	5.4%
	N	68,096	99.7%	7,808	98.6%	2,828	98.2%	1,127	94.6%

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Table C1 (cont)	Presumed opioid abuse	Shopping							
		None		Minimal		Moderate		Extensive	
Characteristic		N	%	N	%	N	%	N	%
<b>DRUG GROUPS / NO. OF DISPENSINGS</b>									
<b>ANTIDEPRESSANTS</b>									
0	Y	87	0.1%	42	0.4%	16	0.5%	28	2.9%
	N	99,261	99.9%	9,825	99.6%	3,274	99.5%	948	97.1%
1	Y	28	0.5%	15	1.7%	6	1.6%	8	4.5%
	N	5,665	99.5%	881	98.3%	360	98.4%	170	95.5%
2-4	Y	55	0.7%	28	2.0%	15	2.8%	18	7.0%
	N	7,692	99.3%	1,347	98.0%	516	97.2%	240	93.0%
5-9	Y	69	0.7%	30	2.1%	21	3.8%	13	4.5%
	N	9,266	99.3%	1,417	97.9%	528	96.2%	275	95.5%
10-19	Y	89	0.7%	43	2.1%	23	2.9%	33	7.3%
	N	13,589	99.3%	1,984	97.9%	757	97.1%	416	92.7%
20+	Y	63	1.5%	25	3.1%	9	2.0%	29	7.1%
	N	4,113	98.5%	794	96.9%	431	98.0%	381	92.9%
<b>ANTIPSYCHOTICS</b>									
0	Y	287	0.2%	142	0.9%	73	1.3%	90	4.0%
	N	136,670	99.8%	15,590	99.1%	5,508	98.7%	2,150	96.0%
1	Y	10	1.6%	8	4.7%	4	4.6%	13	17.6%
	N	632	98.4%	164	95.3%	83	95.4%	61	82.4%
2-4	Y	36	4.6%	10	5.6%	7	6.5%	13	15.5%
	N	749	95.4%	170	94.4%	100	93.5%	71	84.5%
5-9	Y	22	3.8%	8	5.3%	2	3.1%	6	8.7%
	N	557	96.2%	142	94.7%	63	96.9%	63	91.3%
10-19	Y	32	3.8%	13	8.6%	4	4.5%	6	8.7%
	N	803	96.2%	138	91.4%	84	95.5%	63	91.3%
20+	Y	4	2.2%	2	4.3%	0	0.0%	1	4.3%
	N	175	97.8%	44	95.7%	28	100.0%	22	95.7%

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Characteristic	Presumed opioid abuse	Shopping							
		None		Minimal		Moderate		Extensive	
		N	%	N	%	N	%	N	%
<b>ANXIOLYTICS</b>									
0	Y	116	0.1%	62	0.6%	23	0.7%	25	2.4%
	N	104,199	99.9%	10,298	99.4%	3,461	99.3%	1,003	97.6%
1	Y	41	0.3%	18	0.9%	12	1.7%	12	3.7%
	N	13,347	99.7%	1,988	99.1%	689	98.3%	311	96.3%
2-4	Y	50	0.5%	34	1.9%	12	1.7%	22	5.4%
	N	9,969	99.5%	1,714	98.1%	702	98.3%	385	94.6%
5-9	Y	47	0.9%	22	2.3%	13	3.1%	22	7.6%
	N	5,019	99.1%	922	97.7%	411	96.9%	266	92.4%
10-19	Y	96	1.6%	33	3.1%	16	3.5%	31	9.6%
	N	5,771	98.4%	1,033	96.9%	445	96.5%	291	90.4%
20+	Y	41	3.1%	14	4.6%	14	8.1%	17	8.9%
	N	1,281	96.9%	293	95.4%	158	91.9%	174	91.1%

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Characteristic	Presumed opioid abuse	Shopping							
		None		Minimal		Moderate		Extensive	
		N	%	N	%	N	%	N	%
<b>OPIOID TYPE</b>									
ER/LA	Y	21	1.9%	3	2.0%	0	0.0%	0	0.0%
	N	1,111	98.1%	148	98.0%	40	100.0%	10	100.0%
IR	Y	265	0.2%	97	0.7%	51	1.0%	52	3.1%
	N	133,020	99.8%	14,235	99.3%	4,923	99.0%	1,618	96.9%
IR and ER/LA	Y	105	1.9%	83	4.3%	39	4.1%	77	8.8%
	N	5,455	98.1%	1,865	95.7%	903	95.9%	802	91.2%



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Characteristic	Presumed opioid abuse	Shopping							
		None		Minimal		Moderate		Extensive	
		N	%	N	%	N	%	N	%
<b>NUMBER OF TIMES OPIOIDS WERE DISPENSED FOR SELF-PAYMENT</b>									
0	Y	320	0.2%	122	0.9%	54	1.1%	59	3.5%
	N	131,134	99.8%	14,051	99.1%	4,742	98.9%	1,645	96.5%
1	Y	35	0.5%	31	2.0%	19	2.5%	28	6.3%
	N	6,378	99.5%	1,547	98.0%	737	97.5%	415	93.7%
2	Y	17	1.4%	16	4.1%	4	2.0%	17	9.2%
	N	1,197	98.6%	372	95.9%	198	98.0%	168	90.8%
3	Y	5	1.4%	5	3.8%	2	2.5%	7	7.8%
	N	356	98.6%	126	96.2%	79	97.5%	83	92.2%
4+	Y	14	2.6%	9	5.6%	11	9.1%	18	13.1%
	N	521	97.4%	152	94.4%	110	90.9%	119	86.9%
<b>TOTAL MEQ DISPENSED</b>									
<250	Y	189	0.2%	35	0.4%	25	0.9%	7	2.3%
	N	113,465	99.8%	9,270	99.6%	2,832	99.1%	299	97.7%
250-499	Y	45	0.3%	34	1.0%	9	0.7%	14	2.1%
	N	13,859	99.7%	3,391	99.0%	1,346	99.3%	655	97.9%
500-999	Y	41	0.5%	31	1.6%	17	2.0%	21	3.1%
	N	7,444	99.5%	1,957	98.4%	838	98.0%	662	96.9%
1000-2499	Y	44	1.4%	41	3.7%	16	2.9%	42	7.7%
	N	3,108	98.6%	1,056	96.3%	535	97.1%	503	92.3%
2500-4999	Y	34	3.0%	22	5.4%	15	6.9%	25	11.0%
	N	1,107	97.0%	382	94.6%	203	93.1%	202	89.0%
5000-9999	Y	24	4.3%	17	9.6%	5	5.3%	13	13.0%
	N	532	95.7%	161	90.4%	90	94.7%	87	87.0%
10000+	Y	14	16.5%	3	8.8%	3	12.0%	7	24.1%
	N	71	83.5%	31	91.2%	22	88.0%	22	75.9%

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Characteristic	Presumed opioid abuse	Shopping							
		None		Minimal		Moderate		Extensive	
		N	%	N	%	N	%	N	%
BACK PAIN	Y	258	0.4%	130	1.4%	68	2.0%	113	7.0%
	N	60,540	99.6%	8,902	98.6%	3,255	98.0%	1,491	93.0%
MALIGNANCY	Y	34	0.2%	16	0.8%	10	1.5%	12	3.5%
	N	17,034	99.8%	2,099	99.2%	651	98.5%	334	96.5%
WOUNDS/INJURY	Y	100	0.9%	61	2.9%	20	2.4%	38	8.3%
	N	11,298	99.1%	2,047	97.1%	810	97.6%	419	91.7%
INFECTIOUS AND PARASITIC DISEASES	Y	111	0.4%	63	1.8%	29	2.2%	37	6.2%
	N	25,857	99.6%	3,515	98.2%	1,306	97.8%	561	93.8%
DISEASE OF BLOOD FORMING ORGANS	Y	65	0.6%	30	1.6%	24	4.0%	23	6.5%
	N	11,571	99.4%	1,792	98.4%	582	96.0%	332	93.5%
MENTAL DISORDERS	Y	380	0.8%	179	2.3%	83	2.9%	122	8.1%
	N	48,926	99.2%	7,579	97.7%	2,766	97.1%	1,392	91.9%
NERVOUS SYSTEM AND SENSE ORGANS	Y	242	0.4%	131	1.7%	66	2.3%	96	6.6%
	N	58,890	99.6%	7,778	98.3%	2,830	97.7%	1,358	93.4%
CIRCULATORY	Y	215	0.4%	99	1.4%	52	2.2%	67	5.9%
	N	55,530	99.6%	6,732	98.6%	2,284	97.8%	1,066	94.1%
RESPIRATORY	Y	235	0.3%	97	1.1%	48	1.5%	70	4.7%
	N	71,665	99.7%	9,032	98.9%	3,227	98.5%	1,412	95.3%
DIGESTIVE	Y	191	0.4%	101	1.5%	55	2.3%	69	6.1%
	N	48,417	99.6%	6,700	98.5%	2,354	97.7%	1,059	93.9%
CONGENITAL ANOMALIES	Y	11	0.3%	6	1.1%	1	0.6%	3	3.5%
	N	3,989	99.7%	529	98.9%	159	99.4%	83	96.5%
INJURY & POISONING	Y	178	0.7%	83	1.9%	37	2.2%	73	9.0%
	N	26,533	99.3%	4,314	98.1%	1,637	97.8%	734	91.0%