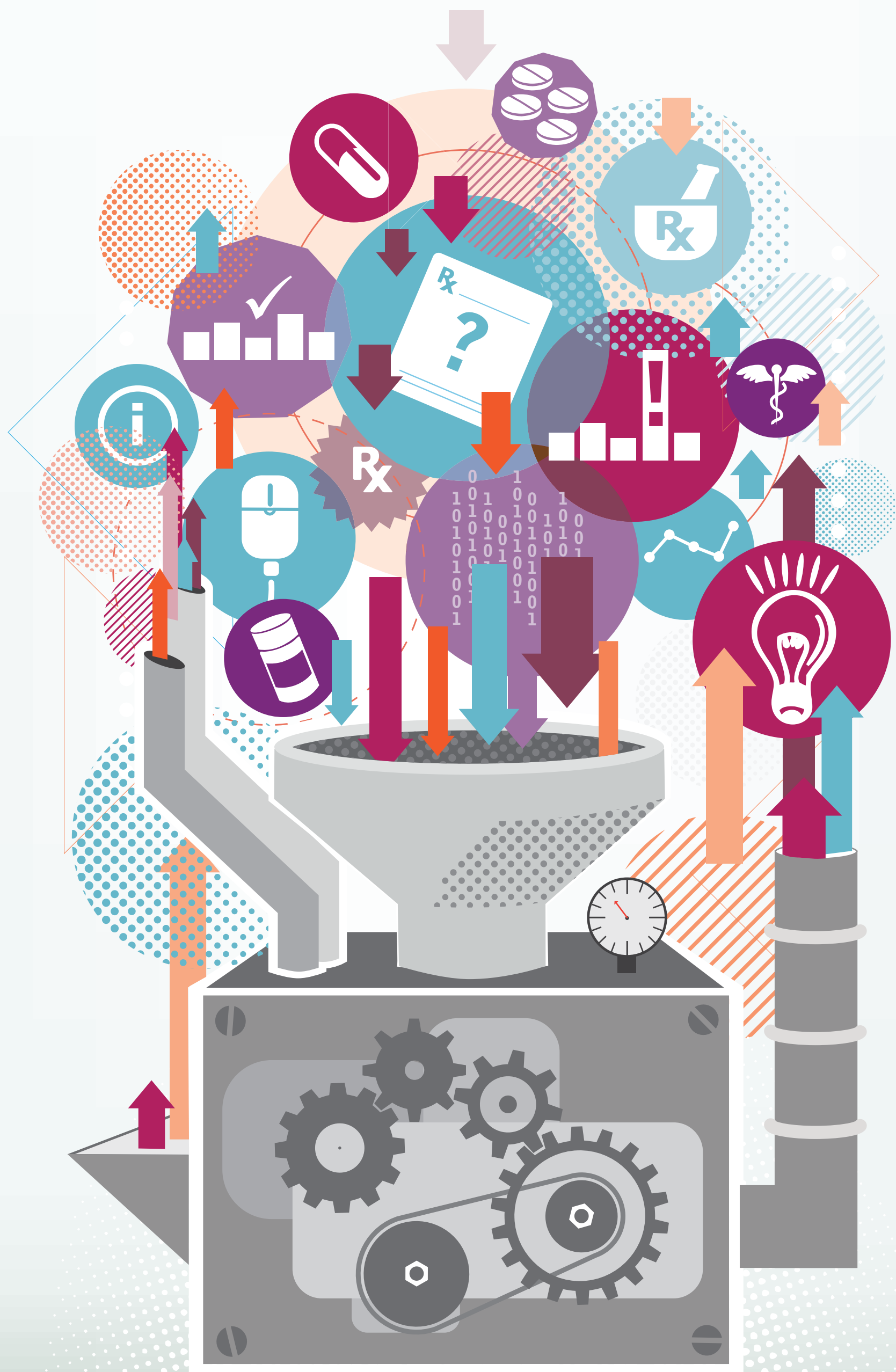


# 2012 Alberta Triplicate Prescription Program Atlas





The Alberta Triplicate Prescription Program (TPP) was established in 1986 to monitor the use of certain drugs prone to misuse and abuse. The mandate of the TPP is:

- To improve patient care by providing timely and relevant information on targeted drugs to prescribers, pharmacists and consumers.
- To reduce the misuse and abuse (non-medical use) of targeted medications.
- To monitor the prescribing and dispensing practices of physicians and pharmacists for the targeted medications.
- To provide timely, accurate information and feedback to prescribers and pharmacists regarding prescribing and dispensing practices and patterns for the targeted drugs.
- To identify potential areas of drug misuse or abuse and work with TPP partners to address issues.

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This work was produced by OKAKI™ for the Alberta Triplicate Prescription Program.

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## Table of Contents

<b>Section 1 - Background</b>	<b>2</b>
2012 Triplicate Prescription Program (TPP) Atlas	2
Transition to the Pharmaceutical Information Network (PIN)	2
TPP Geography	3
<b>Section 2 - TPP Utilization, 2001–2012</b>	<b>4</b>
Prescribers	4
Prescriptions	5
Patients	6
Population Utilization	7
<b>Section 3 – Specific TPP Medication Categories</b>	<b>10</b>
Ingredients	10
Anatomical Therapeutic Classification (ATC)	10
N02 – Analgesics	12
N07 - Other Nervous System Drugs	14
Comparison of Top Four Opioid Analgesics (N02)	16
Introduction of OxyNEO	18
<b>Section 4 - High Risk Opioid Utilization</b>	<b>20</b>
Patients >200 OME/day per 1000 Population	20
High Risk Patient Index	21
High Quantity Dispenses	22
High Risk Utilization Over Eight Quarters	23
List of Tables and Figures	24

# Section 1 - Background

## 2012 Triplicate Prescription Program (TPP) Atlas

The purpose of this Atlas is to provide an update on TPP medication utilization trends in 2012. While the TPP program includes prescribers from several disciplines, the analysis (where specified) focuses on Alberta-registered physicians.

### Transition to the Pharmaceutical Information Network (PIN)

PIN is a prescription information management system that was integrated into Alberta Netcare to support ready access for health professionals to prescription drug information, including TPP medications. In 2012, with a high proportion of Alberta pharmacies submitting information to PIN, the TPP migrated to electronic PIN information as the primary source of data (vs. manual entry of triplicate prescriptions) for patients seen in Alberta. Utilization of PIN information for TPP purposes officially commenced on January 1, 2013. While PIN information from 2011 and 2012 are available for analysis, earlier data are limited by less complete levels of data submission by pharmacies.

This Atlas presents findings from both triplicate prescription and PIN data sources. There are key differences between PIN and triplicate prescription source data. Triplicate prescription data is based on written information on physical prescriptions. PIN data is captured electronically from the pharmacy and consists of dispenses (not prescriptions) and quantities dispensed. This will affect measures such as the oral morphine equivalents (OME) per day and the total quantity of medication received (generally, PIN data shows lower OME per day and lower quantities received than triplicate prescription data). The first three sections of this Atlas use triplicate prescription source data for the analyses. The use of PIN source data is introduced in Section 3 with a review of OxyNEO utilization. The fourth section on high risk utilization is based on PIN source data from quarter four of 2012.

## TPP Geography

Figure 1 a and b show Alberta subzone (provincial and urban) boundaries. Alberta subzones are the geographic unit of analysis used in this Atlas.

Figure 2 compares the geographic distribution of TPP patients, pharmacies, and physicians in 2012.

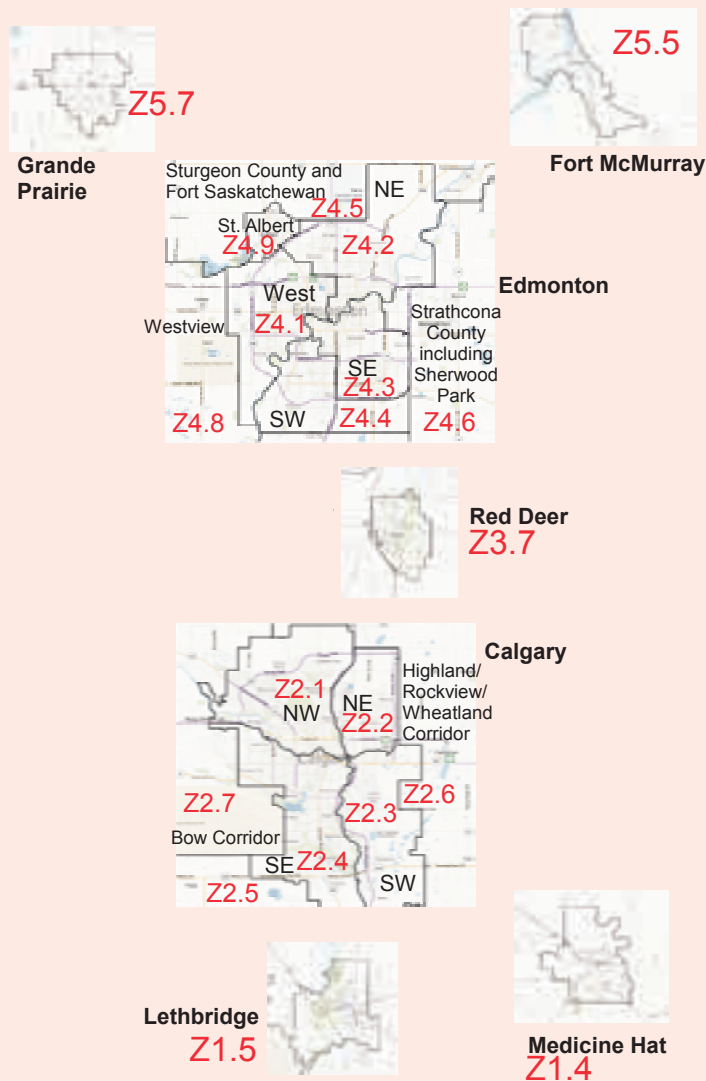
**Figure 1a.**

**Alberta Subzones and Major Communities**



**Figure 1b.**

**Alberta Subzones – Urban Areas**



Maps of the urban subzones accompany the map showing provincial subzone boundaries.



Figure 2.

Comparison of TPP Patient, Pharmacy and Physician Locations, 2012

- Communities with patients, pharmacies, and prescribing physicians
- Communities with patients and pharmacies, but without prescribing physicians
- Communities with patients and prescribing physicians, but without pharmacies
- Communities with patients, but without prescribing physicians or pharmacies



## Section 2 - TPP Utilization, 2001–2012

This section uses triplicate prescription source data from 2001-2012 inclusive.

### Prescribers

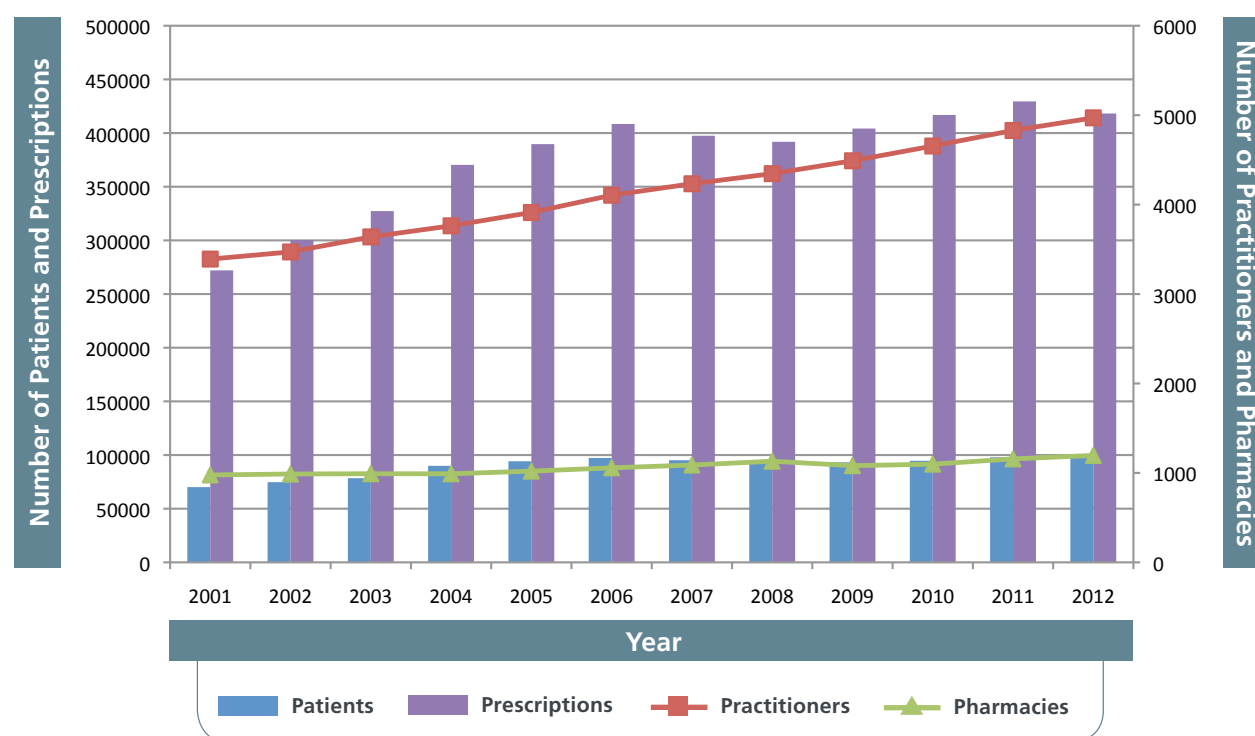
The number of TPP prescriptions, patients, pharmacies and practitioners is shown in Table 1 by type of prescriber. Of note, participation in the TPP only became mandatory for veterinary practitioners in 2010, hence the large increase in numbers for that prescriber group in 2010.

**Table 1. TPP Prescriptions, Patients, Pharmacies, and Practitioners by Prescriber Type, 2001-2012**

Year	Alberta Dentists				Alberta Veterinarians				Alberta Physicians				Yukon Physicians			
	Prescriptions	Patients	Pharmacies	Practitioners	Prescriptions	Patients	Pharmacies	Practitioners	Prescriptions	Patients	Pharmacies	Practitioners	Prescriptions	Patients	Pharmacies	Practitioners
2001	4575	3836	662	374	104	48	40	29	272037	70095	977	3391	7	7	6	6
2002	4605	3827	647	402	140	81	58	38	300332	74727	988	3471	851	374	14	53
2003	4726	3932	662	396	112	70	54	36	327294	78433	991	3639	3327	780	16	80
2004	4663	3801	672	402	141	68	58	34	370343	89944	990	3763	3247	797	18	74
2005	5255	4377	726	413	105	54	41	25	389686	94195	1020	3912	3398	825	13	80
2006	5707	4684	729	414	118	70	46	29	408413	97249	1057	4105	3869	949	27	89
2007	5575	4445	745	402	109	76	47	25	397512	95171	1088	4233	4265	1026	34	86
2008	5697	4660	784	388	111	79	48	28	391855	92922	1131	4346	4512	1056	31	98
2009	5276	4280	763	370	78	59	38	25	404199	93204	1081	4490	4657	1088	25	92
2010	5248	4190	782	389	14024	8043	232	628	416854	94613	1098	4655	5341	1174	18	102
2011	5272	4207	800	371	28615	14727	360	770	429492	97927	1157	4829	5517	1285	36	107
2012	4569	3665	755	337		Incomplete			418209	99099	1195	4970	5119	1221	48	105

All the following figures and tables in section 3 show data based on Alberta physician prescribers only.

**Figure 3. TPP Patients, Prescriptions, Practitioners and Pharmacies for Alberta Physicians, 2001-2012**



Prescriptions

2012 TPP prescription counts are presented by Alberta subzone in Figure 4 and city in Table 2.

Note: all Alberta subzone data are based on pharmacy location as the best approximation of patient location.

Figure 4. 2012 Prescription Counts by Alberta Subzone

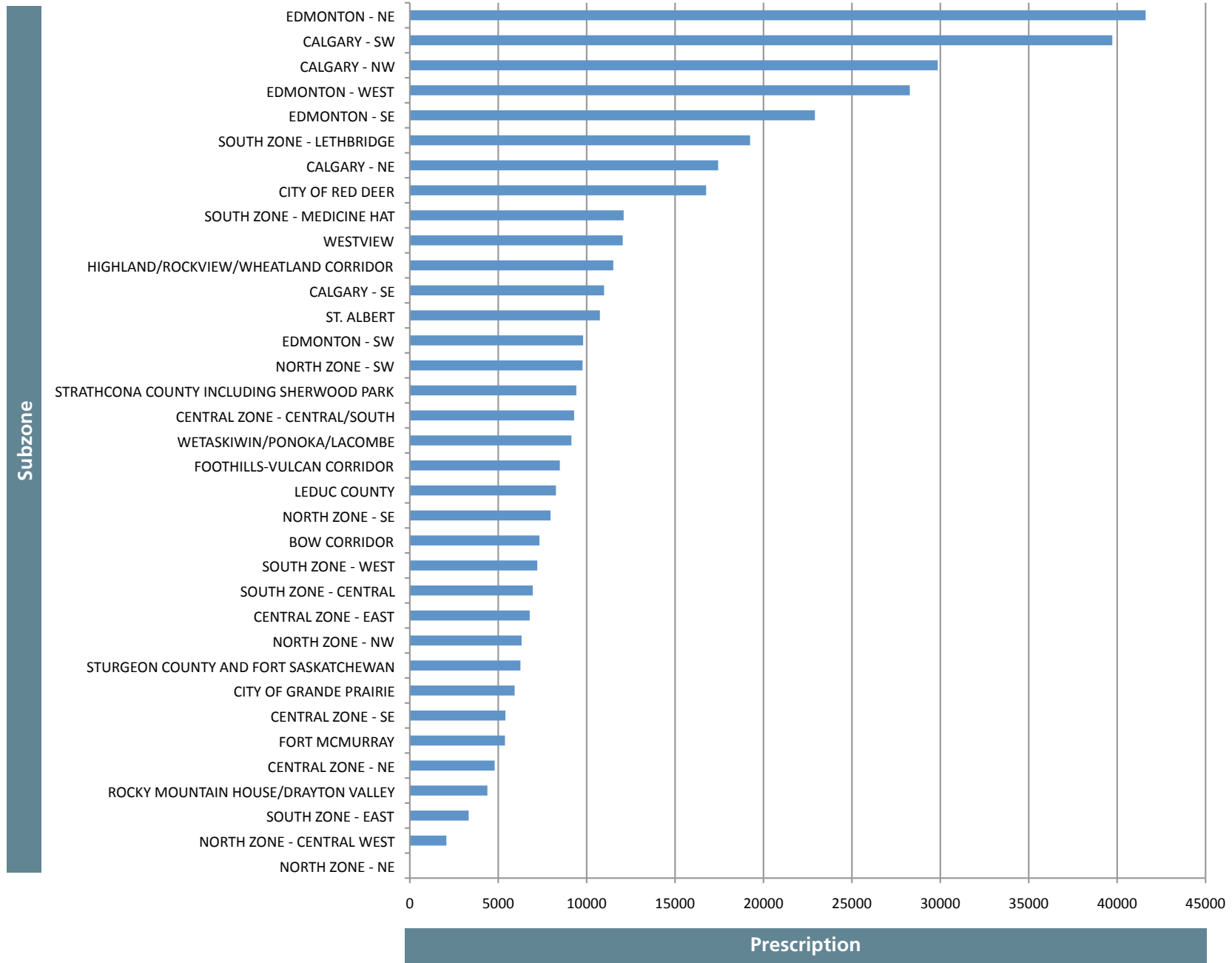


Table 2a. Top 30 Pharmacy Cities Based on Prescription Count

Pharmacy City	Prescription Count
Edmonton	103238
Calgary	98072
Lethbridge	19300
Red Deer	16757
Medicine Hat	12092
St. Albert	10105
Sherwood Park	9445
Spruce Grove	7004
Grande Prairie	5926
Fort McMurray	5380
Airdrie	4840
Stony Plain	4472
Leduc	4221
Fort Saskatchewan	3973
Strathmore	3318
Okotoks	3236
Wetaskiwin	3015
Canmore	2956
Camrose	2919
Innisfail	2866
Cochrane	2755
Sylvan Lake	2741
Rocky Mountain House	2498
Drumheller	2470
Brooks	2462
Lacombe	2220
Coaldale	2020
Olds	1919
Bonnyville	1867
Cardston	1826

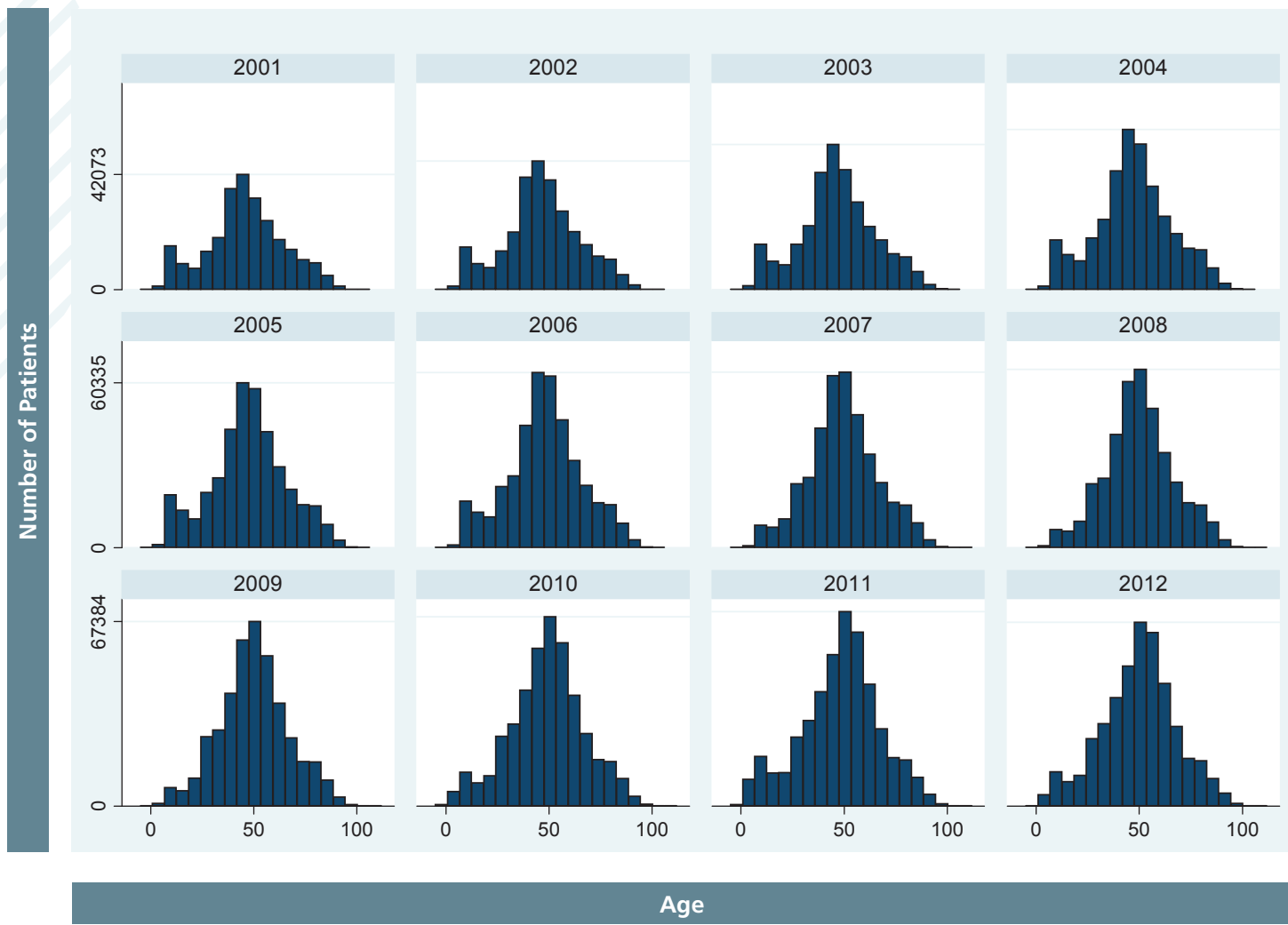
Table 2b. Top 30 Physician Cities Based on Prescription Count

Physician City	Prescription Count
Calgary	105914
Edmonton	105888
Red Deer	22244
Lethbridge	17596
St. Albert	13926
Medicine Hat	11720
Sherwood Park	9026
Spruce Grove	6462
Grande Prairie	4747
Fort McMurray	4551
Stony Plain	3898
Sylvan Lake	3344
Wetaskiwin	3313
Strathmore	3280
Canmore	3133
Fort Saskatchewan	3101
Leduc	3067
Airdrie	3063
Camrose	3035
Innisfail	2805
Lacombe	2647
Cochrane	2586
Okotoks	2536
Coaldale	2465
Devon	2397
Brooks	2388
Drumheller	2185
Rocky Mountain House	2165
Cardston	1847
Pincher Creek	1785

## Patients

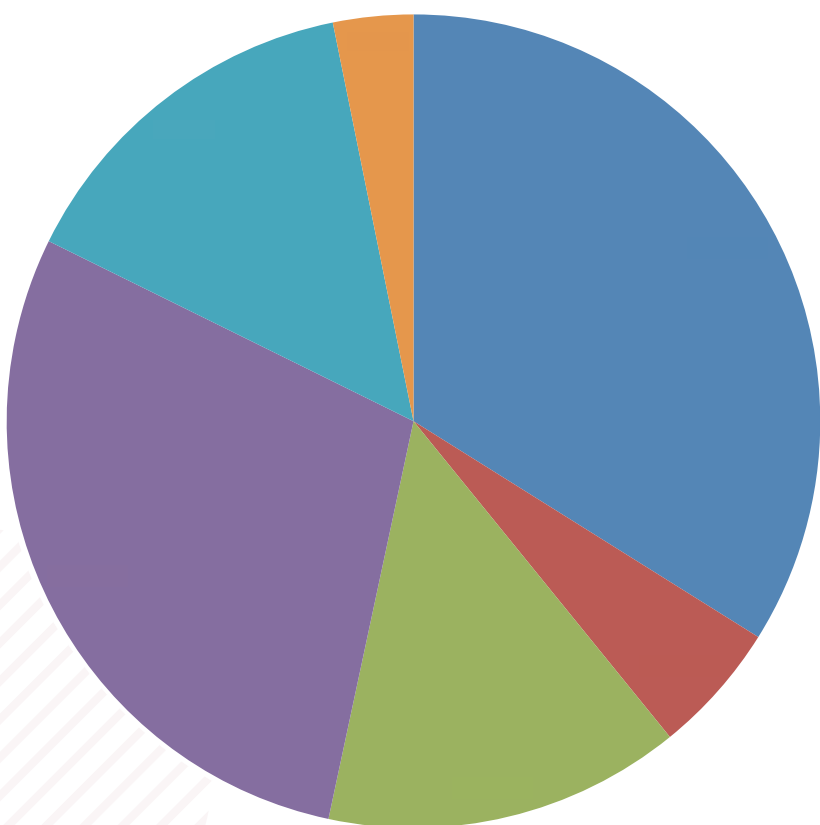
Figure 5 shows the age distribution of TPP patients by year from 2001 to 2012 inclusive.

**Figure 5. Age Distribution of Patients Receiving TPP Medications, 2001 - 2012**



Counts of TPP prescriptions by age group and prescriptions per 1000 population by age group are shown in Figures 6 and 7, respectively.

**Figure 6. TPP Prescription Count by Age Group**

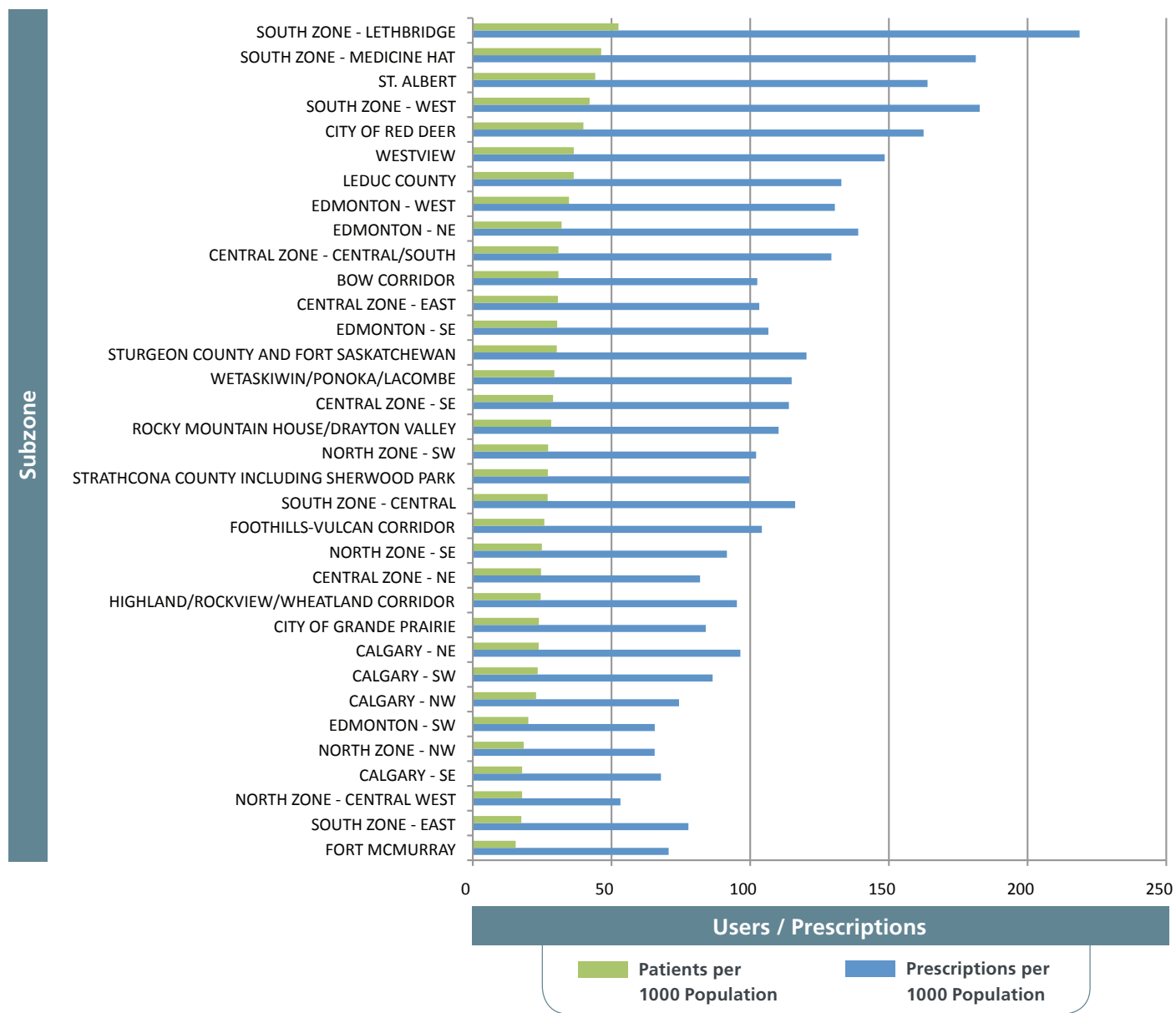


Count by Age Group	Age Group	Count per 1000 Population by Age Group
21774	80+	187
59003	65-79	183
140790	50-64	189
120194	35-49	140
60304	18-34	59
13211	0-17	15

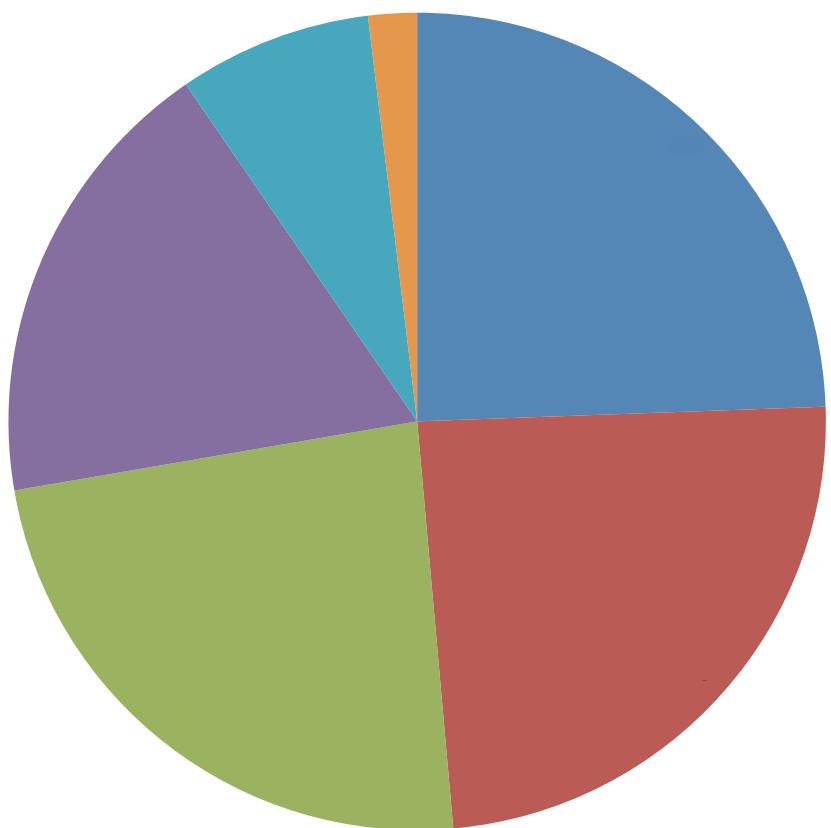
### Population Utilization

2012 TPP prescriptions and patients per 1000 population are summarized by Alberta subzone in Figures 8 and 9.

**Figure 8. 2012 Prescriptions and Patients per 1000 Population by Subzone**



**Figure 7. TPP Prescription Count per 1000 Population by Age Group**





A map is used to show prescriptions per 1,000 population for each subzone. A colour scale is shown that is based on the rate ratio (RR) of utilization for a particular subzone to the provincial average.

Note: Only MD prescriptions are included in these maps.

Note: Subzone Z5.5 (North-NE) does not have any pharmacies and therefore no prescriptions are reported.

Figure 9a.

2012 Prescriptions per 1000 Population by Subzone

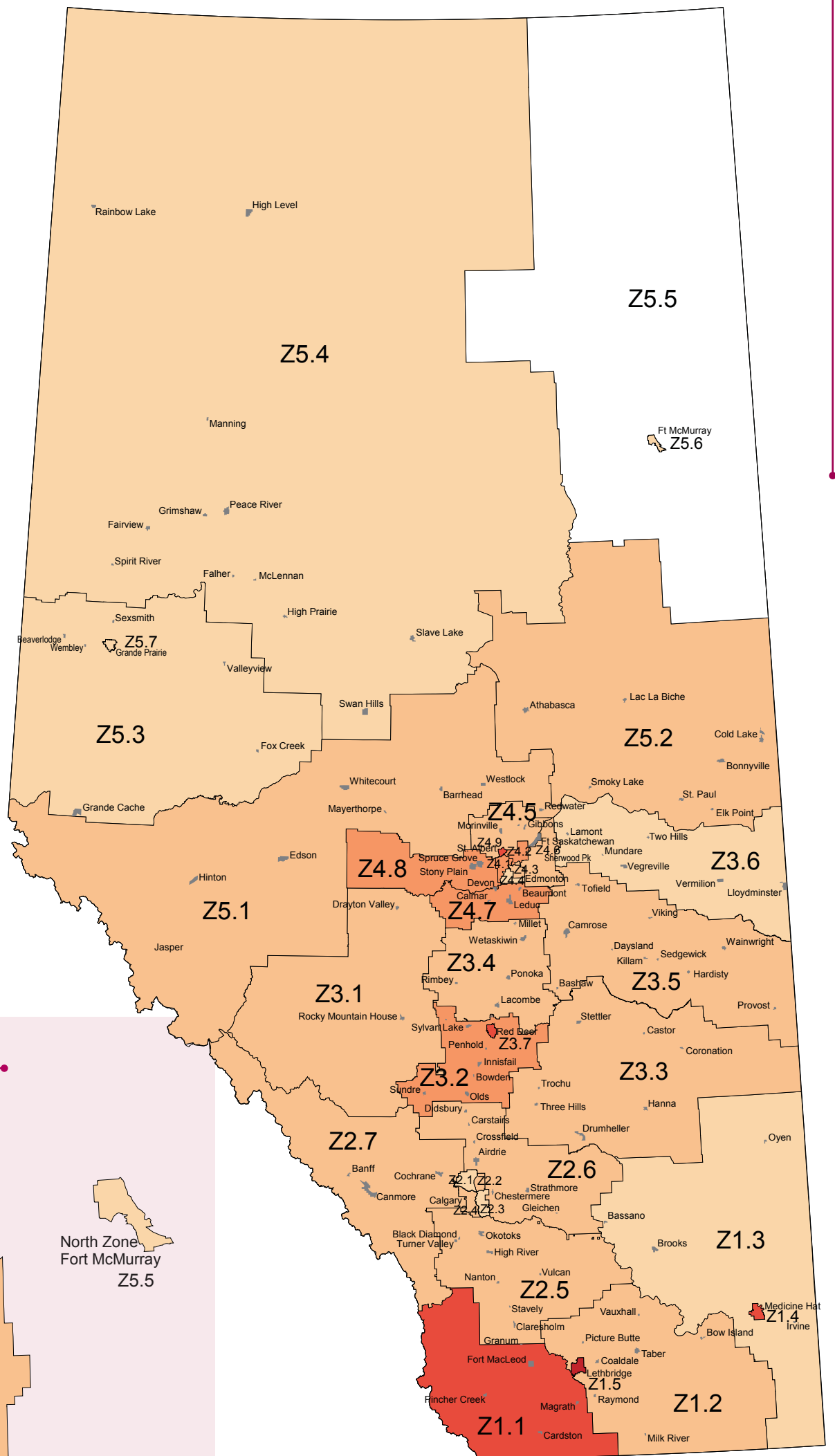


Figure 9b.

2012 Prescriptions per 1000 Population by Urban Area Subzones

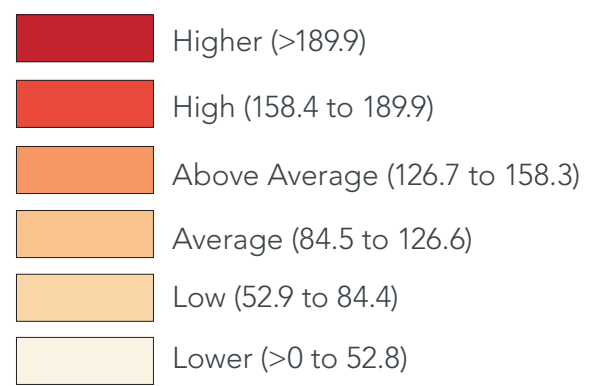
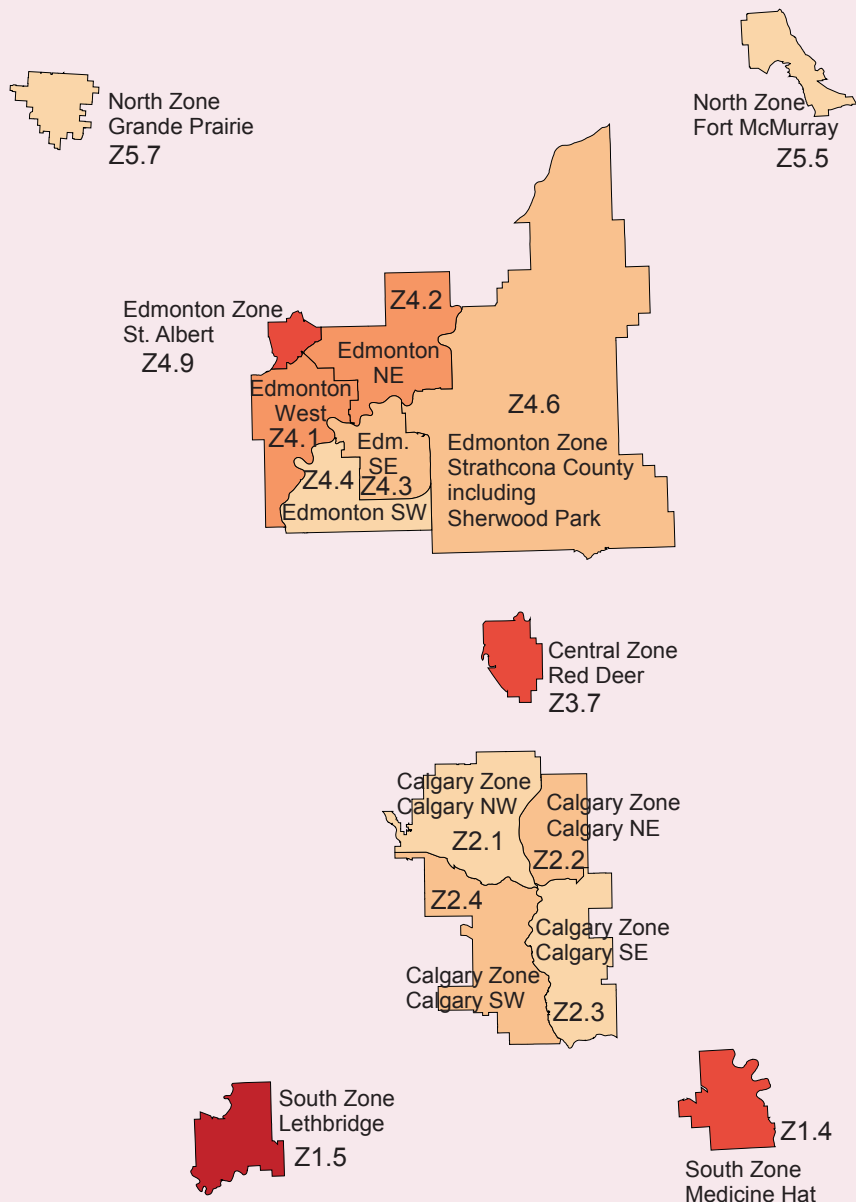


Figure 9c.

2012 Patients per 1000 Population by Subzone

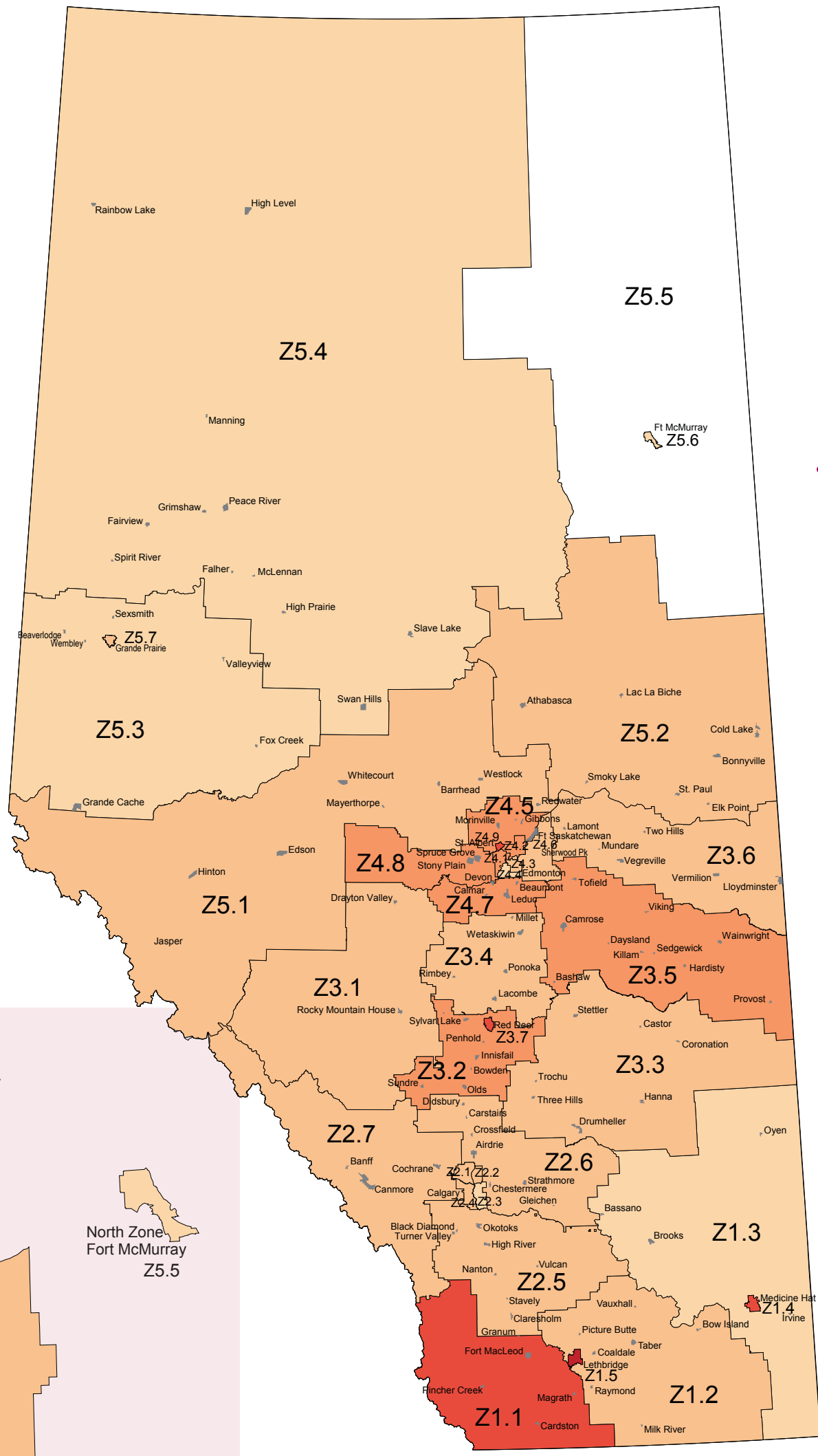
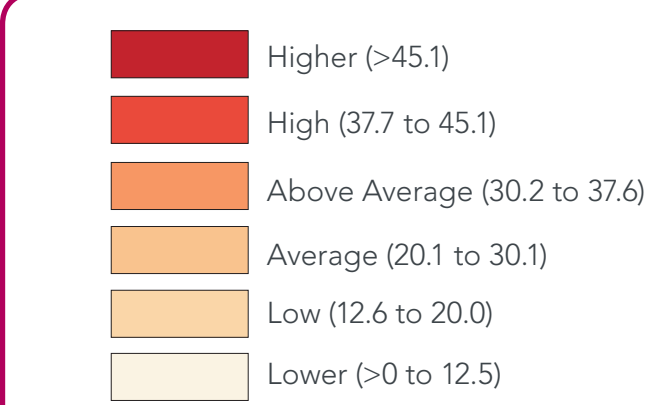
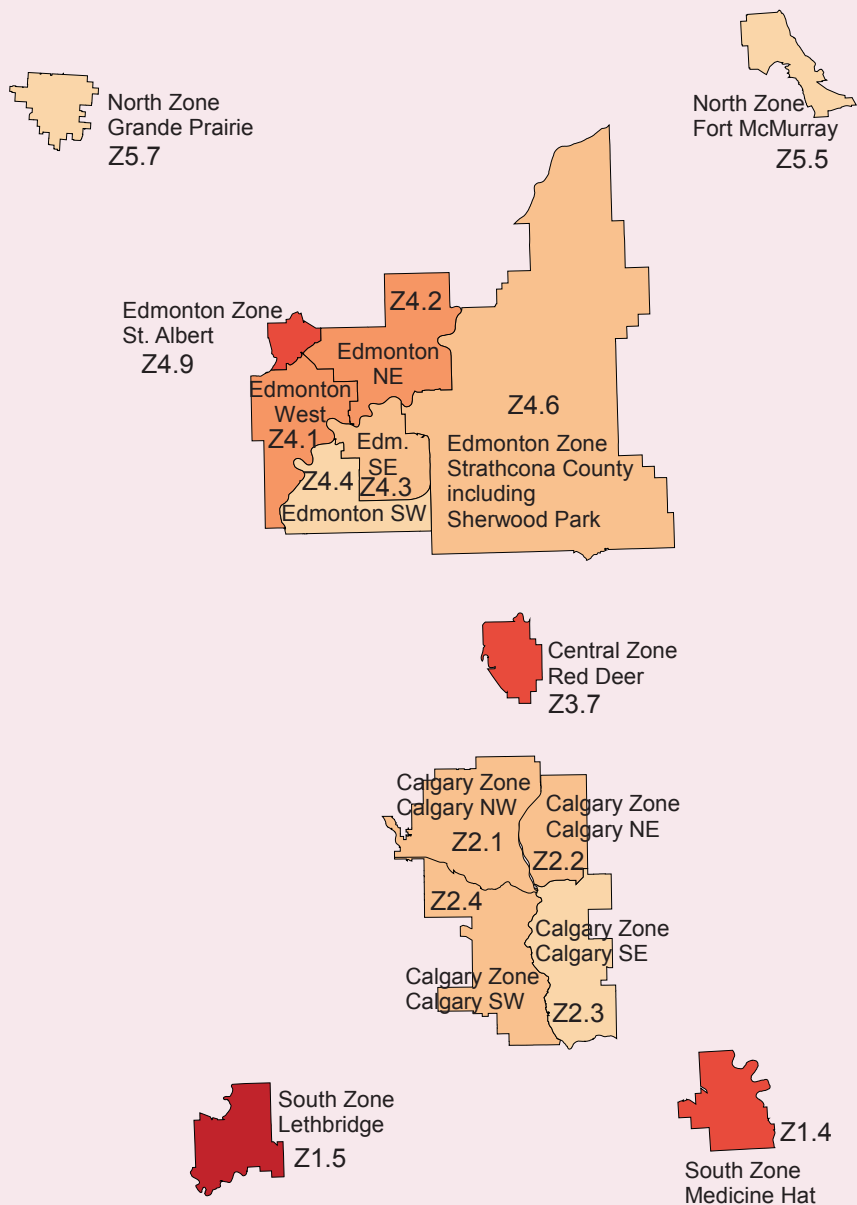


Figure 9d.

2012 Patients per 1000 Population by Urban Area Subzones

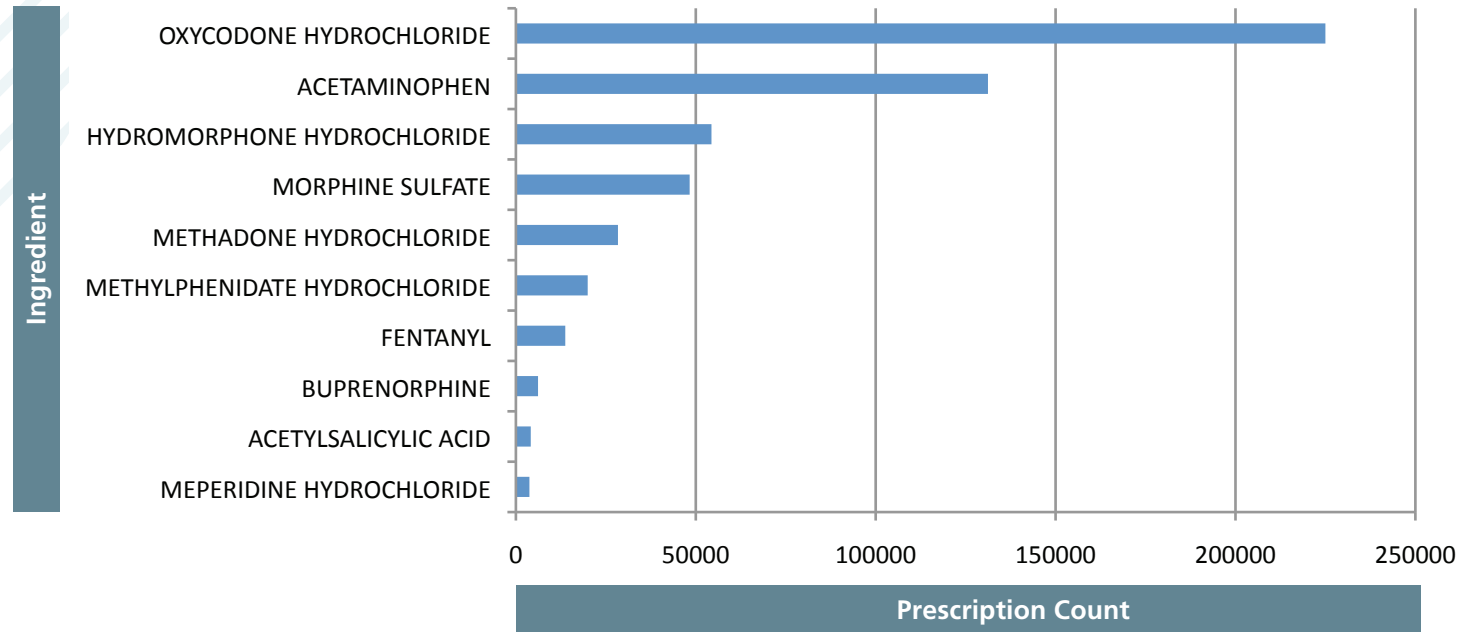


## Section 3 – Specific TPP Medication Categories

This section uses triplicate prescription source data for the analyses **EXCEPT** for the section on the introduction of OxyNEO into Alberta.

### Ingredients

Figure 10. TPP Prescriptions by Top 10 Ingredients, 2012



### Anatomical Therapeutic Classification (ATC)

Table 3. TPP Prescriptions by Anatomical Therapeutic Classification (ATC), 2012

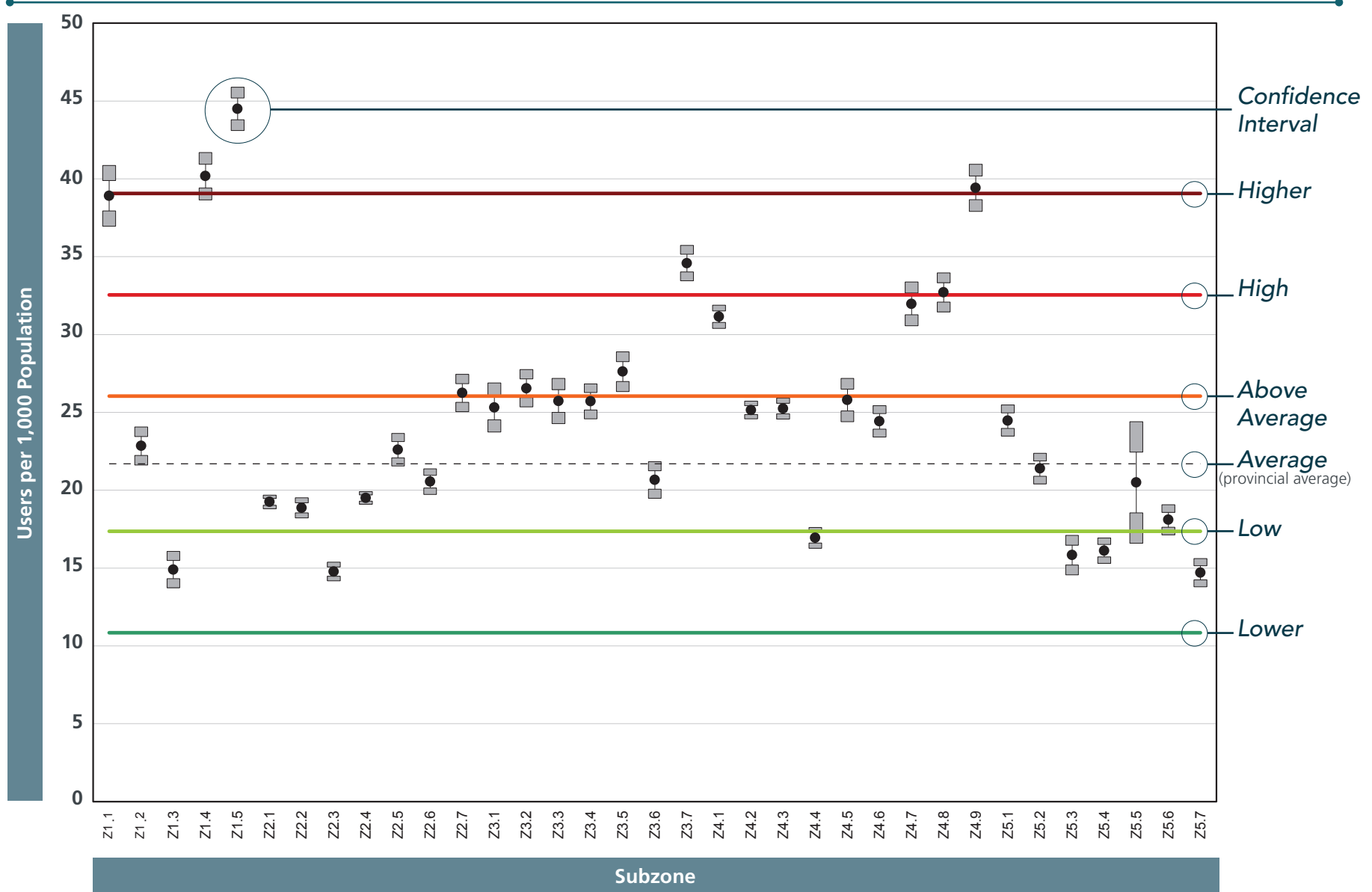
Major Anatomical Therapeutic Classification	Number of Prescriptions	Percent
N-NERVOUS SYSTEM	415225	99.3%
R-RESPIRATORY SYSTEM	1943	0.5%
G-GENITO-URINARY SYSTEM & SEX HORMONES	655	0.2%
A-ALIMENTARY TRACT & METABOLISM	312	0.1%
No ATC Code	33	0.0%
M-MUSCULO-SKELETAL SYSTEM	19	0.0%
<b>Total</b>	<b>418187</b>	<b>100.0%</b>

Table 4. Breakdown of N-Nervous System Prescriptions, 2012

Nervous System Medication Category	Number of Prescriptions	Percent
N02-ANALGESICS	362504	87.3%
N07-OTHER NERVOUS SYSTEM DRUGS	30012	7.2%
N06-PSYCHOANALEPTICS	21380	5.1%
N01-ANESTHETICS	1279	0.3%
N05-PSYCHOLEPTICS	38	0.0%
N03-ANTIEPILEPTICS	12	0.0%
<b>Total</b>	<b>415225</b>	<b>100.0%</b>

For the year 2012, the number of users per 1000 population for specific ATC medication categories are shown by subzone on the following pages. Subzone maps are accompanied by a graph (example shown below). The graph shows users per 1000 population for each subzone with 95% confidence intervals. A hashed black line shows the provincial average. Coloured lines correspond to the colour cut-offs in the accompanying maps. The cut-offs are based on the rate ratio of utilization for a particular subzone compared to the provincial average.

**Example Graph:**



**Table 5. Breakdown of N02-Analgesic Prescriptions, 2012**

Anatomical Therapeutic Classification - N02 Level 5 Category	Number of Prescriptions	Percent
N02BE51-ACETAMINOPHEN, COMB EXCL PSYCHOLEPTICS	131017	36.1%
N02AA05-OXYCODONE	92367	25.5%
N02AA03-HYDROMORPHONE	54444	15.0%
N02AA01-MORPHINE	49882	13.8%
N02AB03-FENTANYL	13848	3.8%
N02AE01-BUPRENORPHINE	6161	1.7%
N02AB02-PETHIDINE	5222	1.4%
N02AX06-TAPENTADOL	3126	0.9%
N02AA79-CODEINE, COMBINATIONS WITH PSYCHOLEPTICS	2897	0.8%
N02AA55-OXYCODONE, COMBINATIONS	1111	0.3%
N02BA71-ACETYLSALICYLIC ACID, COMB WITH PSYCHOLEPTICS	695	0.2%
N02AF01-BUTORPHANOL	610	0.2%
N02BA51-ACETYLSALICYLIC ACID, COMB EXCL PSYCHOLEPTICS	510	0.1%
N02AD01-PENTAZOCINE	301	0.1%
N02AA59-CODEINE, COMBINATIONS	182	0.1%
N02AX02-TRAMADOL	47	0.0%
N02AA02-OPIUM	31	0.0%
N02AX52-TRAMADOL, COMBINATIONS	26	0.0%
N02BG10-NABIXIMOLS	21	0.0%
N02CA52-ERGOTAMINE, COMBINATIONS EXCL. PSYCHOLEPTICS	3	0.0%
N02AAXX-OXYMORPHONE	1	0.0%
N02AC04-DEXTROPROPOXYPHENE	1	0.0%
N02CX01-PIZOTIFEN	1	0.0%
<b>Total</b>	<b>362504</b>	<b>100.0%</b>

## N02 – Analgesics

Note: Only MD prescribed TPP prescriptions shown.

Note: Subzone Z5.5 (North-NE) does not have any pharmacies and therefore no prescriptions are reported.

Figure 11a.

N02 Users per 1000 Population by Alberta Subzone, 2012

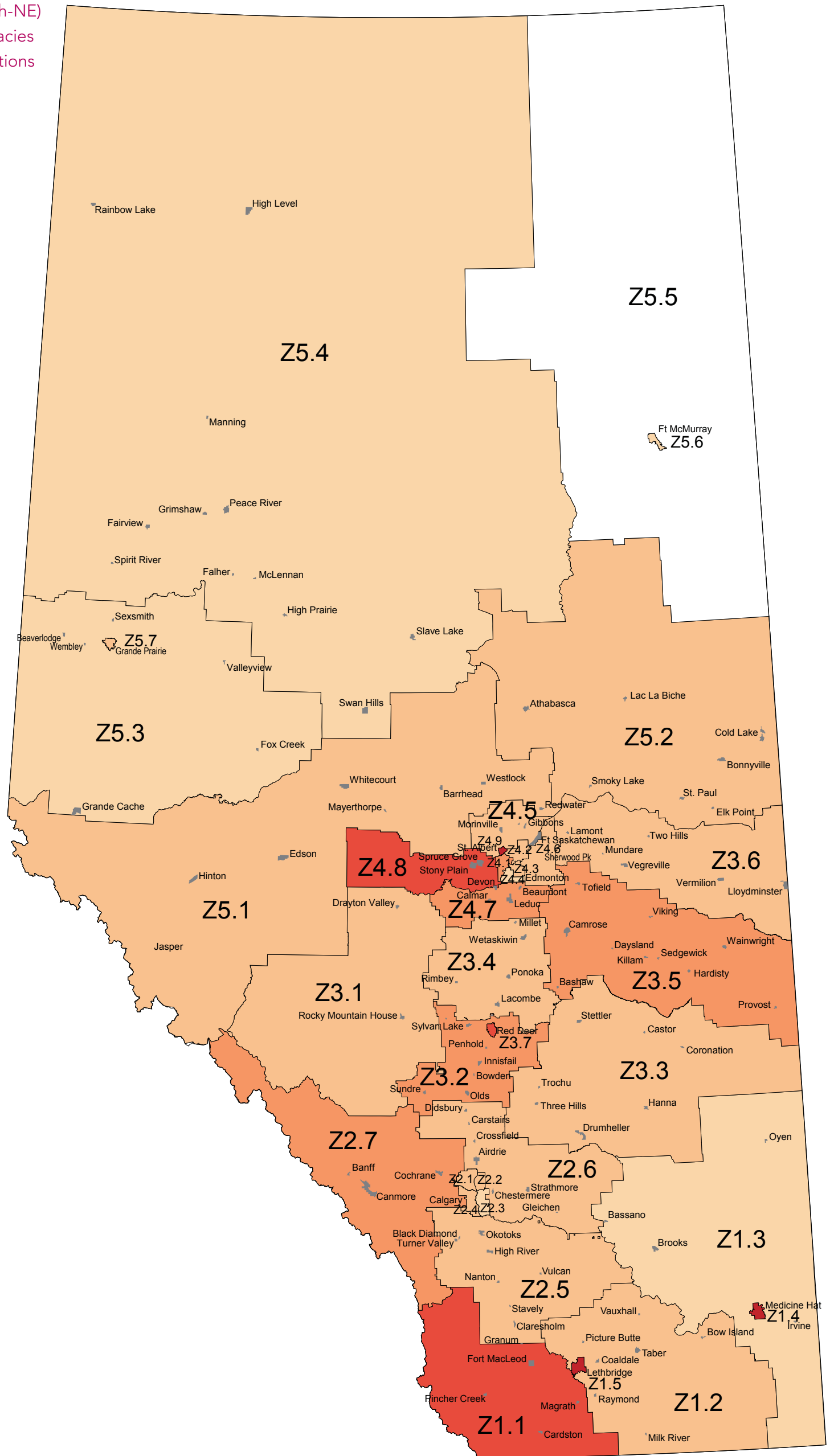




Figure 11b.

N02 Users per 1000 Population by Alberta Subzone – Urban Areas, 2012

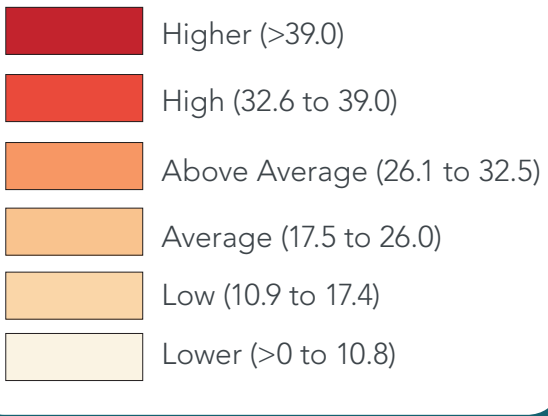
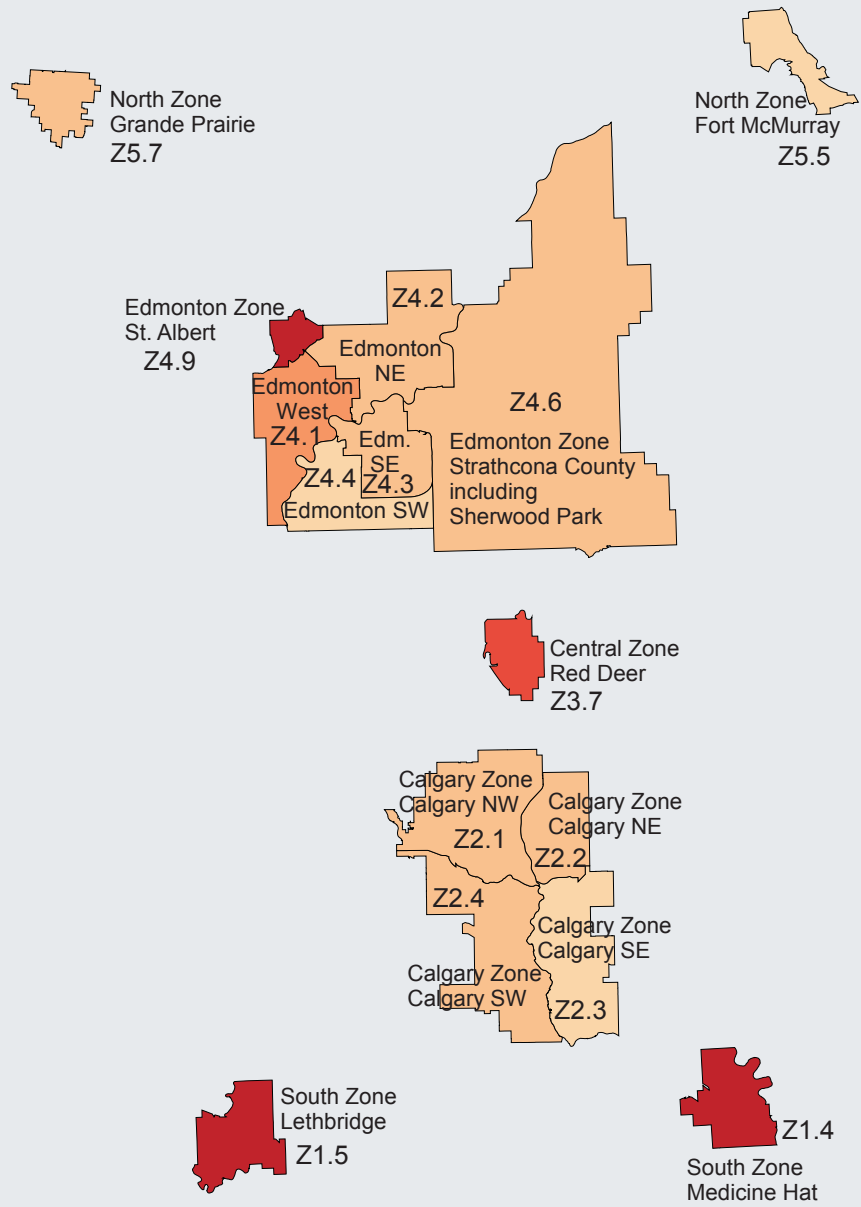
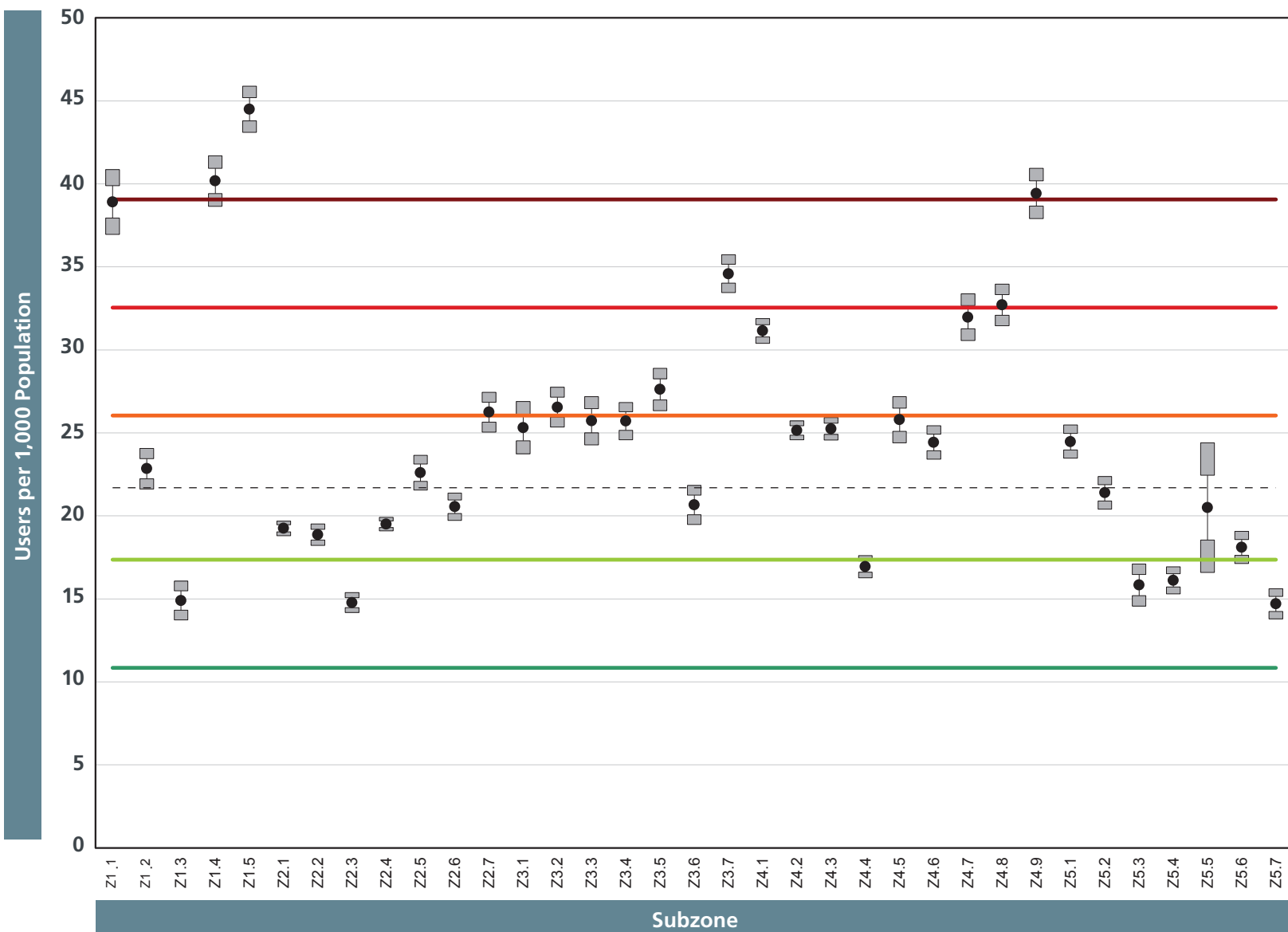


Figure 11c. N02 Users per 1000 Population by Alberta Subzone, 2012



## N07 - Other Nervous System Drugs

Note: Only MD prescribed TPP prescriptions shown.

Note: Subzone Z5.5 (North-NE) does not have any pharmacies and therefore no prescriptions are reported.

100 percent of all TPP N07 prescriptions are medications used for addictive disorders (N07B).

Figure 12a.

N07 Users per 1000 Population by Alberta Subzone, 2012

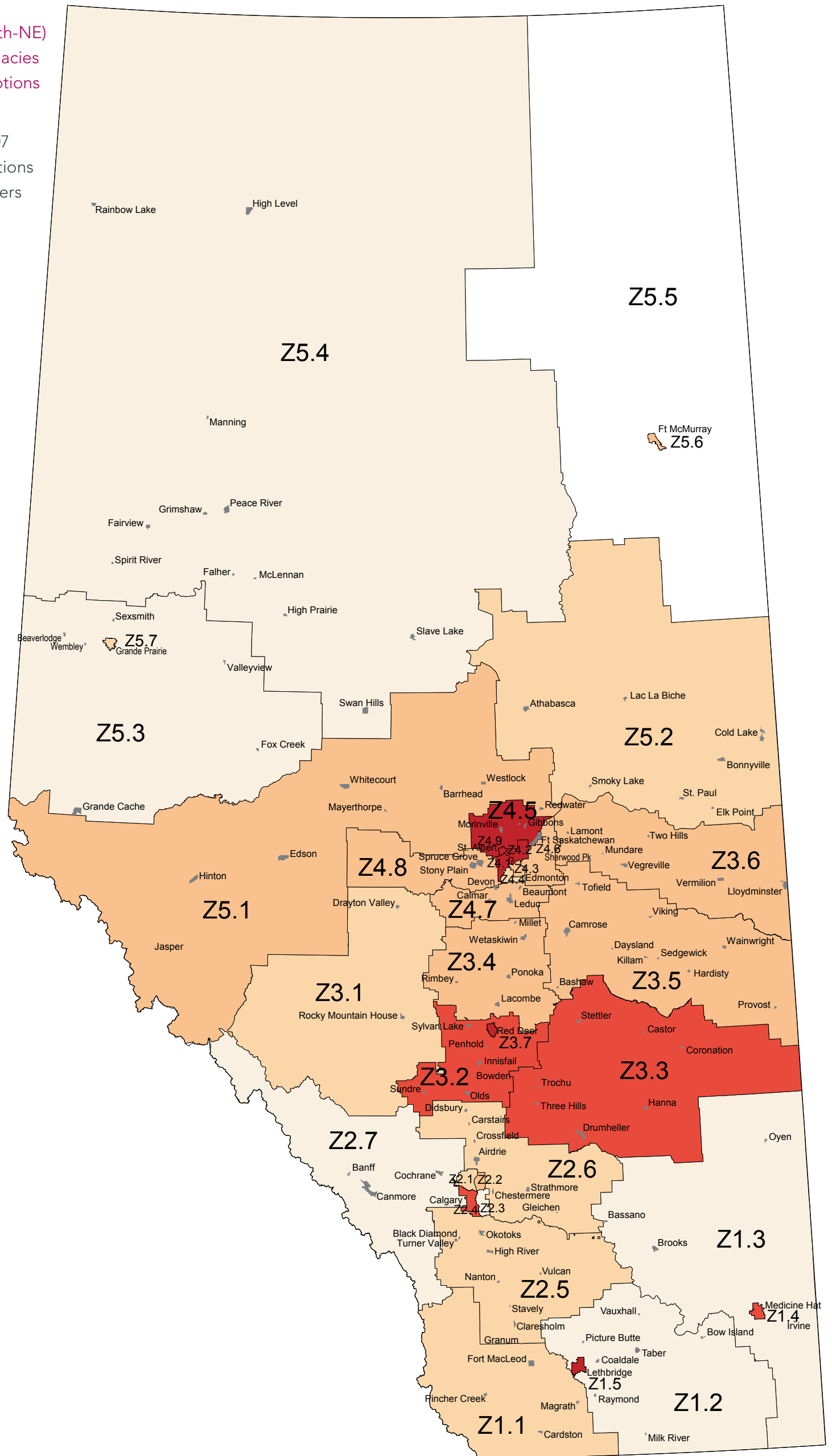


Figure 12b.

N07 Users per 1000 Population by Alberta Subzone – Urban Areas, 2012

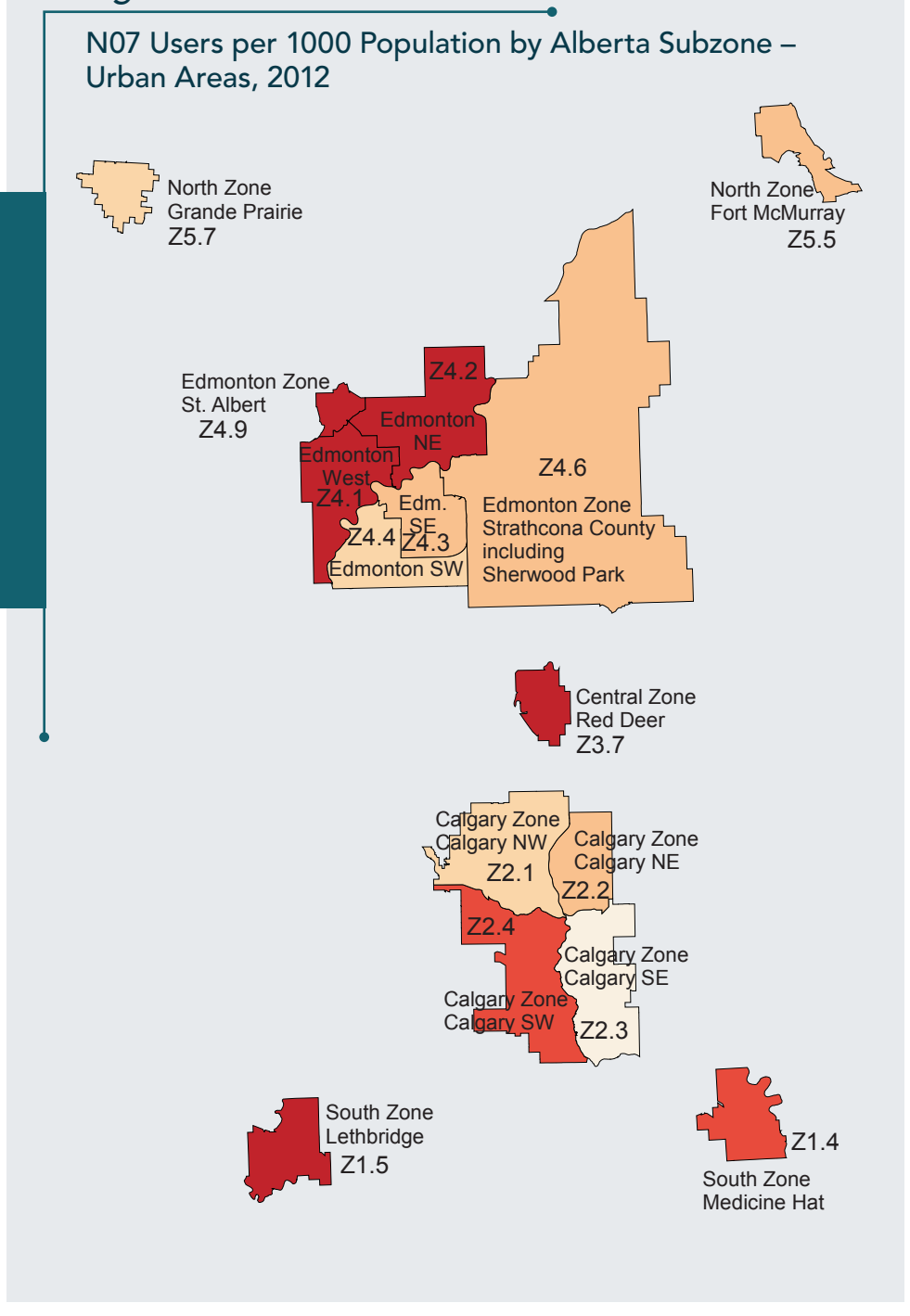
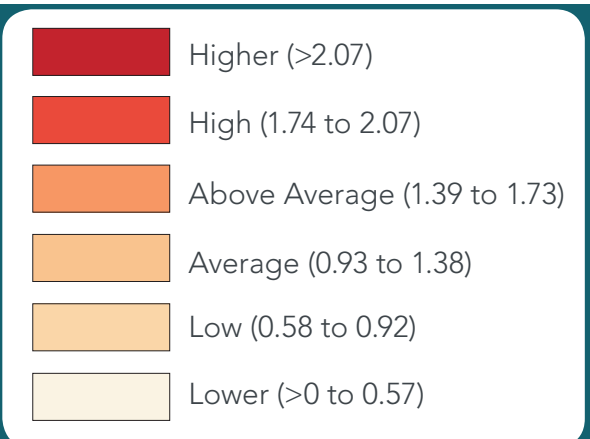
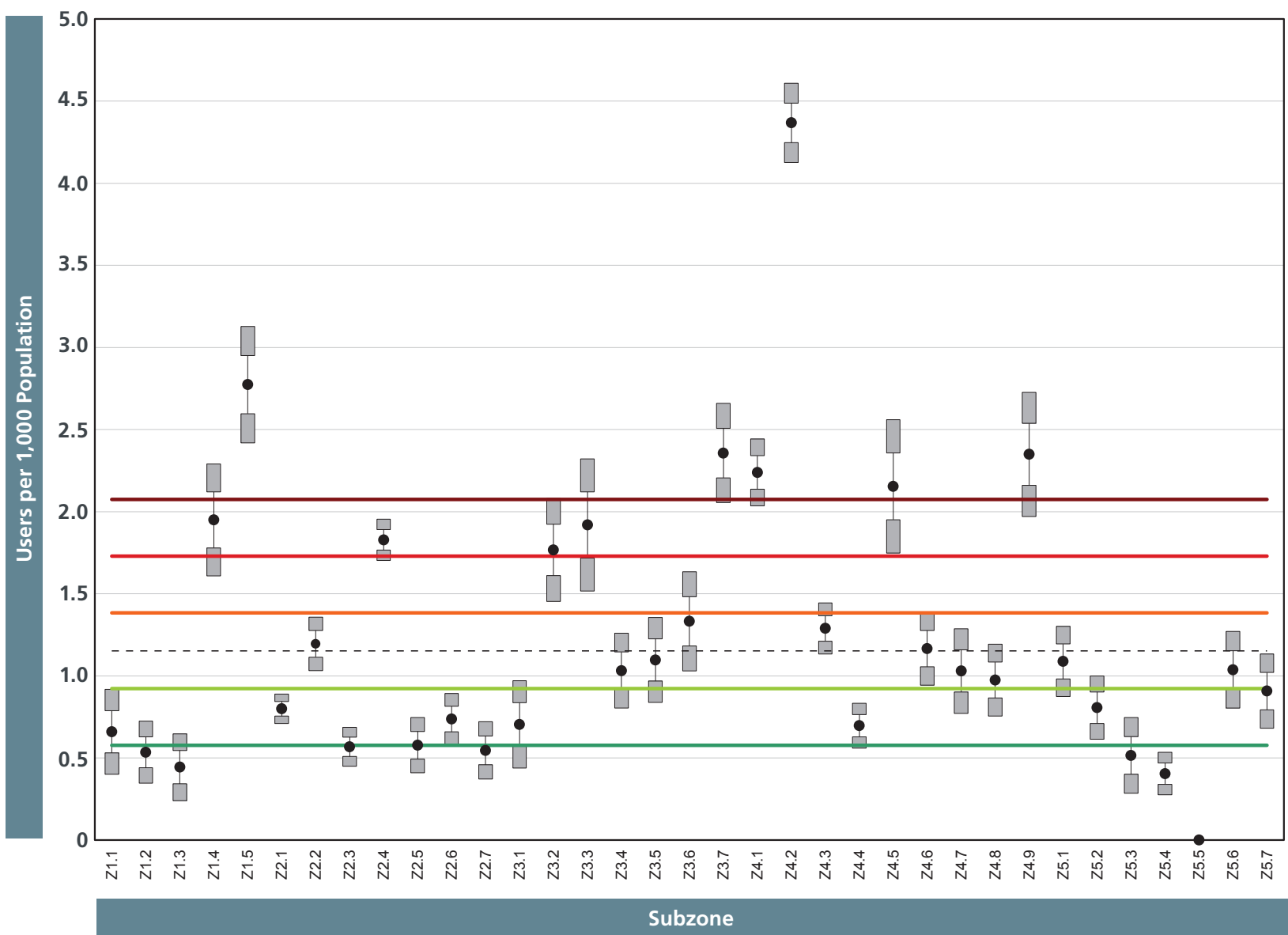


Figure 12c. N07 Users per 1000 Population by Alberta Subzone, 2012



## Comparison of Top Four Opioid Analgesics (N02)

Note: Only MD prescribed TPP prescriptions are shown.

Note: Subzone Z5.5 (North-NE) does not have any pharmacies and therefore no prescriptions are reported.

Lower Low Average

Figure 13a. N02BE51 Acetaminophen Combinations Excluding Psycholeptics Users per 1000 Population by Alberta Subzone, 2012

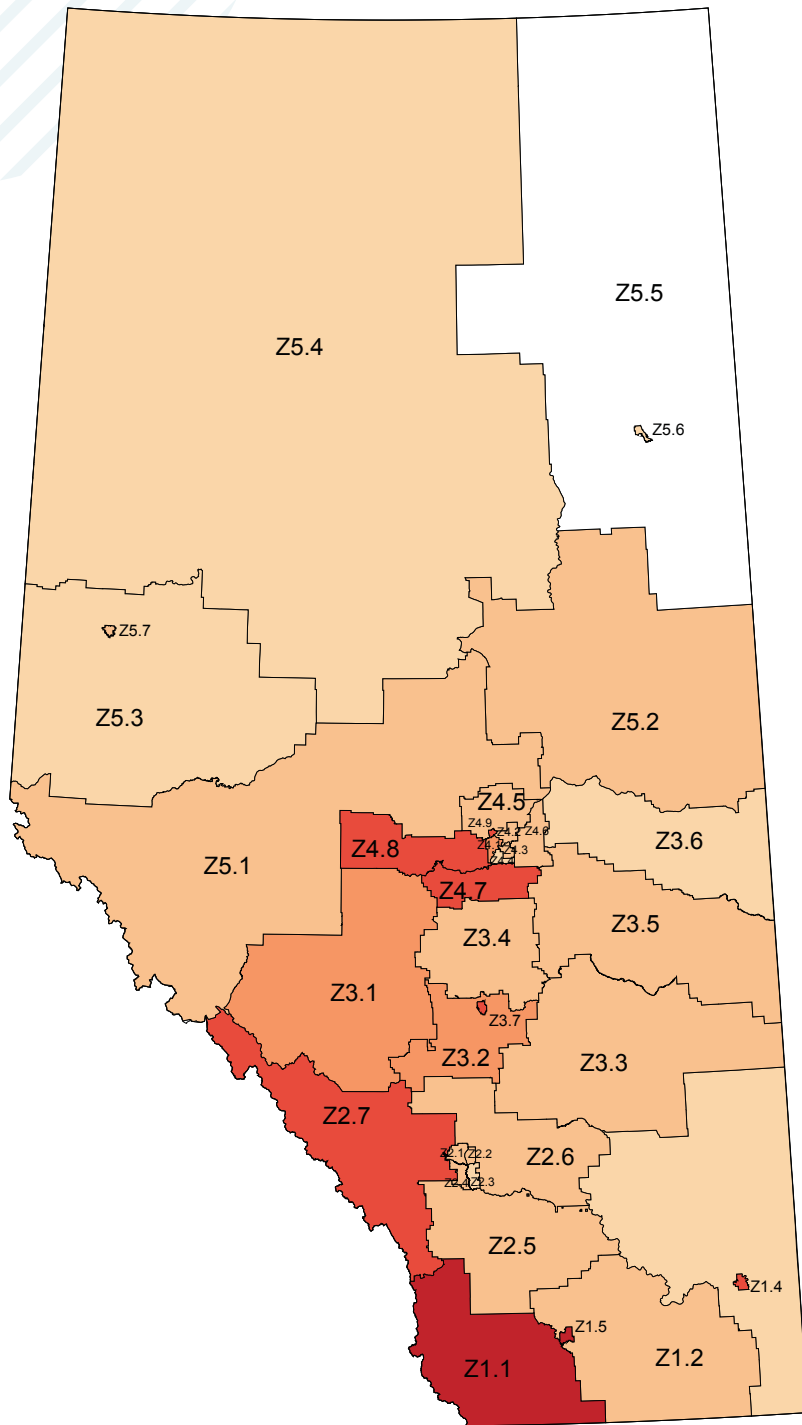


Figure 14a. N02AA05 Oxycodone Users per 1000 Population by Alberta Subzone, 2012

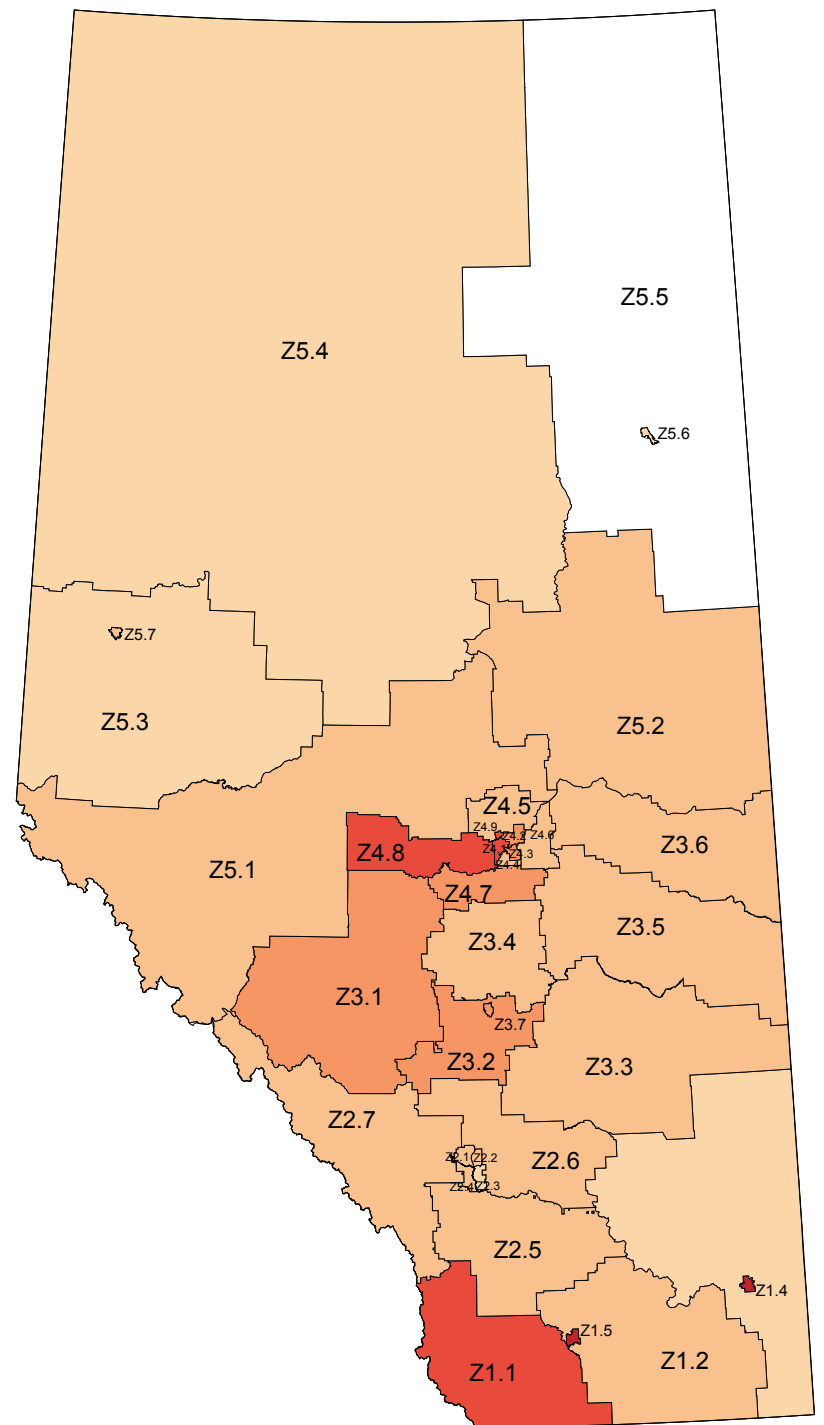


Figure 13b. N02BE51 Acetaminophen Combinations Excluding Psycholeptics Users per 1000 Population by Alberta Subzone – Urban Areas, 2012

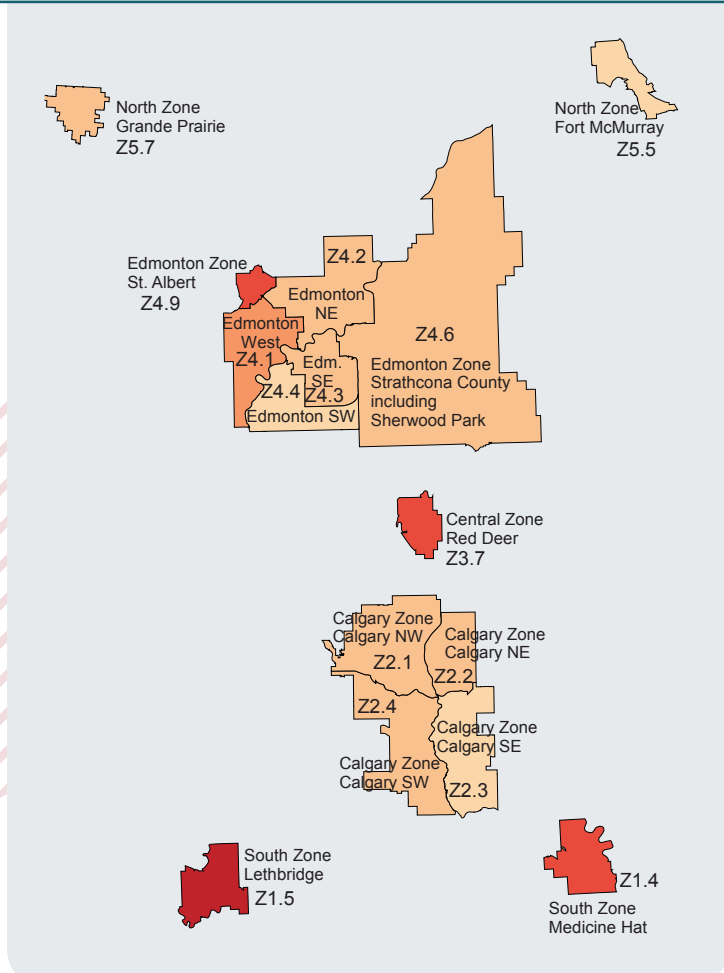


Figure 14b. N02AA05 Oxycodone Users per 1000 Population by Alberta Subzone – Urban Areas, 2012

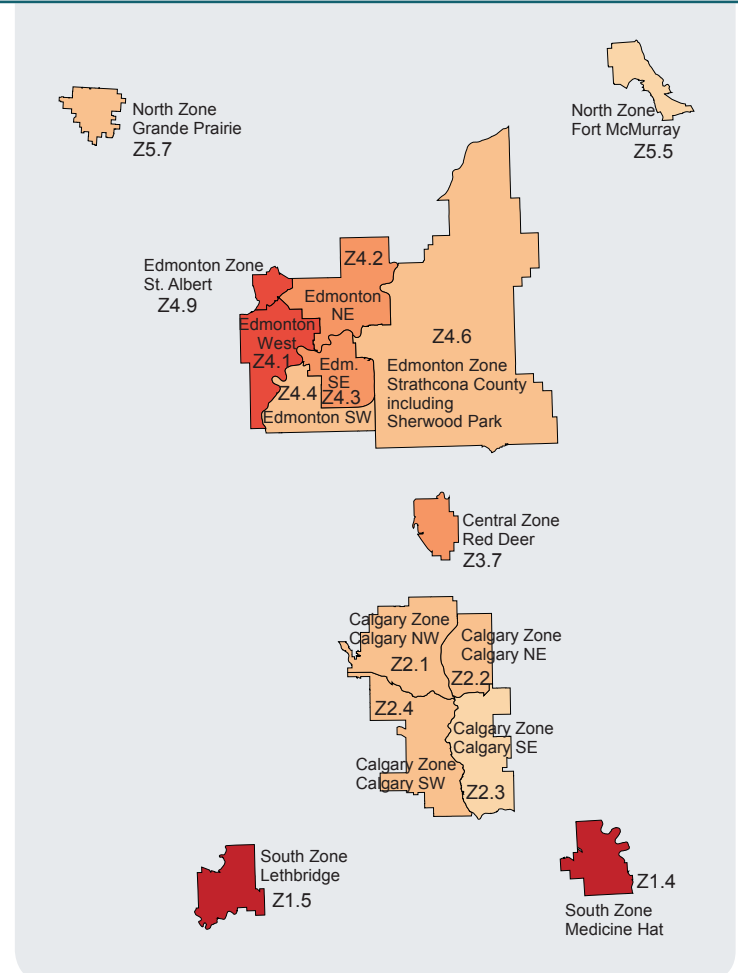




Figure 15a. N02AA03 Hydromorphone Users per 1000 Population by Alberta Subzone, 2012

Figure 16a. N02AA01 Morphine Users per 1000 Population by Alberta Subzone, 2012

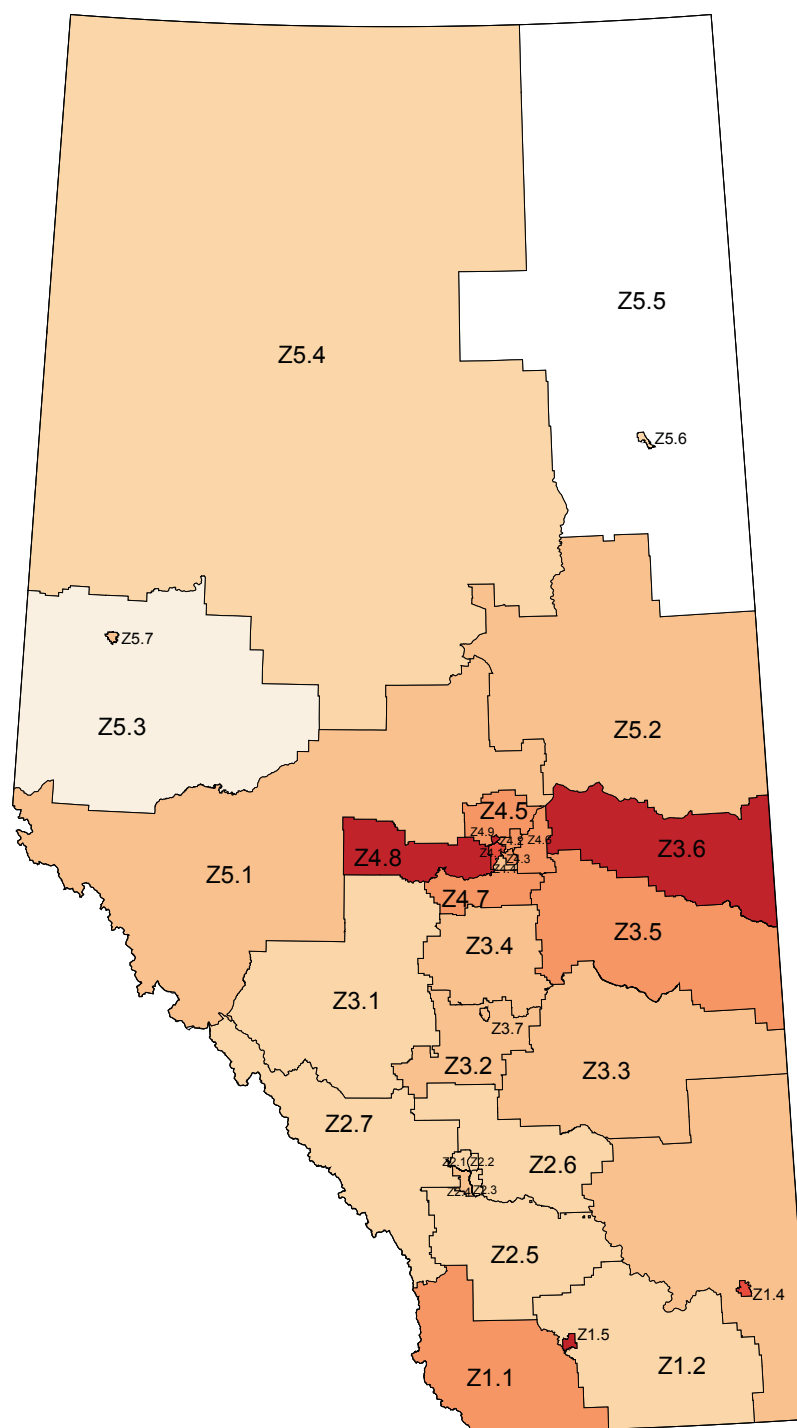
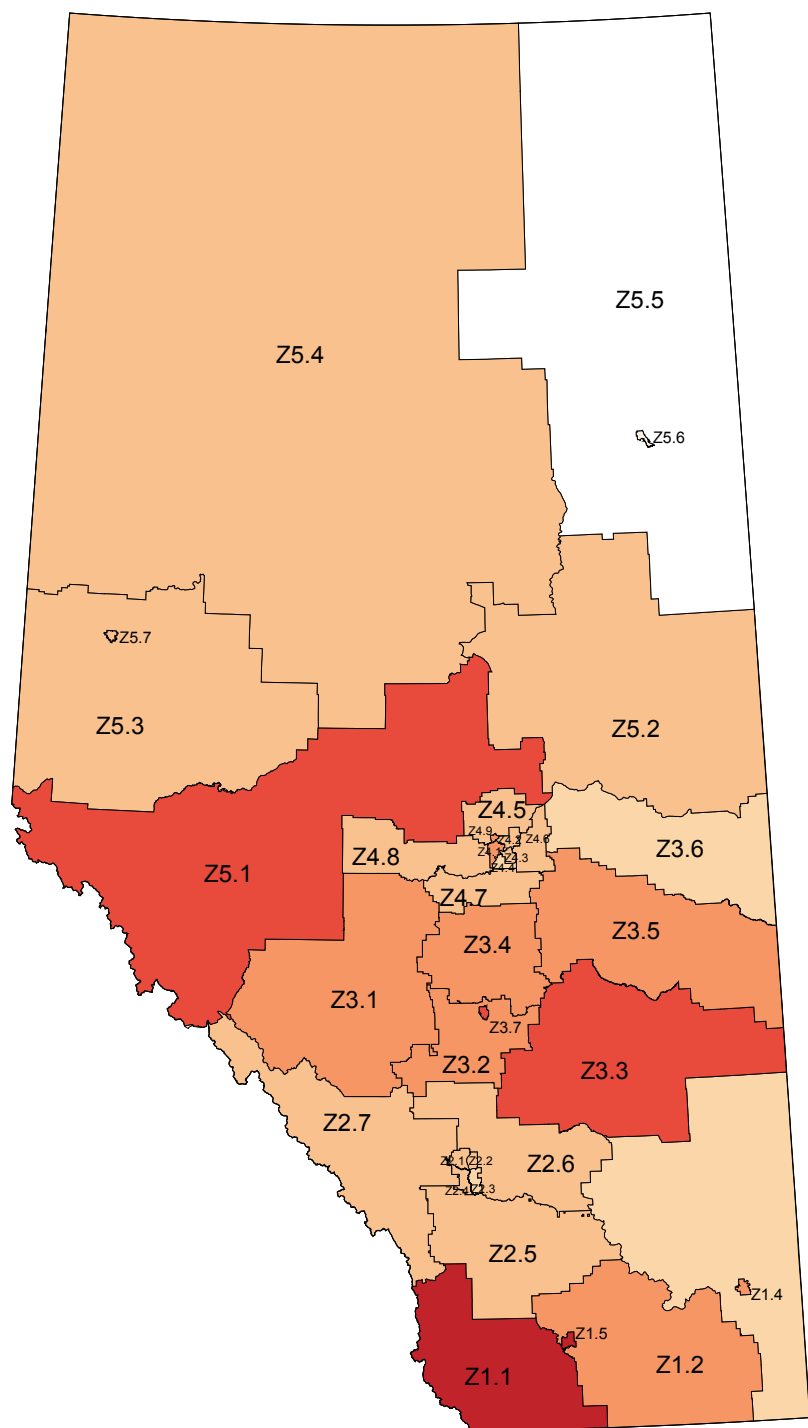
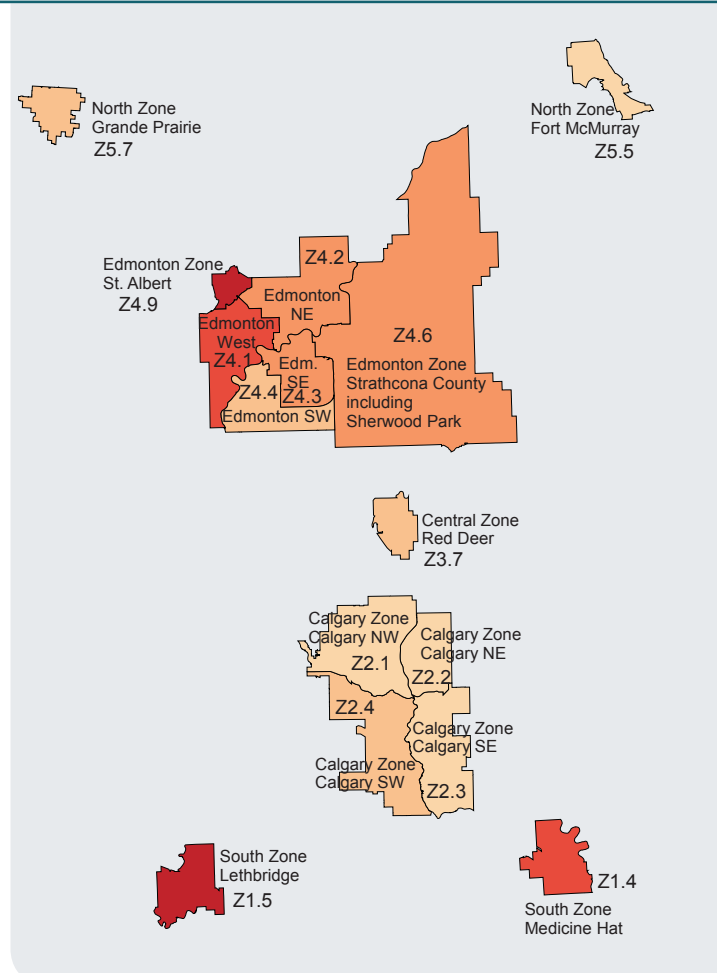
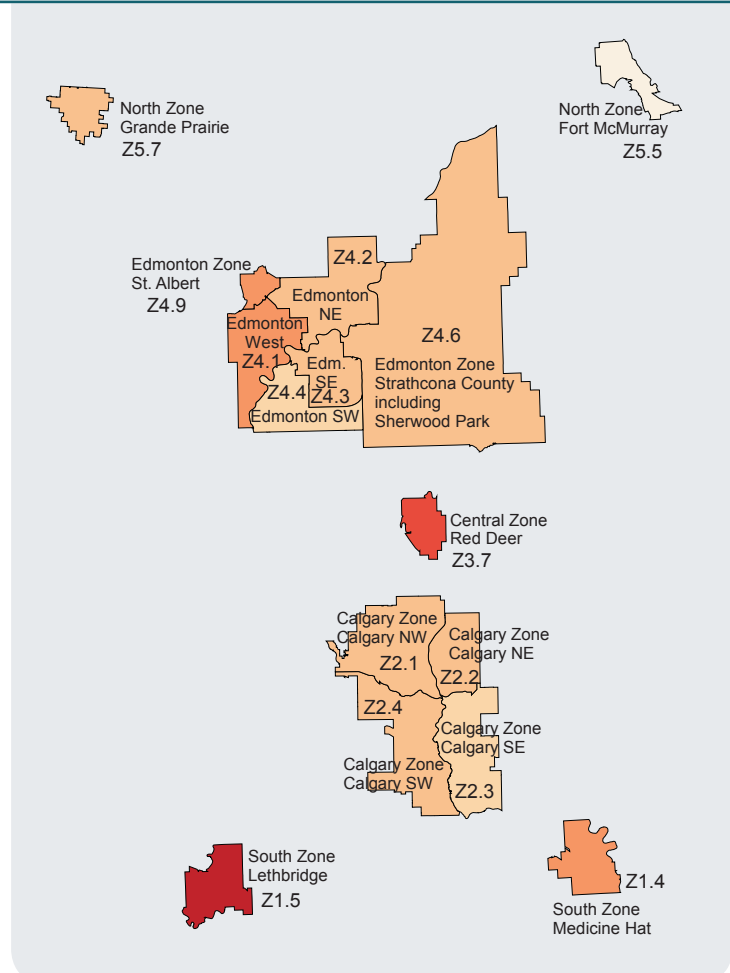


Figure 15b. N02AA03 Hydromorphone Users per 1000 Population by Alberta Subzone – Urban Areas, 2012

Figure 16b. N02AA01 Morphine Users per 1000 Population by Alberta Subzone – Urban Areas, 2012





## Introduction of OxyNEO

This section uses PIN source data for the analysis. The data presented is for all Alberta prescribers.

On March 1, 2012, a new oxycodone formulation, OxyNEO, was introduced into Alberta as an alternate treatment option to OxyContin, an extended-release form of oxycodone. OxyNEO has been promoted as being more tamper resistant than OxyContin. On November 25, 2012, the patent for OxyContin expired and Health Canada approved six generic forms of OxyContin.

The increase in generic OxyContin use can be seen in Figures 17c (Prescriber Counts by Month) and Figure 17d (Pharmacy Counts by Month).

The impact of OxyNEO introduction on patient, prescriber and provider utilization of various oxycodone formulations (combination oxycodone-acetaminophen drugs, oxycodone extended release (ER) drugs excluding OxyNEO, and oxycodone immediate release (IR) drugs) is shown in the following graphs.

Oxy-Acetaminophen ■  
 Oxycodone HCL ER excluding OxyNEO ■

Figure 17a. Prescription Counts by Month for Oxycodone Formulations, Jan 2011-Jan 2013

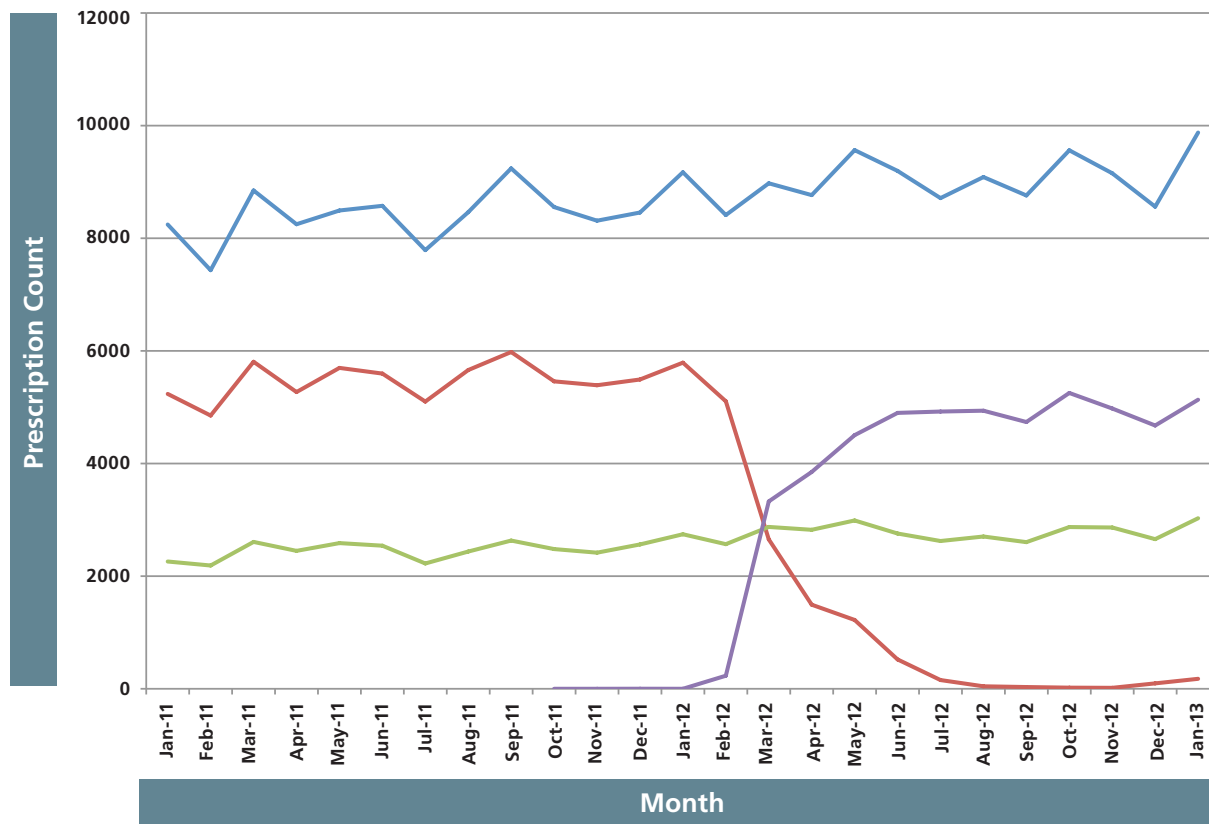
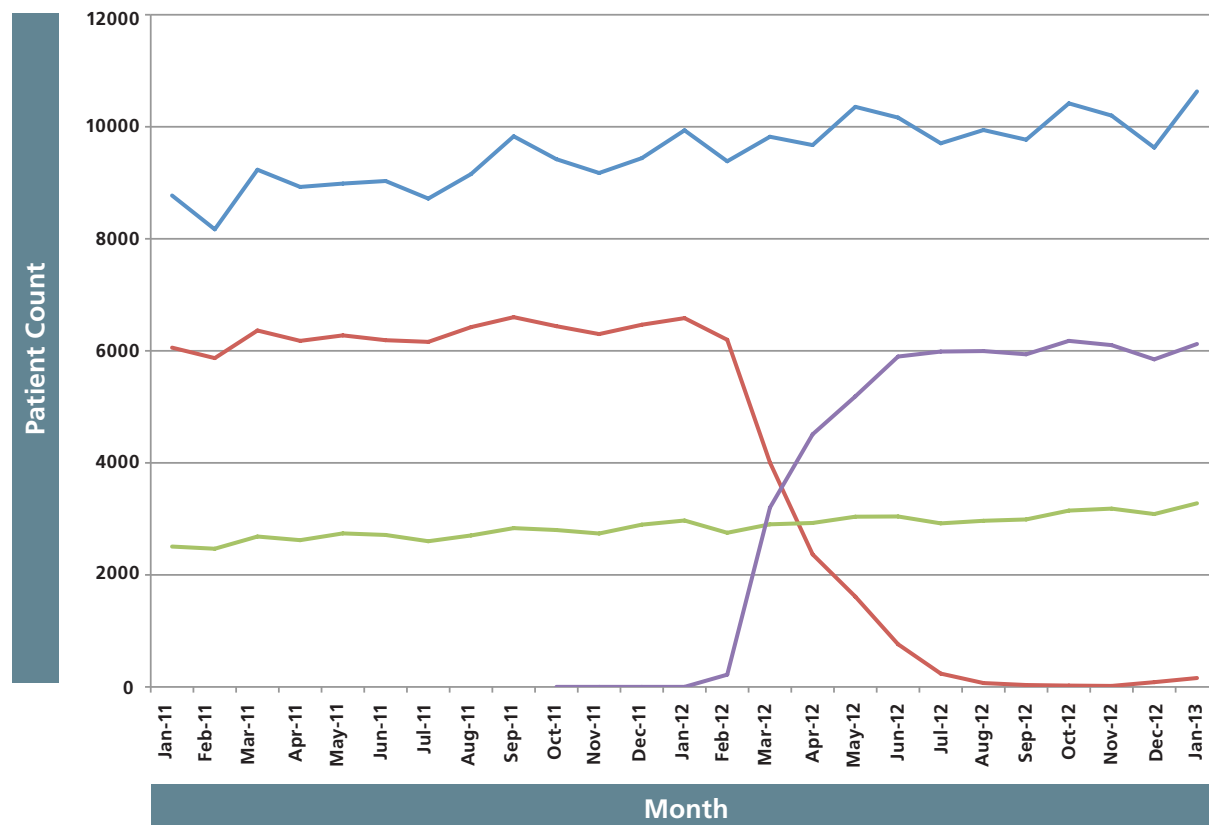


Figure 17b. Patient Counts by Month for Oxycodone Formulations, Jan 2011-Jan 2013



■ Oxycodone HCL IR  
■ OxyNEO

Figure 17c. Prescriber Counts by Month for Oxycodone Formulations, Jan 2011-Jan 2013

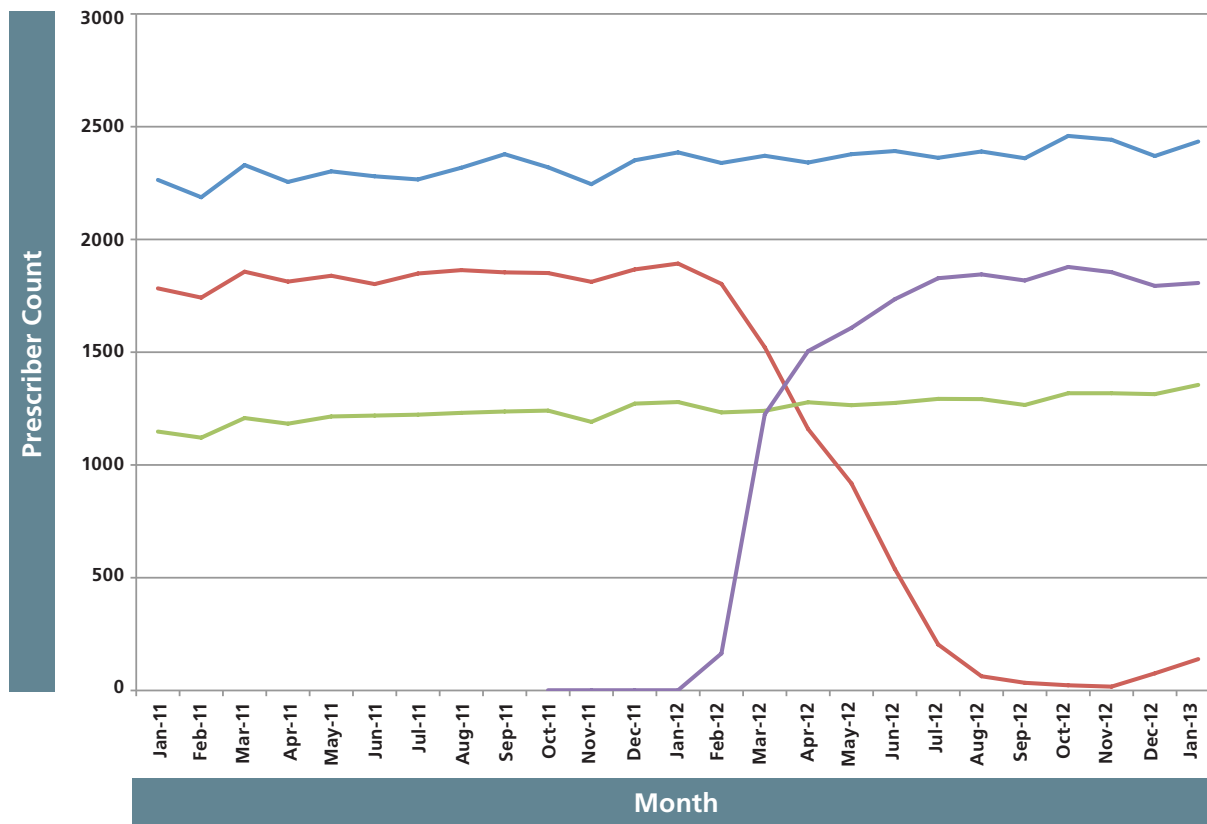
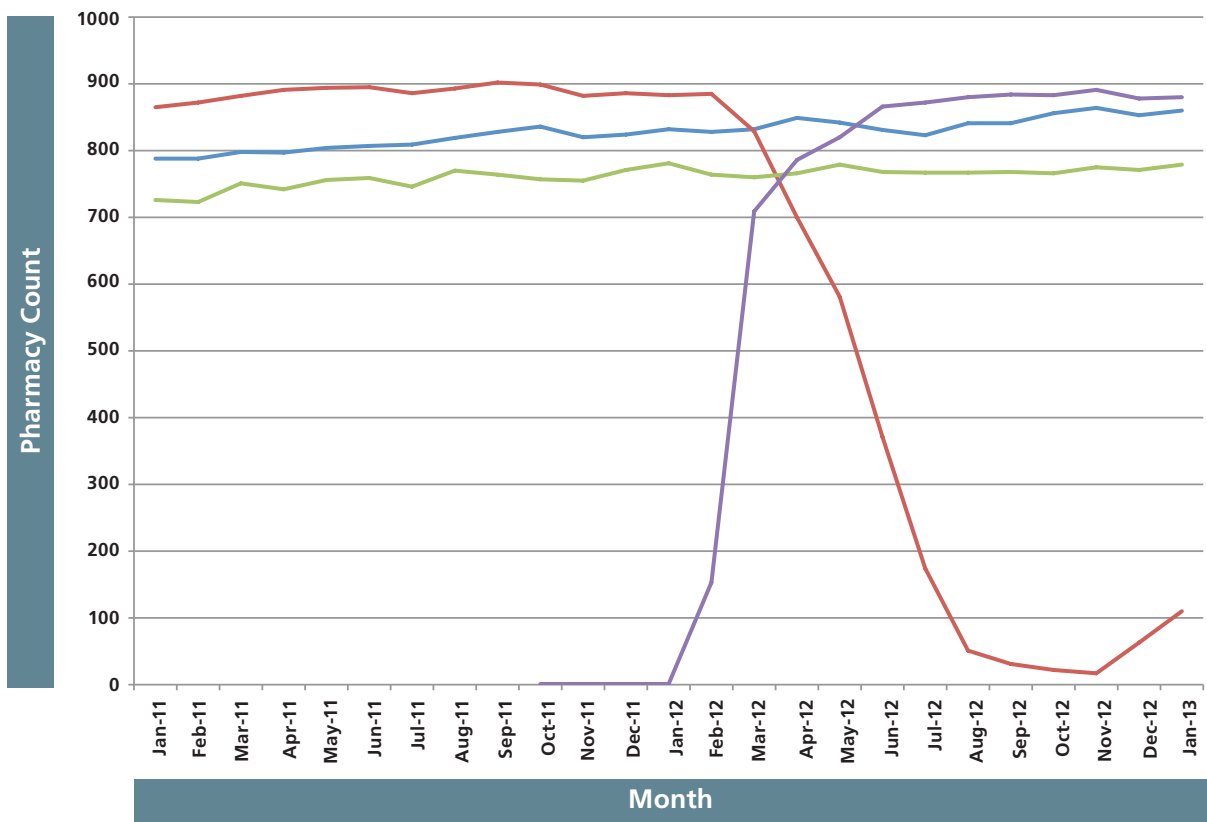


Figure 17d. Pharmacy Counts by Month for Oxycodone Formulations, Jan 2011-Jan 2013



## Section 4 - High Risk Opioid Utilization

This section uses PIN data from the fourth quarter of 2012, including all practitioner types and unknown practitioners to describe three measures of high risk opioid use. These measures include:

- Patients >200 oral morphine equivalents (OME) per day per 1000 population in a 3 month period.
- A high risk patient index (HRPI) defined as patients with >200 OME per day AND >2 pharmacies AND >2 prescribers in a 3 month period.
- Patients receiving >1000 tablets in any dispense in a 3 month period.

### Patients >200 OME/day per 1000 Population

The number of patients with >200 OME/day per 1000 population by Alberta subzone is shown in Figure 18 for the fourth quarter of 2012.

The age-specific population utilization of high dose opioids (>200 OME/day per 1000 population) is shown in Figure 19 for the fourth quarter of 2012.

Figure 18. Number of Patients >200 OME/day per 1000 Population Ranked by Subzone, Quarter 4, 2012

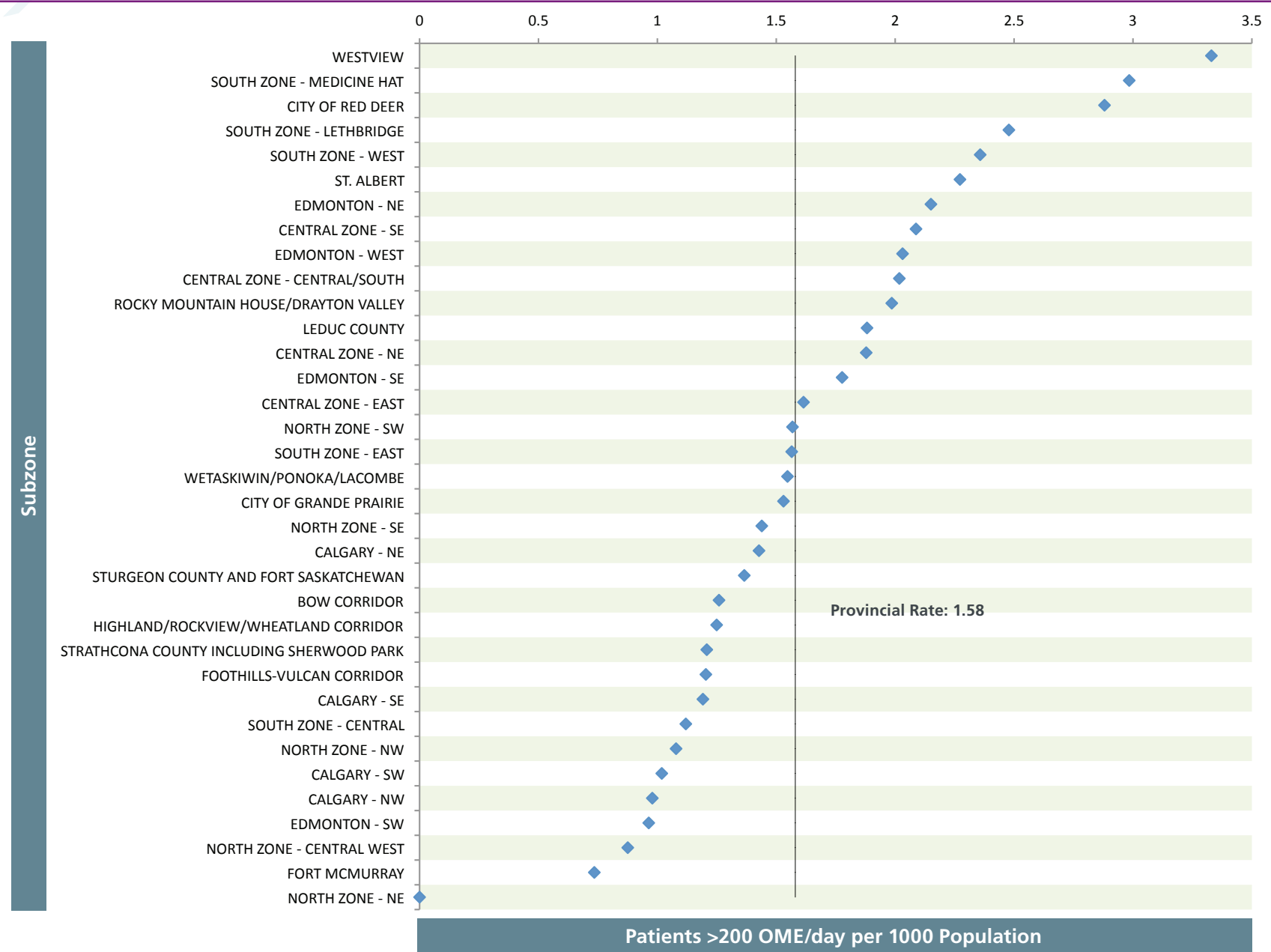
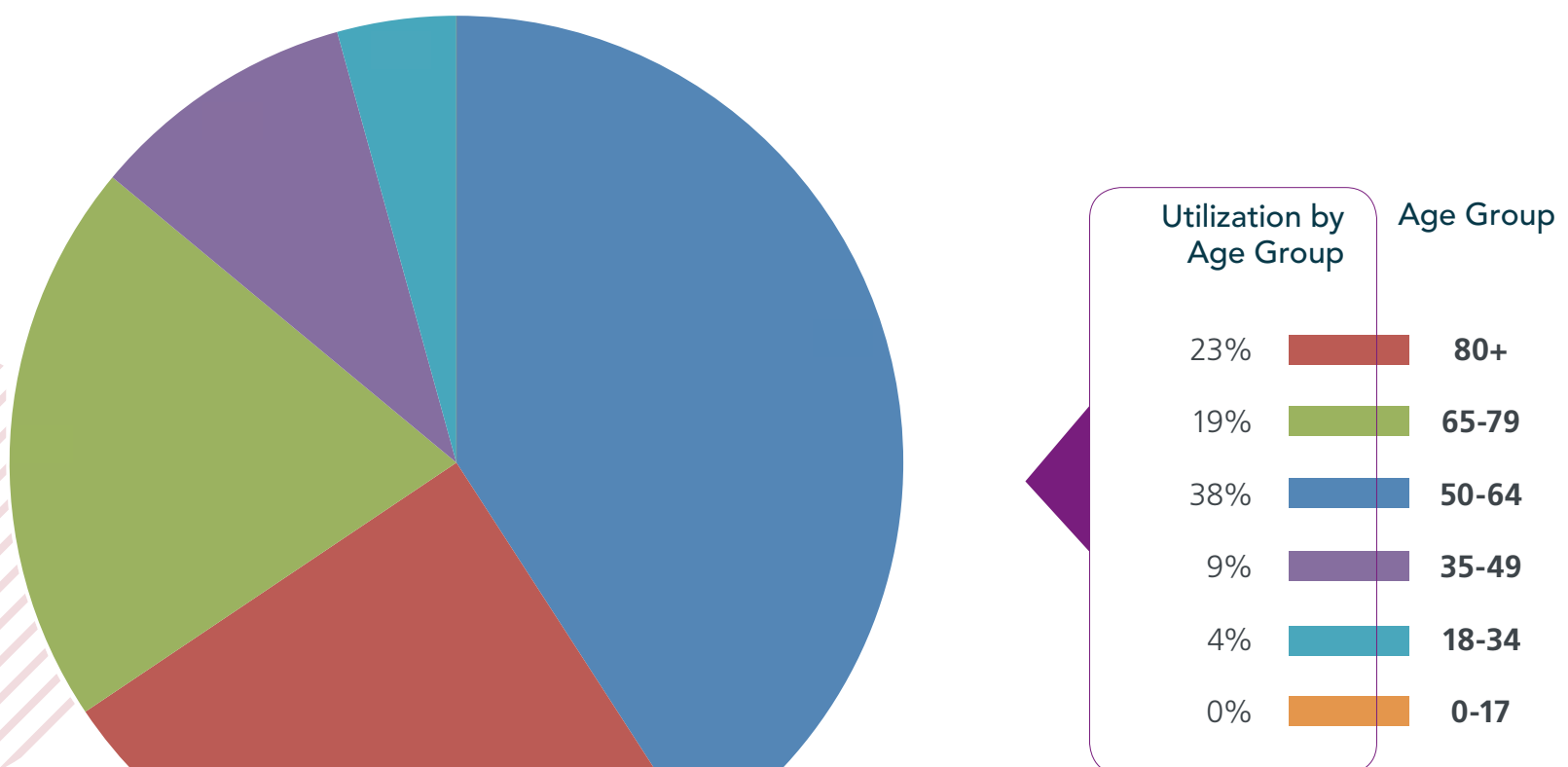


Figure 19. Age-Specific Utilization of High Dose Opioids (>200 OME/day per 1000 Population), Quarter 4, 2012



### High Risk Patient Index

The high risk patient index (HRPI) is defined as the number of patients with >200 OME per day AND >2 pharmacies AND >2 prescribers in a 3 month period.

**Table 7a.**  
Number of HRPI Patients by Pharmacy City

Pharmacy City	Number of HRPI Patients
Edmonton	23
Calgary	10
Lethbridge	4
Red Deer	4
Spruce Grove	4
St. Albert	4
Alberta Beach	2
Grande Prairie	2
Leduc	2
Sherwood Park	2
Unknown	1
Airdrie	1
Barrhead	1
Beaverlodge	1
Canmore	1
Coaldale	1
Devon	1
Drumheller	1
Fort McMurray	1
High Level	1
High Prairie	1
Mayerthorpe	1
Milk River	1
Okotoks	1
Onoway	1
Peace River	1
Ponoka	1
Rimbey	1
Rocky Mountain House	1
Sangudo	1
Stettler	1
Stony Plain	1
Thorsby	1
Westlock	1

**Table 7b.**  
Number of HRPI Patients by Physician City

Practitioner City	Number of HRPI Patients
Edmonton	26
Unknown	24
Calgary	12
Red Deer	6
Lethbridge	4
Spruce Grove	2
St. Albert	2
Airdrie	1
Beaverlodge	1
Canmore	1
Coaldale	1
Devon	1
Drumheller	1
Fort McMurray	1
Grande Prairie	1
Grimshaw	1
High River	1
Mayerthorpe	1
Milk River	1
Rocky Mountain House	1
Sherwood Park	1
Stettler	1
Westlock	1

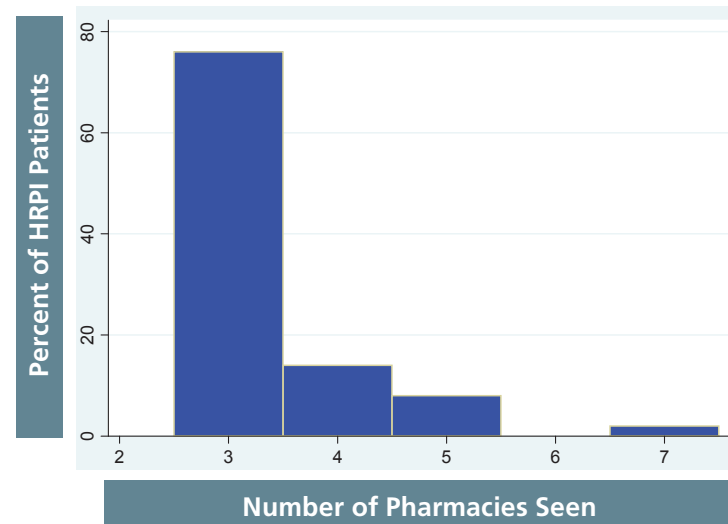
**Table 6.**  
Summary Data for HRPI Patients – Quarter 4, 2012

Number of HRPI patients	50
Total number of patients	57883
Percent of HRPI patients	0.1%
Number of prescribers with at least one HRPI patient (excluding unknown prescribers)	147
Total number of prescribers	4745
Percent of prescribers with at least one HRPI patient	3.1%
Number of physicians with at least one HRPI patient	147
Total number of Alberta physicians	4615
Percent of physicians with at least one HRPI patient	3.2%
Number of pharmacies with at least one HRPI patient	136
Total number of pharmacies	986
Percent of pharmacies with at least one HRPI patient	13.8%

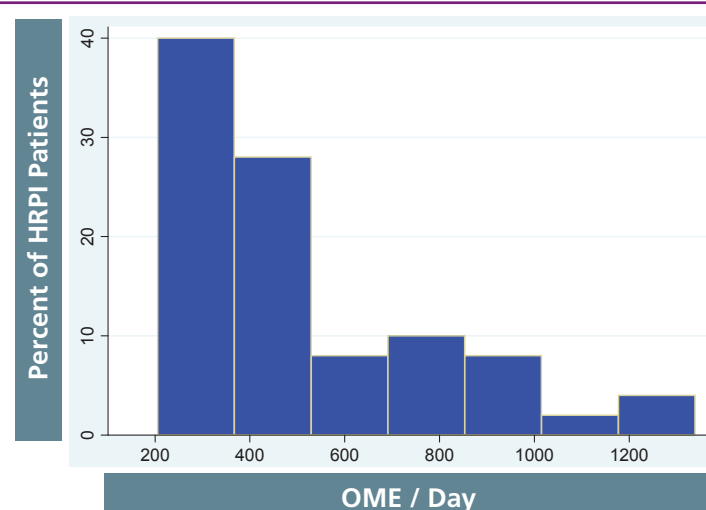
**Figure 20a.**  
Distribution of HRPI Patients by Number of Practitioners Seen - Quarter 4, 2012



**Figure 20b.**  
Distribution of HRPI Patients by Number of Pharmacies Seen - Quarter 4, 2012



**Figure 20c.**  
Distribution of HRPI Patients by OME/day - Quarter 4, 2012



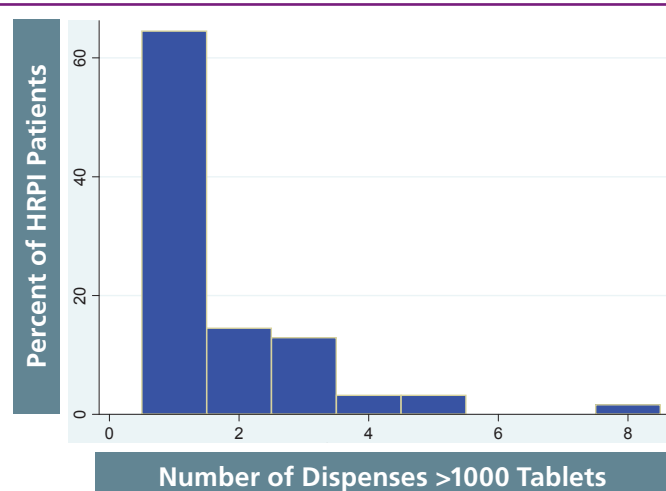
## High Quantity Dispenses

This section describes the number, proportion, distribution and geographic location of patients, prescribers and pharmacies with at least one high quantity dispense, defined as any dispense of >1000 tablets in quarter 4, 2012.

**Table 8.**  
Summary Data for High Quantity Dispenses - Quarter 4, 2012

Number of dispenses >1000 Tablets	108
Total number of dispenses	342,326
Percent of total dispenses that are high quantity dispenses	0.03%
Number of patients with at least one high quantity dispense	62
Total number of patients	57883
Percent of patients with at least one high quantity dispense	0.1%
Number of prescribers with at least one high quantity dispense	53
Total number of prescribers with at least one high quantity dispense	4745
Percent of prescribers with at least one high quantity dispense	1.1%
Number of pharmacies with at least one high quantity dispense	58
Total number of pharmacies	986
Percent of pharmacies with at least one high quantity dispense	5.9%

**Figure 21.**  
Distribution of High Quantity Dispense Patients by Number of High Quantity Dispenses - Quarter 4, 2012



**Table 9a.**  
Number of High Quantity Dispenses by Pharmacy City

Pharmacy City	Number of Dispenses >1000 Tablets
Calgary	31
Edmonton	28
Rocky Mountain House	6
Coaldale	5
Athabasca	4
Leduc	4
Red Deer	4
Sherwood Park	4
Spruce Grove	4
Pincher Creek	2
St. Albert	2
Stony Plain	2
Wetaskiwin	2
Banff	1
Beiseker	1
Cold Lake	1
Fort McMurray	1
Hinton	1
Killam	1
Lethbridge	1
Medicine Hat	1
Nanton	1
Ponoka	1

**Table 9b.**  
Number of High Quantity Dispenses by Physician City

Practitioner City	Number of Dispenses >1000 Tablets
Calgary	32
Edmonton	29
Unknown	7
Coaldale	5
Stony Plain	5
Athabasca	4
Red Deer	4
Rocky Mountain House	4
Sherwood Park	4
Leduc	2
Pincher Creek	2
Wetaskiwin	2
Beiseker	1
Canmore	1
Cold Lake	1
Fort McMurray	1
Hinton	1
Killam	1
Medicine Hat	1
St. Albert	1



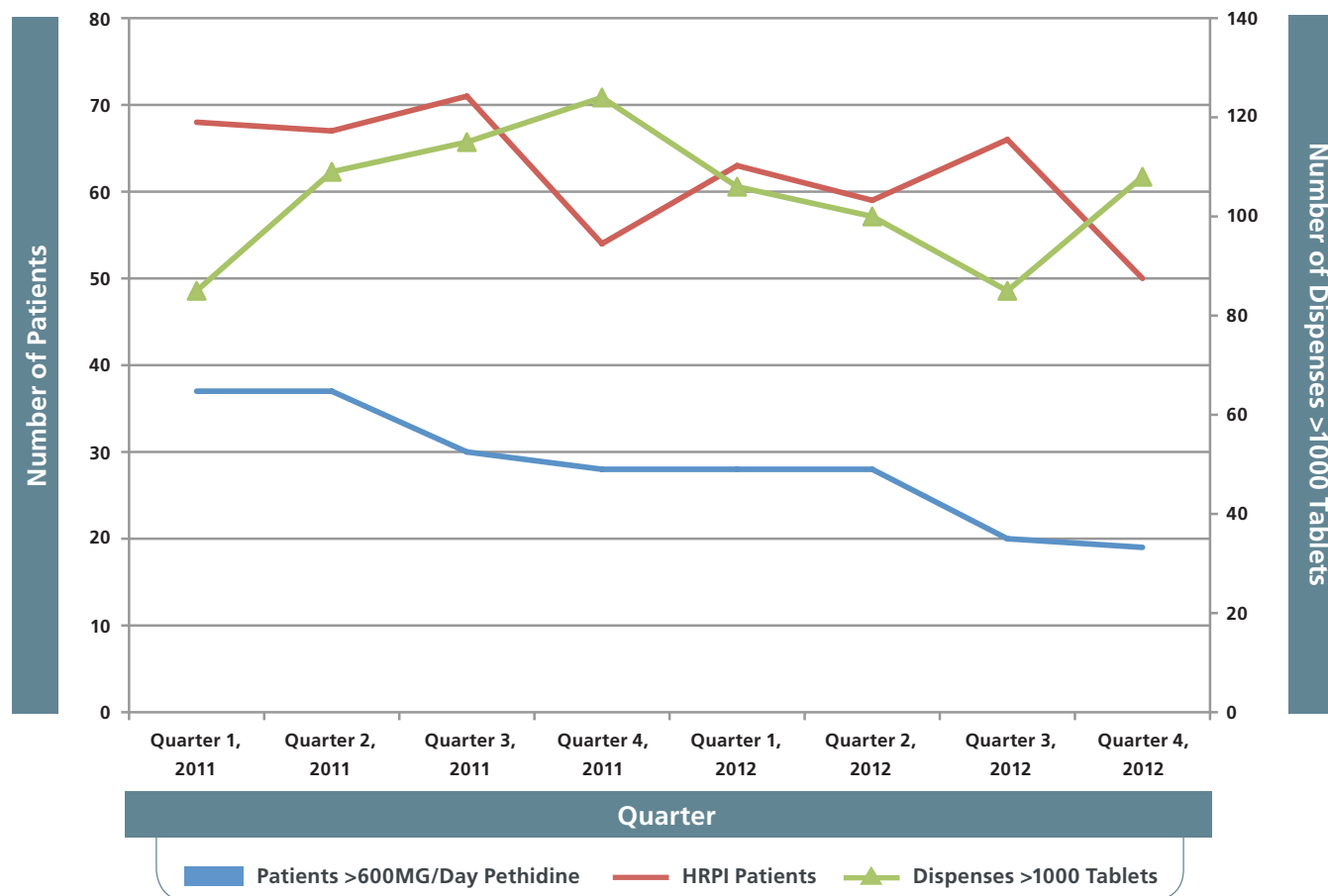
### High Risk Utilization Over Eight Quarters

Table 10 shows the number of high risk patients over eight quarters for three measures based on PIN data. Note that earlier PIN data is less complete than more recent quarters. The high risk measures are the HRPI, high quantity dispenses and pethidine use over 600 mg per day.

**Table 10.** High Risk Patients and Dispenses Over 8 Quarters, 2011/12

Date	# Patients >600 MG/Day Pethidine	# HRPI Patients	# Dispenses >1000 Tablets
Quarter 1, 2011	37	68	85
Quarter 2, 2011	37	67	109
Quarter 3, 2011	30	71	115
Quarter 4, 2011	28	54	124
Quarter 1, 2012	28	63	106
Quarter 2, 2012	28	59	100
Quarter 3, 2012	20	66	85
Quarter 4, 2012	19	50	108

**Figure 22.** High Risk Patients and Dispenses Over 8 Quarters, 2011/12



# List of Tables and Figures

## Tables

Table 1. TPP Prescriptions, Patients, Pharmacies, and Practitioners by Prescriber Type, 2001-2012.....	4
Table 2a. Top 30 Pharmacy Cities Based on Prescription Count .....	5
Table 2b: Top 30 Physician Cities Based on Prescription Count.....	5
Table 3. TPP Prescriptions by Anatomical Therapeutic Classification (ATC), 2012.....	10
Table 4. Breakdown of N-Nervous System Prescriptions, 2012 .....	10
Table 5. Breakdown of N02-Analgesic Prescriptions, 2012 .....	11
Table 6. Summary Data for HRPI Patients – Quarter 4, 2012.....	21
Table 7a. Number of HRPI Patients by Pharmacy City.....	21
Table 7b. Number of HRPI Patients by Physician City.....	21
Table 8. Summary Data for High Quantity Dispenses - Quarter 4, 2012.....	22
Table 9a. Number of High Quantity Dispenses by Pharmacy City.....	22
Table 9b. Number of High Quantity Dispenses by Physician City .....	22
Table 10. High Risk Patients and Dispenses Over 8 Quarters, 2011/12 .....	23

## Figures

Figure 1a. Alberta Subzones and Major Communities .....	2
Figure 1b. Alberta Subzones – Urban Areas .....	2
Figure 2. Comparison of TPP Patient, Pharmacy and Physician Locations, 2012 .....	3
Figure 3. TPP Patients, Prescriptions, Practitioners and Pharmacies for Alberta Physicians, 2001-2012.....	4
Figure 4. 2012 Prescription Counts by Alberta Subzone .....	5
Figure 5. Age Distribution of Patients Receiving TPP Medications, 2001 - 2012.....	6
Figure 6. TPP Prescription Count by Age Group .....	6
Figure 7. TPP Prescription Count per 1000 Population by Age Group .....	7
Figure 8. 2012 Prescriptions and Patients per 1000 Population by Subzone .....	7
Figure 9a. 2012 Prescriptions per 1000 Population by Subzone .....	8
Figure 9b. 2012 Prescriptions per 1000 Population by Urban Area Subzones.....	8
Figure 9c. 2012 Patients per 1000 Population by Subzone.....	9
Figure 9d. 2012 Patients per 1000 Population by Urban Area Subzones.....	9
Figure 10. TPP Prescriptions by Top 10 Ingredients, 2012 .....	10
Figure 11a. N02 Users per 1000 Population by Alberta Subzone, 2012 .....	12
Figure 11b. N02 Users per 1000 Population by Alberta Subzone – Urban Areas, 2012 .....	13
Figure 11c. N02 Users per 1000 Population by Alberta Subzone, 2012.....	13

Figure 12a. N07 Users per 1000 Population by Alberta Subzone, 2012.....	14
Figure 12b. N07 Users per 1000 Population by Alberta Subzone – Urban Areas, 2012 .....	15
Figure 12c. N07 Users per 1000 Population by Alberta Subzone, 2012 .....	15
Figure 13a. N02BE51 Acetaminophen Combinations Excluding Psycholeptics Users per 1000 Population by Alberta Subzone, 2012 .....	16
Figure 13b. N02BE51 Acetaminophen Combinations Excluding Psycholeptics Users per 1000 Population by Alberta Subzone – Urban Areas, 2012 .....	16
Figure 14a. N02AA05 Oxycodone Users per 1000 Population by Alberta Subzone, 2012 .....	16
Figure 14b. N02AA05 Oxycodone Users per 1000 Population by Alberta Subzone – Urban Areas, 2012 .....	16
Figure 15a. N02AA03 Hydromorphone Users per 1000 Population by Alberta Subzone, 2012 .....	17
Figure 15b. N02AA03 Hydromorphone Users per 1000 Population by Alberta Subzone – Urban Areas, 2012.....	17
Figure 16a. N02AA01 Morphine Users per 1000 Population by Alberta Subzone, 2012 .....	17
Figure 16b. N02AA01 Morphine Users per 1000 Population by Alberta Subzone – Urban Areas, 2012.....	17
Figure 17a: Prescription Counts by Month for Oxycodone Formulations, Jan 2011-Jan 2013 .....	18
Figure 17b. Patient Counts by Month for Oxycodone Formulations, Jan 2011-Jan 2013.....	18
Figure 17c. Prescriber Counts by Month for Oxycodone Formulations, Jan 2011-Jan 2013 .....	19
Figure 17d. Pharmacy Counts by Month for Oxycodone Formulations, Jan 2011-Jan 2013.....	19
Figure 18. Number of Patients >200 OME/day per 1000 Population Ranked by Subzone, Quarter 4, 2012 .....	20
Fig 19. Age-Specific Utilization of High Dose Opioids (>200 OME/day per 1000 Population), Quarter 4, 2012 .....	20
Figure 20a. Distribution of HRPI Patients by Number of Practitioners Seen - Quarter 4, 2012 .....	21
Figure 20b. Distribution of HRPI Patients by Number of Pharmacies Seen - Quarter 4, 2012 .....	21
Figure 20c. Distribution of HRPI Patients by OME/day - Quarter 4, 2012.....	21
Figure 21. Distribution of High Quantity Dispense Patients by Number of High Quantity Dispenses - Quarter 4, 2012 .....	22
Figure 22: High Risk Patients and Dispenses Over 8 Quarters, 2011/12 .....	23



