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Analysis and Evaluation of Participation by Prescribers and Dispensers in the Maine State Prescription Monitoring Program

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**Analysis and Evaluation of Participation
by Prescribers and Dispensers in the
Maine State Prescription Monitoring Program**

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EXECUTIVE SUMMARY

As part of a Department of Justice, U.S. Attorneys Office grant for the analysis and evaluation of participation in the Prescription Monitoring Program (PMP), the Margaret Chase Smith Policy Center mapped and analyzed spatial patterns of prescriber and pharmacy locations as well as PMP participation, and conducted a survey of licensed prescribers and dispensers of controlled substances in Maine. The PMP, implemented beginning July 1, 2004, monitors all drugs in Schedules II, II, and IV, and any pharmacy that is licensed to dispense prescriptions in or into the state of Maine is required by law to report to the program. Prescribers receive automatic reports from the system about patients who exceed a threshold level of activity: prescribers, dispensers, or prescriptions. In addition, prescribers and pharmacists are encouraged to sign up to use the online system that allows them to check patient activity; participation is voluntary. Not all dispensing is tracked. Hospital inpatient dispensing data and data from veterinarians are not collected. Clinics that offer methadone assisted therapy for addictions do not participate.

On January 5, 2009, the PMP opened a new web portal for their online system and participants were asked to re-enroll. As of June 9, 2009, 149 Data Submitters are registered to submit data for 403 pharmacies; and 1,197 Prescribers and 138 Dispensers of controlled substances in Maine are currently registered with the service to access online information on their own patients.

Prescriber and Dispenser Spatial Distributions: GIS Findings

Using de-identified datasets extracted for each of the fiscal years FY2005 through FY2008 by PMP contractor Gould Health Systems (GHS), we examined spatial patterns associated with prescribing, dispensing, and PMP participation. A Geographic Information Systems (GIS) approach revealed the location of patients, prescribers and pharmacies that generate and dispense Maine prescriptions, as well as the distribution of prescribers who are enrolled in the online PMP.

The spatial analysis revealed a substantial amount of interstate activity. In FY2008, there were 2,276,321 prescription records that had valid location data for 18,444 prescribers (physicians, nurses, dentists, podiatrists). The vast majority (95%) of the prescriptions were written by 5,478 Maine-based prescribers, who constitute only 29% of the 18,444 total of unduplicated prescribers in the database. Thus 71% of the unduplicated prescribers of prescriptions for controlled substances filled in Maine are based outside Maine. Similarly, in FY2008, the dataset had 2,339,032 prescription records for which we had valid patient location data. Maine's 547,650 unduplicated patients comprise 97% of the total 562,471 unduplicated patients for whom Maine-filled prescriptions were written; 14,821 (3%) of the patients were from outside the state, with New Hampshire and Massachusetts contributing more out-of-state patients and prescribers than other states.

The numbers of both in-state and out-of-state patients, prescriptions, and prescribers have increased every year since FY2005. Between FY2007 and FY2008 the total number of prescriptions filled for Maine patients increased 9%, although the proportion, stayed about the same, 99% prescriptions and 97% unduplicated Maine patients. The number and percent of out-of-state prescribers,

however, increased by 1176 (10%). Most of the Maine-filled prescriptions written by out-of-state prescribers (90%) in FY2008 were written for Maine patients. Likewise, the majority (56%) of the Maine-filled prescriptions written for out-of-state patients in FY2008 were written by Maine prescribers.

Nevertheless, 71% of prescribers encountered by PMP pharmacies (the data submitters) are from out-of-state. This likely contributes to missing and erroneous data that may be of concern. For example, in FY2008, when we checked several high-frequency drugs, prescriptions for methadone 10 mg (but not Adderall XR 20 mg, APAP/Codeine Tab 300/30, or Lorazepam 1 mg tab) were significantly more likely than other types of prescriptions to have invalid or missing prescriber location data. In FY2008 13% of prescribers lacked valid location data. When a sample of prescription transactions from the 3rd quarter of FY2008 were sampled by GHS, 9% of prescriber DEA numbers were invalid.

Our GIS mapping research focused particular attention on registration rates by prescribers in the on-line PMP, normalized within Healthy Maine Partnership (HMP) areas, which are smaller than counties and often organized around hospitals or other medical provider organizations. Rates were adjusted for population density, prescriber density, and prescription density. We also analyzed the increase/decrease seen between FY2007 and FY2008.

The absolute number of registrants increased in most HMP areas, with some HMPs increasing about 50% in the HMP associated with Cary Medical Center and the Ellsworth-Mt. Desert Island area, as well as the HMPs in the southern quarter of the state. When calibrated according to population density, the highest rates of participation were seen in the Bangor, Augusta-Waterville, and Waldo County HMP areas, with the area Portland south having lower rates. When we mapped participation rates according to the number of prescribers located in each HMP, we found percentages above 50% in some areas: Wiscasset, Machias, Sebasticook Valley, Dover, Lincoln, and northern Aroostook County; lower rates are seen in the Bangor, Calais, and Portland areas.

We measured prescription density per 100,000 population, as well as prescriber density per 100,000 population, as an indicator of potential PMP need (and impact). The areas for greatest potential need (and greatest potential pay-off for PMP marketing) were in the Bangor, Waterville, Lewiston-Auburn, and Portland. When we looked at the density of prescribers per 100,000 prescriptions, indicating higher potential PMP participation volume, we found that prescriber density is greatest in the Kittery, Bangor, and Ellsworth area: fewer prescriptions per prescriber, but relatively more prescribers to recruit. Conversely, recruiting prescribers in the Lincoln and Sebasticook areas would impact a greater proportion of prescriptions.

Survey of Prescribers and Pharmacists

Survey participants were recruited using address lists obtained through state licensing boards, and all 6,753 potential participants were mailed questionnaires from May 19-29, 2009. As of July 10, 2009, 1,352 questionnaires have been received: 203 (18.9% of distributed) completed the Pharmacist Survey, and 1,101 (20.2% of distributed) completed the Prescriber Licensee Survey. Questions in the survey focused on two aspects of the PMP, the threshold reports and use of the online PMP system.

Pharmacist Survey

Of the 203 pharmacists who completed the Pharmacist Survey, about half (51.7%) practice in pharmacy chains, 21.7% practice in hospitals, and 14.8% are independent. The vast majority, 192 (94.5%) dispense controlled substances: our analysis focuses on those respondents. Of these, 80 (41.7%) pharmacist respondents are enrolled to use the online PMP, 58.0% of the 138 pharmacist enrollees in OSA's records. Although 80 are enrolled, only 55 (68.7%) respondent enrollees say they are actually using the online PMP.

Of the 128 of pharmacist responders who have not registered with the PMP, 60.9% have never attempted to enroll, 22.6% do not have internet access at work, 14.1% are unsure how to use PMP, and 11.7% commented that their own computer network problems and/or organization policy barriers precluded their registration. Of those 55 pharmacists who are enrolled online with PMP, if a pharmacist finds through the PMP that a patient is receiving prescriptions from multiple providers, he/she will "usually/always" look up the patient's history (62.0%), call other prescribers (52.9%), and/or add the information to the patient's file (52.2%).

Suggestions for improvement were received from 67 pharmacist respondents. The most common responses were: there should be better education about and awareness of the program (16.2%), the new interface was too cumbersome and logging in was difficult (16.2%), and make the information more "up-to-date" (14.7%). Selected key informant interviews of three pharmacists representing chains and an independent pharmacy revealed that using the PMP may take as long as 5-6 minutes per patient. They commented that the post-January design is a bit faster. . The second problem, and one for which they see no apparent solution, is that the data are at least two weeks old. Nevertheless they see the PMP as very necessary and helpful.

We examined pharmacy types (chain, independent, and other)¹ in terms of PMP registration patterns and reasons for non-use of the PMP. We grouped the reasons respondents selected for not registering with or using the PMP into three categories: those related to training, design changes, or organization policy issues. We found that there is no statistically significant difference among the respondents from these three types of pharmacies or in terms of whether pharmacist respondents have ever registered or re-registered, in terms of (a) whether the respondent selected organizational issues as a reason for non-use or non-registration, (b) selected training issues, or (c) selected design issues.

Prescriber Survey

Of the 1101 Prescriber Licensee Survey respondents who are currently licensed in Maine to prescribe controlled substances, 127 (11.5%) do not prescribe controlled substances ("Non-Prescribers"); they were removed from the analysis. The primary focus of this report addresses the 974 Prescriber Licensee Survey respondents who have prescribed controlled substances to at least 1% of their patients within the previous year ("Prescribers"). Findings for Prescribers who write scripts for controlled substances are reported in three groups: "Not Registered with the PMP (Q6), "Registered/Do Not Use the PMP (Q7)," and "Registered/Use the PMP (Q8)." When all licensees are considered together, almost half of respondents (48.9%) are not registered with the PMP, 16.1% are registered but do not use the PMP and 34.1% are registered and use the PMP online service.

¹ Hospital pharmacies were removed from this analysis.

The most common reasons cited for non-enrollment include they "never attempted to enroll" (72.3%) and they are "unsure how to use PMP system" (18.1%). Of the 85 respondents who expanded on reasons for non-enrollment, 36.5% did not know about the PMP or had forgotten about the program.

Of the sixteen percent who are registered with the PMP but do not use the online service, more than one in three (39.4%) had forgotten their user name and/or password, 30.0% were unsure how to use the PMP system, and 25.0% stated it was inconvenient to have timely access. A substantial number (41.7%) of these respondents who provided comments said the PMP did not apply to their practice or they had too few patients for whom they prescribed controlled substances.

A total of 294 (34.1%) of those respondents who write scripts for controlled substances are registered for and use the PMP. These respondents "usually/always" use the PMP to check suspicions of doctor shopping (47.3%), and "occasionally" check to monitor a current patient (61.3%) or to check history for a new patient (44.3%). If they find that a patient is receiving prescriptions from multiple providers, over half (54.5%) "very rarely/never" discharge the patient. They "occasionally" call the pharmacist (50.0%) or refer the patient to a licensed substance abuse treatment professional (48.3%). These respondents "usually/always" look up the patient history (65.6%), discuss the situation with the patient (67.7%), and/or add this information to the patient's file (76.1%).

More than half (51.9%) of all 974 Prescriber respondents have received a PMP threshold notification report. After receiving a report, 61.1% of Prescribers state that they "usually/always" add this information to the patient's file, 31.3% discuss the situation with the patient, and/or 29.8% establish a controlled substances agreement. Most of these respondents (68.5%) say they "very rarely/never" discharge the patient, call other prescribers listed in the threshold report (65.3%), refer the patient to a licensed substance abuse treatment professional (69.8%), or conduct a substance abuse screening and brief intervention (53.5%).

We looked at whether reasons for non-registration or non-use of the PMP could be associated specifically with lack of training, or PMP design, or respondent organization policies. We found that all three of these types of issues were significantly associated with non-registration or non-use. We also examined how years in practice might be associated, and found that those with fewer years in practice were significantly more likely to register and use the PMP. In addition, receiving a threshold report was significantly associated with registration and use.

PMP Use by Practice Specialty

Six categories of practice specialties were broken out for further examination: Primary Care, Nursing, Surgical, Dental, Emergency Medicine, and "All Others." The percentages within each specialty category that are registered are: 55.7% in Primary Care; 61.6% in Nursing; 31.5 in Surgical specialties; 33.1% in Dental specialties; and 83.1% in Emergency Medicine. Of those who have registered, the percent of those who use the PMP are as follows: Primary Care 68.6%; Nursing 68.3%; Surgical 53.3%; Dental 55.8%; Emergency Medicine 79.3%. Emergency Medicine respondents are more likely to be registered users than any other category, with Nursing and Primary Care specialties ranking second and third. Although more years in practice is associated with non-registration and use in

the prescribers considered as a whole population, it is not significantly associated in any of the specialty categories taken individually.

A greater proportion of Surgical (68.5%) and Dental (66.9%) specialties are not enrolled with the PMP compared to Emergency Medicine (16.9%) respondents. Additionally, while Surgical specialty respondents prescribe controlled substances at a higher rate than other specialties—35.5% prescribe to over 51% of their patients, they are also the group most likely to not be registered with the PMP online service. Those in Surgical specialty were more likely (83.8%) to say they had never attempted to enroll compared to those in Emergency medicine (36.4%). Those in Nursing specialties (31.3%) and Emergency Medicine (27.3%) were more likely to state they were unsure how to use PMP as a reason for non-registration than those in Surgical (13.5%) or Dental (10.1%) specialties.

The most common reasons for non-PMP use among those who have registered include the following: Primary Care (52.5%) and Emergency Medicine (58.3%) respondents were most likely to choose “forgot user name or password.” For Surgical (42.9%) it was “inconvenient to have timely access;” for Dental (36.8%) it was “enrolled but have not yet had the opportunity to use PMP;” and for All Others (51.4%) it was “unsure how to use the PMP system.” Dental (31.6%), Emergency Medicine (25.0%) and Primary Care (20.3%) respondents were most likely to cite “system design problems at the PMP’s end.” Of the 25 respondents who gave comments expanding on these system design problems, 76.0% cited login or access problems as the reason for not using the PMP service.

A greater proportion of Emergency Medicine (70.8%) respondents are enrolled and use the PMP service compared to Primary Care (55.7%), Nursing (61.6%), Surgical (14.8%) and Dental (20.3%) specialties. Most of the PMP users report occasional use, rather than routine use for current patients. Most PMP users in all specialties report they use the system for “1% - 25%” of their patients. While Dental (60.9%) and Surgical (50.0%) groups will “very rarely/never” use the PMP to check history for a new patient, 45.0% of Emergency Medicine and 44.4% of Nursing groups “usually/always” check. Similarly, Dental (36.4%) and Surgical (37.5%) will “very rarely/never” use the PMP to check suspicions of doctor shopping, compared to Emergency Medicine (64.3%) and Nursing (54.5%) specialties who will “usually/always” check.

If a Prescriber finds that a patient is receiving prescriptions from multiple providers, respondents will “usually/always” look up patient history in PMP (78.4% Nursing, 70.0% Dental, 65.8% Primary Care, 65.0% Emergency Medicine), add this information to the patient’s file (84.7% Primary Care, 84.3% Nursing, 75.0% Surgical), and/or discuss the situation with the patient (80.0% Nursing, 75.2% Primary Care, 67.7% All Others). Primary Care (62.5%) and Nursing (64.7%) will “usually/always” establish a controlled substance agreement. While 50.0% of Primary Care, 41.3% of Nursing, and 40.7% of All Others would “occasionally” discharge the patient from the practice, 77.8% of Dental specialties say they would “very rarely/never” discharge the patient.

Respondent Comments and Suggestions

Regardless of whether they use the service or not, a majority of both pharmacists and prescribers believe the PMP is a useful tool that needs some tweaking. When asked how the PMP has affected their

practice, 38.5% of pharmacist survey and 64.5% of Prescriber survey respondents who commented gave positive responses or examples. They believe it is a useful, helpful program, and used descriptors like “excellent program,” “wonderful,” and “invaluable tool.” Still, 29.6% of pharmacists and 12.0% of prescribers felt that the PMP had done little or nothing for them.

Prescriber respondents (n=229) gave multiple comments about improving the PMP online service: the PMP is “clunky,” confusing, and not “user-friendly” (34.1%); that login/password accessibility is frustrating (17.9%); that information should be more up-to-date (17.9%); and that more training/information would be beneficial (10.9%); other states should be included (3.5%); and methadone clinics should be included (3.9%).

SUMMARY AND RECOMMENDATIONS

Following its first four years, Maine's Prescription Monitoring Program (PMP) has established itself as an important vehicle to help pharmacists and prescribers manage medical therapies involving Schedules II, III, and IV controlled substances. The data from 100% of legitimately dispensed Maine prescriptions² is aggregated every two weeks into a searchable database.³ The database is being used by an increasing number of pharmacists and prescribers statewide. Prescribers have two types of potential links to the PMP. Medication threshold reports are currently being generated automatically for all patients in the system who exceed a threshold number of prescribers, pharmacies, or prescriptions; these reports are sent to the prescribers. Secondly, prescribers as well as pharmacists can enroll to use the on-line version of the database in order to locate information about their own patients.

Analysis of PMP spatial data demonstrates that out-of-state pharmacies, patients, and prescribers play a prominent role in Maine's prescription monitoring system, pointing to the importance of developing and collaborating with inter-state PMP data systems. In FY2008, 71% of the 18,444 prescribers and 3% of the 547,650 patients in the system originated from outside Maine. Almost half (44%) of the prescriptions written by out-of-state prescribers were written for out-of-state patients (who received their prescriptions from Maine-based pharmacies). Although Maine prescribers constituted only 29% of all of the individual prescribers in the system, they were responsible for 95% of the 2,276,321 prescriptions.

All states contribute prescribers and patients to Maine's PMP, but many of those states do not themselves monitor prescriptions. New Hampshire and Florida are important sources of Maine's PMP prescribers and patients, yet neither have functioning PMPs. Out-of-state PMP prescribers and patients are most numerous in states adjacent to Maine, but with fairly high levels of participation from some more distant locations, for example New York, Pennsylvania, Florida and California. Thus, as interstate data sharing grows⁴, Maine's collaboration with some states will be more important than others.

Although the vast majority of prescriptions are written by Maine prescribers, the participation of out-of-state prescribers (13,095 of them in 2008) is apparently presenting data collection challenges to the data submitting pharmacies. For example, data associated with the out-of-state prescribers more often (13% of the time) lacks valid location data; these missing data are significantly more often associated with narcotic analgesic prescriptions than those for stimulants and tranquilizers. And in the third quarter of FY2008, 9% of the prescribers in the dataset lacked valid DEA numbers. A small number of the out-of-state prescribers are *locum tenens* doctors who are filling in locally for vacationing physicians or in other staff shortage situations. But our analysis shows that many more are associated with seasonal residents and vacationers. It is important that the PMP and Maine pharmacies have procedures to assure complete data, particularly out-of-state location data and DEA numbers.

The target population of prescribers and dispensers who could benefit by using the online PMP is spread unevenly across the state. Not surprisingly, high participation is localized in areas with more

² Although prescription data from the Veterans Administration is in the FY2004-FY2008 datasets, they will not be submitting data in the future.

³ The system design was updated in January, 2008, requiring re-enrollment to use the on-line database. The system will soon shift to weekly data submissions.

⁴ Maine is already taking initial steps to test data sharing concepts.

density of population and prescribers, frequently corresponding to the catchment areas associated with medical centers. Spatial analysis of the prescribers who had enrolled in the on-line PMP system showed that the spatial distribution and density of participants remained about the same between 2007 and 2008, although the number of prescriptions has increased.

Education about the PMP, and evaluation of participation should be targeted to those who actually prescribe (or dispense) these substances. There is a great deal of variability in the prescriber population in terms of their need for PMP information. Our survey indicates that only 88% of prescribers and 95% of pharmacists actually prescribe Schedules II, III, and IV. And most (75%) prescribers prescribe controlled substances to fewer than 25% of their patients. Primary care (physicians and advanced practice nurses) and emergency room physicians tend to use the PMP the most, while surgeons and dentists tend to use it much less. Thus some education about the PMP could be tailored for particular specialties and particular organizations. Similarly, published enrollment rates could perhaps be more fine-tuned to reflect enrollment levels within subsets of prescribers who are already prescribing controlled substances, or within certain geographic areas, rather than across all licensees.

PMP participant engagement should be an on-going process. Even though prescribers may enroll at one point in time, survey results show about a third of enrollees do not use, or stop using, the PMP. Enrollees are the potential opinion leaders (and frequently the on-site trainers for their colleagues) whose experience is critical to additional recruitment. On-going engagement and education efforts should target this important subpopulation, for example involving them in continuing education, user tips, and reminders. Their experience with the PMP can perhaps provide an education feed-back loop, for example through an on-line users group. Provider organizations which have mandated use of the PMP might be interested in becoming PMP trainers for their areas. Emergency room physicians, advanced practice nurses, and primary care physicians are the greatest proponents of the system; be sure to keep these and other enrollees in the loop with up with updates, efforts to develop training strategies, and continuous improvement.

Education about the PMP should target enrollees and explicitly address key perceived barriers, which span all specialties and license types. In particular these approaches or training units might include: (a) 'Speeding up your PMP access process,' (b) 'Strategies to keep your user name and password handy,' (c) 'Retrieving lost passwords,' (d) 'What to do if your patient is doctor shopping,' (e) 'Strategies to address patient addiction,' (f) 'How to handle suspected drug diversion by a patient,' (g) 'A quick-start refresher in using the PMP,' (h) 'PMP use for the computer novice,' (i) 'Suggested language to use for encounters with difficult patients,' (j) 'How to use the PMP to do a quick check on a new patient,' (k) 'Where to get more training on prescriber practice standards,' (l) 'Legal issues associated with the state's Prescription Monitoring Program.'

In targeting those who have not enrolled, consider focused marketing efforts for surgeons and dentists. These approaches include a brief rationale about the benefits (even necessities) of use and enhancements recently done to increase speed and efficiency. Target these specialties with language addressing them, e.g., 'Integrating PMP use into your dentistry practice,' or 'PMP benefits for surgeons,' or 'Do dentists need to use the PMP?' Data about how many minutes a PMP patient check actually takes may be helpful.

The Maine PMP continues to refine its approaches and its system. They have recently upgraded their data system to improve accuracy and completeness. The new system also provides for automated password recovery. One problem prescribers in the survey reported was that data were not “up to date.” The data submission is increasing to require pharmacies to submit within seven days of dispensing starting January 1, 2010. Maine is also collaborating in the development of interstate data sharing. Recent statute changes provide for access to the PMP by MaineCare and the Office of Chief Medical Examiner. The PMP will also soon undergo a routine program evaluation.

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INTRODUCTION

The purpose of this study⁵ was to collaborate with the Maine Office of Substance Abuse in evaluating the Prescription Monitoring Program (PMP), particularly patterns of participation/non-participation by prescribers and pharmacists in the online service. The study involved two primary components: (1) a geographic information systems (GIS) analysis of spatial characteristics associated with prescribing, dispensing, and with participation in the online PMP, and (2) a survey of licensed prescribers and pharmacists who were already participating or could potentially participate in the online service to access patient data. The following report uses the study findings to describe how prescribers are using the information from the threshold reports and the online data as well as to analyze barriers and opportunities for expanding PMP participation.

The PMP statute was passed by the Maine State Legislature in 2003, and began operation in July 2004. This system, which is operated by the Maine Office of Substance Abuse, monitors all drugs in Schedules II, III, & IV as described by the Federal Controlled Substances Act (CSA). Any pharmacy licensed to dispense prescriptions in or into the State of Maine is required by law to report to the program, with the exception of methadone assisted therapy programs; submissions are due the 15th and 30th of every month. Currently (June, 2009), 149 Data Submitters are registered to submit data for 403 pharmacies. Prescribers themselves do not submit data to the system. Hospital inpatient dispensing data and data from veterinarians are not collected⁶.

Each quarter, Patient Threshold Reports are automatically sent to the health care providers regarding any patient who exceeds a threshold number of prescribers or pharmacies. In addition, prescribers and dispensers can register for online access to obtain information regarding their own patients only. Licensing boards may use the information for investigations they are conducting; law enforcement officials can access the data only through the Attorney General's Office by subpoena for a case they are currently investigating.

The PMP began registration of prescribers and pharmacists to use online access to the database in January 2005. The online interface was updated in January 2009, and participants were asked to re-register for access to the new system. As of June 2009, 1,197 prescribers (22% of those who prescribe controlled substances covered by the PMP (Table 1) and 138 pharmacists (13% of the estimated number who dispense controlled substances covered by the PMP) were registered with the service to utilize the online PMP to obtain information on his or her own patients.

⁵ Funded by a grant from the United States Attorneys Office for the District of Maine

⁶ PMP website, http://www.maineppm.org/frequently_asked_questions, accessed 6/12/2009.

METHODS

GIS Analysis of Spatial Data Collected as a Function of the PMP

A de-identified data set was extracted by the PMP contractor, Gould Health Systems, including a record for each controlled substance prescription transaction from July 1, 2004, through June 30, 2008 (Table 1).

Table 1. Total number of prescription records provided, by state fiscal year

Fiscal Year	Total Number of Records Provided by GHS	Records with Valid PATIENT Location Data	Records with Valid PRESCRIBER Location Data	Records with Valid PHARMACY Location Data
2005	1,878,736	1,878,132	1,866,389	1,868,694
2006	2,033,619	2,032,817	1,735,895	2,031,334
2007	2,148,294	2,147,593	2,132,850	2,147,728
2008	2,339,662	2,339,032	2,276,321	2,286,415

In addition to information about the drug and dose, the dataset includes a pharmacy/pharmacy chain identification number, the zip code and state location of the pharmacy, a patient identification number (randomly assigned) with associated zip code and state location, a Prescriber identification number (randomly assigned), and a zip code and state for the primary address of the Prescriber. Prescriber and patient identification numbers are specific to only one fiscal year at a time.

Our focus with these data was to learn about spatial patterns associated with patients, prescribers and pharmacists. We were particularly interested in the locations of patients, prescribers, pharmacies, and the related volume of controlled-substance prescriptions. We imported the data into Arc-GIS v. 9.3 and produced a series of maps portraying spatial frequency and rate patterns of (a) the dispensers (pharmacies/pharmacy chains), (b) the prescribers, and (c) patients associated with prescriptions. Maps were done for each fiscal year using a unified scale and legend system, so that years could be compared.

Preparing Unduplicated Patient, Prescriber and Pharmacy Datasets with Valid Location Data

In the dataset we were using (e.g., n=2,339,662 records in FY2008), each record was a single prescription transaction. For some analyses, however, we created an unduplicated count of patients, or prescribers, or dispensers (rather than using all the prescription records) and analyzed their locations. Unduplicated values from the FY2008 dataset included the following: 562,713 unduplicated patient identification numbers; 21,192 unduplicated prescriber identification numbers; and 339 unduplicated pharmacy data submitter (NABP) identification numbers.

We extracted for use only those records for which location data was present. Since each patient, prescriber and dispenser had an unduplicated identification number, we sorted the dataset using that field, then selected the first occurrence of each unduplicated identification number in order to do an unduplicated count, and utilized the state and/or zip code from that record as the location. Over 97% of the records have valid location data (see Table 2). That is, out of 2,339,662 records in the original

dataset, 2,286,415 (97.7%) have valid pharmacy locations, 2,276,321 (97.3%) records have valid prescriber locations, and 2,339,032 (100.0%, when rounded) have valid patient locations. Despite the high percent of prescription transactions with valid location data, when we analyzed the unduplicated patients, prescribers, or pharmacy data submitters, the percent with valid location data was lower for prescribers (87%) and pharmacies (85%) (see Table 2).

Table 2. Number of unduplicated patients, prescribers, and pharmacies with location data, by fiscal year

Fiscal Year	Number of Unduplicated Patients	Number of Unduplicated Prescribers	Number of Unduplicated Pharmacies
2005	504,042	17,795	284
2006	517,169	13,796	294
2007	521,812	19,093	310
2008	562,471	18,444	289

We removed records for which location data were invalid or missing. If we had the zip code but not the state we were able to look up the zip code and insert a state designation. Sometimes the zip code was missing for just the patient, or just the provider, but not both. Thus, we might be able to include a specific record in the patient analysis (for example) but not for the prescriber analysis.

Table 3. Number and percent of unduplicated records with valid location data in FY2008⁷

	Unduplicated Count	Unduplicated Count and Percent With Valid Location Data	Total Number of Associated Prescriptions	Total Number of Associated <u>Maine</u> Prescriptions
	All prescription transactions received 2,339,662			
Patient Records	All unduplicated patients 562,713 (100.00%)	Patients with valid location data 562,471 (99.96%)	All prescriptions associated with located patients 2,339,032	All prescriptions associated with Maine-located patients 2,311,429
Prescriber Records	All unduplicated prescribers 21,192 (100.00%)	Prescribers with valid location data 18,444 (87.03%)	All prescriptions associated with located prescribers 2,276,321	All prescriptions associated with Maine-located prescribers 2,162,701
Pharmacy Records	All unduplicated pharmacies 339 (100.00%)	Pharmacies with valid location data 289 (85.25%)	All prescriptions associated with located pharmacies 2,286,415	All prescriptions associated with Maine-located pharmacies 2,285,576

⁷ The PMP relies on the pharmacies to submit accurate data, but some errors and omissions occur. When errors come to the attention of the PMP, they are corrected, but the PMP does not automatically check for errors.

Data submissions and procedures have improved through time, and although all years have relatively complete data, the data for FY2008 are more complete than previous years. Some of the increase in absolute numbers of prescriptions from year to year may be due to improved quality of reporting. Thus, we were cautious about comparing absolute numbers (e.g., of prescriptions or patients) through time. Instead, we focused our year-to-year comparisons on proportions rather than absolute numbers. For example, the absolute number of prescriptions dispensed to out-of-state patients increased 19% between FY2007 and FY2008, a rather high percentage. However, we chose to describe the change as an increase in the proportion (percent) of prescriptions dispensed to out-of-state patients (see Table 8), which increased only 9%.

For PMP Maps 500-502 (Appendix A) we displayed the prescription frequency by the home state of the pharmacies, prescribers, or patients. For PMP Maps 503-505 we unduplicated the prescribers, pharmacies, and patients and examined their frequency within their home state.

In PMP Maps 100,109-115 (Appendix A) we mapped at the state level, as well as the sub-county level, the latter by using Healthy Maine Partnership areas. We selected the Healthy Maine Partnership areas because they are more specific than counties and generally associated with hospitals or other health care provision infrastructures. In some maps we display the absolute number of prescriptions (or prescribers, pharmacies or patients) for each area. For others we have converted the frequency data to rates per 100,000 persons, or per 100,000 prescriptions. Associated with each map is a table that displays the data behind the spatial patterns. Statistical analyses were performed using SPSS v. 14.

It is important to note that machine-assigned identification numbers for (unduplicated) prescribers and (unduplicated) patients are specific to each year's extraction, so patterns associated with individual patients or prescribers cannot be followed through time. Further, the method for linking prescriptions to individual ("unduplicated") patients uses a "fuzzy logic" approach that matches names and dates of birth, rather than utilizing a patient's formal identification number.

GIS Analysis of Participation in the Online PMP

The PMP Coordinator provided a de-identified dataset of participants in the online PMP for FY2007 and FY2008, localized by zip code. Because the numbers of participating prescribers in each zip code area were small, we aggregated the zip code designations into Healthy Maine Partnership Areas (each encompassing multiple zip code areas) in order to examine participation frequencies. In order to explore variation in the spatial distribution of licensed prescribers (e.g., there are more in areas with medical centers and in areas with higher population density), we normalized data by converting the raw frequencies to rates according to three parameters: the density of prescribers, the population density, and the density of prescriptions filled.

Survey of Prescribers and Pharmacists

The Prescriber Licensee Survey (Appendix B) was mailed to Maine licensed prescribers of controlled substances in May 2009. A separate Pharmacist Survey (Appendix B) was mailed to licensed pharmacists. Questionnaires were designed to learn about perceived barriers and advantages to using the PMP online service. For those who had registered online, the questionnaire asked how the PMP was being used and what impact the PMP had on their practices. For those who had not registered online,

the questionnaire asked for feedback on the PMP and why the service was not being used. All participants were asked to share suggestions for improving the PMP online service. They were informed that survey results would be shared with the Office of Substance Abuse to help improve the program and the participation rates.

Participants were recruited for the mail survey using address lists obtained from state licensing boards (Table 4). These lists were first sent to University of Maine Mail Services for address validation, and then distributed through postal mail from May 19 – 29, 2009. The population was not sampled; questionnaires were mailed to all potential participants. Participants were sent a letter of introduction including informed consent (Appendix C), a questionnaire (Appendix B), and a postage-paid return envelope. Medical Doctors (MD), Doctors of Osteopathy (DO), and Physician Assistants (PA) received a letter of introduction signed by the principal investigator as well as by the heads of those boards of licensure, while other prescribers (e.g., Doctors of Podiatry, Doctors of Dental Surgery, Advanced Practice Nurses, and Midwives) and all Registered Pharmacists received a letter signed by the principal investigator alone. Participation was described as voluntary, and consent was implied when participants returned completed questionnaires. Returned questionnaires contained no identifying information other than zip code of practice and practice specialty. The Prescriber Licensee Survey expands on a similar questionnaire administered to Maine General Medical Center staff in Fall 2008.

Table 4: Questionnaire Distribution for Maine Prescribers and Dispensers

Survey Group	Addresses Obtained From	Original number of addresses	Final mailing after address validation
Dispenser Survey:			
Pharmacist	Agency License Management System (alms) online	1,083	1,075 (99.3%)
Prescriber Survey:			
Dentist	Maine Office of Data, Research, and Vital Statistics	596	560 (94.0%)
Midwife	Maine State Board of Nursing	75	72 (96.0%)
Advanced Practice Nurse	Maine State Board of Nursing	893	870 (97.4%)
Podiatrist	Agency License Management System (alms) online	82	82 (100.0%)
Medical Doctor	Maine Board of Licensure in Medicine	3,325	2,979 (89.6%)
Doctor of Osteopathy	Maine Board of Osteopathic Licensure	771	720 (93.4%)
Physician Assistant	Maine Board of Licensure in Medicine	471	395 (83.9%)
All Survey Groups:		7,296	6,753 (100.0%)

Only seven Prescriber questionnaires were returned with “address unknown.” As of July 10, 2009, 1,352 questionnaires have been completed and returned: 203 (18.9% of distributed) pharmacist questionnaires and 1,149 (20.2% of distributed) Prescriber questionnaires. Forty-one prescribers returned their questionnaires, informing us they were retired or not currently licensed in Maine; these were removed. Of the 1,101 total valid Prescriber surveys received, 127 (11.5%) reported that they did not prescribe controlled substances. These are designated in this report “non-prescribers,” and are

reported on briefly as a separate group. The final dataset for analysis consists of 974 active prescribers of controlled substances in Maine, and 203 pharmacists. This respondent sample is likely not representative of all prescribers and dispensers due to a probable non-response bias.

Analysis and discussion of the survey results is broken into three sections (Table 5), according to respondent type: pharmacists (n=203); prescribers who *do not* write scripts for controlled substances (“non-prescribers,” n=127); and prescribers who have prescribed controlled substances to at least 1% of their patients within the past year (“prescribers,” n=974). When feasible, respondents are also analyzed by the larger categories of self-reported specialties, including primary care physicians; emergency medicine physicians; surgeons; nursing; dentists (general dentistry and all other dental specialties); and “all others.”

Table 5. Distribution of Prescriber Respondent Types by Specialty Categories

Respondents by Specialty Group			Non-Prescribers	Prescribers		
Specialty Categories	Total Respondents in Each Specialty Group	Percent of 1,101 Respondents	Non-Prescribers Number and Percent of Specialty Group Total	Not Registered with PMP Number and Percent of Specialty Group Total	Registered/ Do Not Use PMP Number and Percent of Specialty Group Total	Registered/ Use PMP Number and Percent of Specialty Group Total
Primary Care*	355	32.2%	19 (5.3%)	149 (44.3%)	59 (17.6%)	129 (38.4%)
Nursing*	145	13.2%	20 (13.8%)	48 (38.4%)	26 (20.8%)	56 (44.8%)
Surgical	56	5.1%	2 (3.6%)	37 (68.5%)	7 (13.0%)	8 (14.8%)
Dental*	125	11.3%	7 (5.6%)	79 (66.9%)	19 (16.1%)	24 (20.3%)
Emergency Medicine	65	5.9%	0 (0.0%)	11 (16.9%)	12 (18.5%)	46 (70.8%)
All Others	352	32.0%	79 (22.4%)	151 (55.3%)	37 (13.5%)	69 (25.3%)
Unknown	3	0.3%	*Note: Number and Percent of “Prescribers” may be more than Total Responses due to overlap in responses. (e.g., a responder who was <i>previously</i> registered with the PMP may answer Q6 about current non-enrollment as well as Q8 about previous use of PMP.			
Totals	1,101	100%				

*Primary Care Category: Family Medicine/General Practice, Internal Medicine, Obstetrics/Gynecology, Pediatrics.

*Nursing Category: Advanced Practice Nurse, Family Nurse Practitioner, Nurse Anesthetist, and Nurse Midwife.

*Dental Category: General and Surgical Dentists

RESULTS: SPATIAL PATTERNS OF PRESCRIBING & DISPENSING

Relationships to Areas Outside Maine

The Maine PMP involves many out-of-state prescribers and patients, representing nearly all U.S. states and Canadian provinces. During FY2008, about 2.3 million prescriptions were filled for narcotic analgesics, tranquilizers, and stimulants, serving a patient population of just over .5 million. PMP prescriptions were written by 18,444 licensed prescribers.

Remarkably, only 5,478 (30%) of the PMP prescribers are located in Maine. However, among prescription records for which the prescriber location is known, most of the prescriptions (95%) were written by Maine prescribers, and 97% of the unduplicated patients with valid location data are from Maine. Nearly all of the unduplicated pharmacies (98%) reporting to the PMP in FY2008 are located in Maine. The out-of-state patients (n=14,821) come from all other states and Canadian provinces, as do the out-of-state prescribers (n=12,966) writing Maine-filled prescriptions (Table 7).

Not surprisingly, Maine's neighboring states of New Hampshire and Massachusetts, along with Connecticut, Florida, and New York contribute more out-of-state patients than do other states (Figure 2). PMP Maps 500-505, which are included in Appendix A, display frequency distributions by states and Canadian provinces by fiscal year. Following the maps are tables displaying the data associated with each map.

The numbers of both in-state and out-of-state patients (Table 2), prescriptions, and prescribers have increased every year (Tables 6 and 7). Between FY2007 and FY2008, there was a 9% increase in the overall number of prescriptions reported (Table 1), including a 9% increase in the number of prescriptions filled for Maine patients (see Tables 6, 7, and 8). As discussed in the Methods section, we were concerned that these increases might be due to improved reporting, so we included an analysis of proportions as well as absolute numbers (Table 8).

Table 6. Number of prescriptions associated with out-of-state patients, prescriptions, and pharmacies with valid location data, by fiscal year

Fiscal Year	Number of Prescriptions Dispensed for Out-of-State PATIENTS	Number of Prescriptions Written by Out-of-State PRESCRIBERS	Number of Prescriptions Dispensed by Out-of-State PHARMACIES
2005	20,614	186,955	6,586
2006	21,973	111,005	5,635
2007	23,173	111,931	6,686
2008	27,603	113,620	839

Table 7. Number of unduplicated out-of-state patients, prescribers, and pharmacies with valid location data, by fiscal year

Fiscal Year	Unduplicated Out-of-State PATIENTS	Unduplicated Out-of-State PRESCRIBERS	Unduplicated Out-of-State PHARMACIES
2005	10,700	11,097	15
2006	11,592	9,623	14
2007	12,563	11,790	24
2008	14,821	12,966	7

Table 8. Change in number and percent of PMP data reported from FY2007 to FY2008

	2007	2008
Prescriptions reported: all	2,148,294	2,339,662
Prescriptions reported with valid patient locations: total	2,147,593 (100.00%)	2,339,032 (100.00%)
• For Maine patients	2,124,420 (98.89%)	2,311,429 (98.79%)
• For out-of-state patients	23,173 (1.08%)	27,603 (1.18%)
Unduplicated PATIENTS with valid location data: total	521,812 (100.00%)	562,471 (100.00%)
• Maine patients	509,249 (97.59%)	547,650 (97.37%)
• Out-of-state patients	12,563 (1.98%)	14,821 (2.63%)
Unduplicated PRESCRIBERS with valid location data: total	19,093 (100.00%)	18,444 (100.00%)
• Maine prescribers	7,303 (38.25%)	5,478 (29.70%)
• Out-of-state prescribers	11,790 (61.75%)	12,966 (70.30%)
Unduplicated PHARMACIES with valid location data: total	310 (100.00%)	289 (100.00%)
• Maine pharmacies	286 (92.26%)	282 (97.58%)
• Out of state pharmacies	24 (7.74%)	7 (2.42%)

Figure 1 illustrates that, as the total number of unduplicated patients increases overall, so does the number of Maine patients. Figures 2 and 3 show that the volume increase occurs also among patients who come from key states (data extracted from Appendix A Table).

Nevertheless, between FY2007 and FY2008, there were increases in both the number and percent of (a) prescriptions for out-of-state patients, (b) unduplicated out-of-state patients, and (c) unduplicated out-of-state prescribers (Table 8). The proportion of out-of-state prescribers increased the most, from 62% to 70%. The percentage of out-of-state pharmacies, on the other hand, decreased from 8% to 2%.

Figure 1. Change in total number of unduplicated patients and number from Maine, by fiscal year

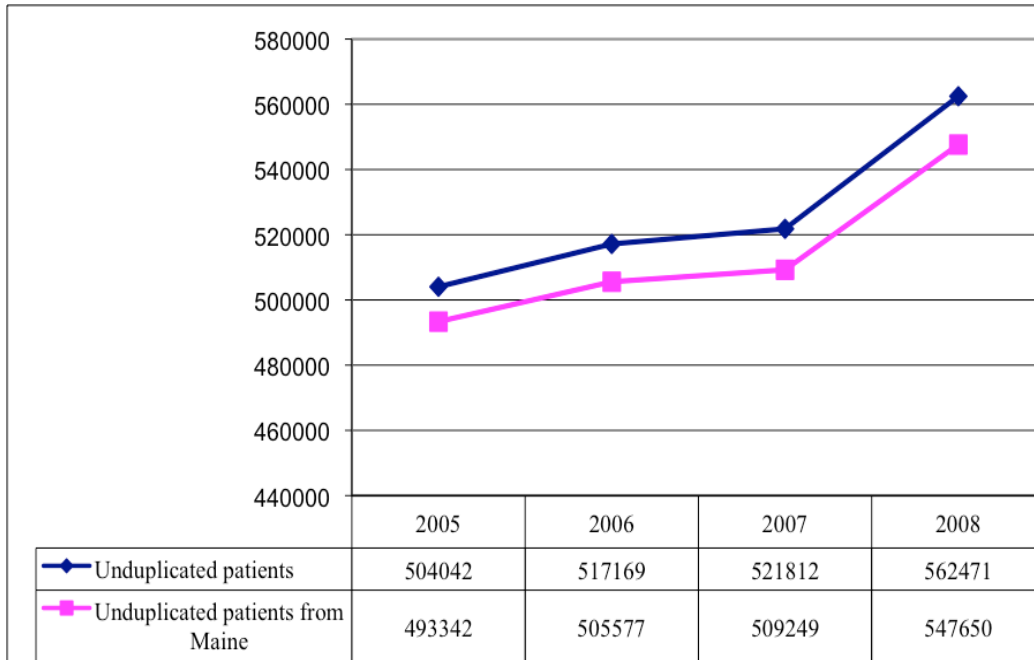


Figure 2. Number of unduplicated out-of-state patients, by fiscal year and by top five states

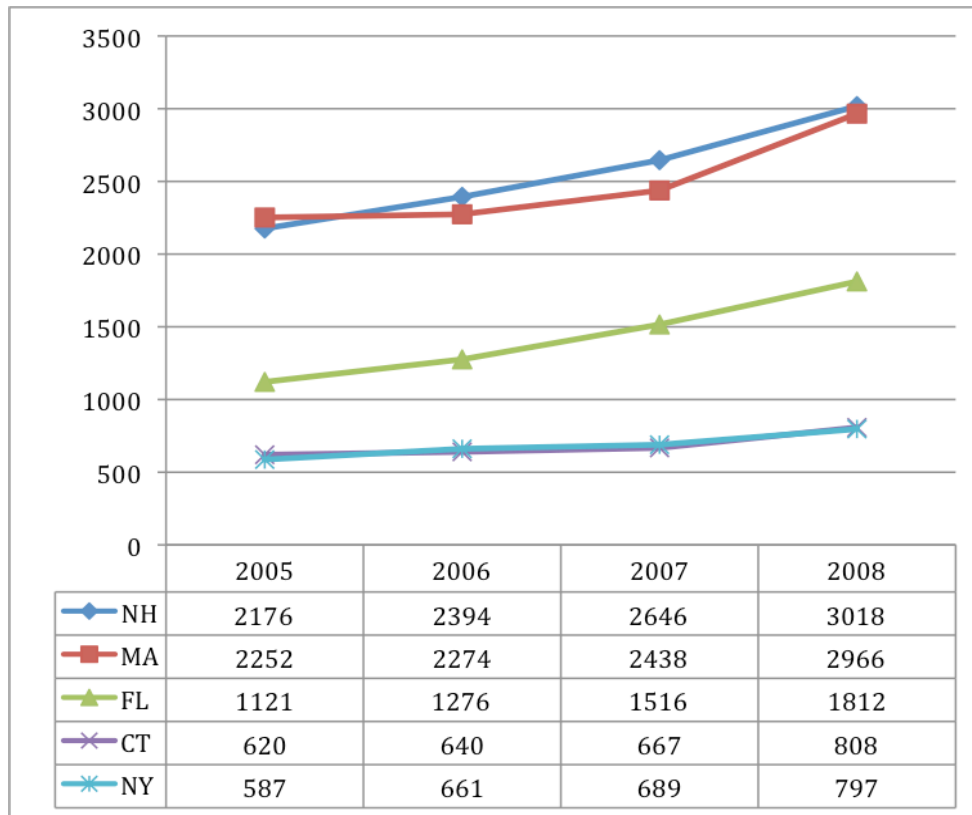
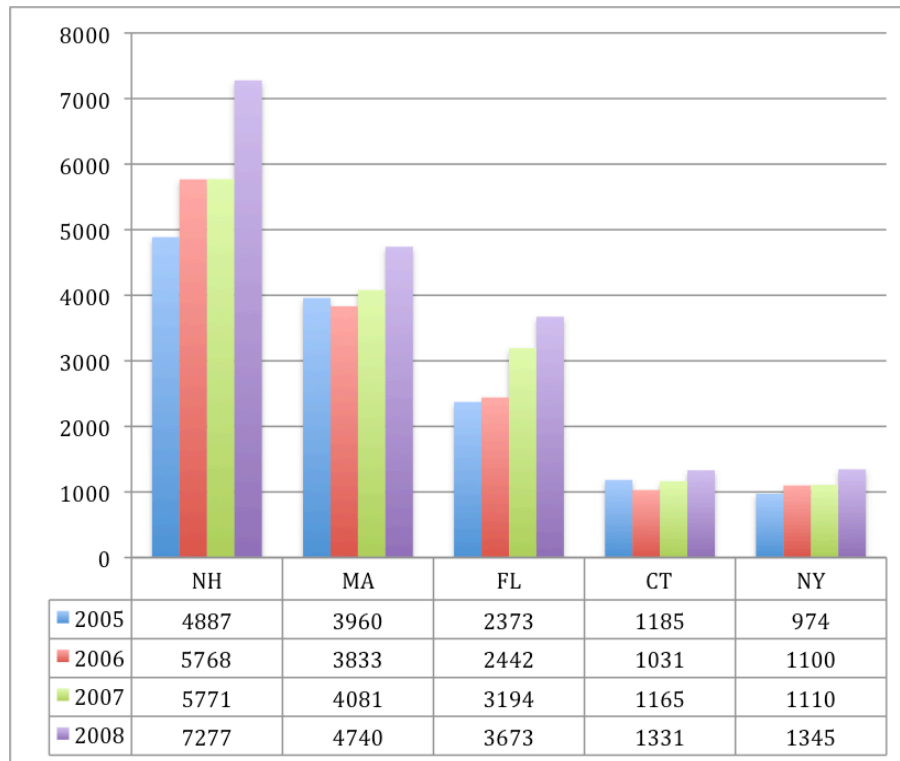


Figure 3. Number of prescriptions dispensed to patients from top five non-Maine states



Locations of (Unduplicated) Patients: Maps 500 and 501

Maps 500 and 501 and their associated data table, located in Appendix A, (Table Map 500-501) presents the number of unduplicated patients (Map 501) and their associated prescriptions (Map 500) localized by the patient’s home state or province. The maps use a gradation to darker colors to indicate larger numbers within a state or province. Referring to Table Map 500-501, in FY2008, Maine is home to 547,650 (97.3%) of the 562,471 unduplicated patients with valid location data (state or zip code) in the PMP, for whom 2,311,429 (98.8%)⁸ prescriptions were dispensed. Conversely, 14,821 out-of-state patients filled 27,603 prescriptions in Maine during FY2008 (Table 6).

In all years but FY2005, New Hampshire had the second highest number of Maine’s PMP patients, and Massachusetts the third highest (Figure 2). Referring again to Table Map 500-5001, in FY2008, New Hampshire is home to 3,018 (0.5%) unduplicated (“unduplicated”) patients in Maine’s PMP, for whom 7,277 (0.3%)⁹ prescriptions were dispensed. Massachusetts is home to 2,966 (0.5%), with 4,740 (0.2%) prescriptions. Similarly, Florida, ranked fourth, is home to 1,812 (0.3%) unduplicated patients in FY2008, for whom 3,673 (0.2%) prescriptions were dispensed.

⁸ The totals of patients, prescribers, and prescriptions vary slightly among the separate analyses of spatial data. This is because the number of records with valid location data differs depending on whether patients, prescribers, or pharmacies are the analytical focus. For example, when analyzing the dataset of patients with valid location data, the Maine prescriptions account for 98.8% of all the prescriptions, but when analyzing the dataset of prescribers with valid location data, the Maine prescriptions account for 95.0% of all prescriptions.

⁹ The number of prescriptions for New Hampshire residents increased 26% between FY2007 and FY2008.

Locations of (Unduplicated) Prescribers: Maps 502 and 503

Maps 502 and 503 display the number of unduplicated prescribers (Map 503) and associated prescriptions (Map 502) localized by the prescriber's state. As in the maps (Appendix A) described above, darker colors indicate larger numbers of prescribers and prescriptions within a state. Interestingly, the proportion of prescribers and associated prescriptions coming from California, New York, and Florida in particular decreased noticeably between FY2005 and FY2008. Referring to Table Map 502-503, in FY2008, Maine is the address of 5,478 (29.7% of 18,444) of the unduplicated prescribers with valid location data that appear in the PMP dataset. Those prescribers are associated with 2,162,701 (95.0%) of the 2,276,321 prescription records with valid Prescriber location data. In Massachusetts, ranked second in FY2008, there are 3,377 (18.3%) unduplicated prescribers, associated with 18,745 (0.8%) prescriptions filled in Maine. Similarly, in Florida, there are 1,610 (8.7%) prescribers and 7,195 (0.3%) prescriptions filled in Maine. New Hampshire is ranked fourth with 1,602 (8.7%) prescribers and a larger number of prescriptions: 40,547 (1.8%). Thus, as expected, out-of-state prescribers each write many fewer prescriptions than prescribers from Maine.

Location of (Unduplicated) Pharmacies: Maps 504 and 505

Map 504 displays the number of prescriptions localized by the state of the pharmacies that dispensed them for Maine clients. The pattern has changed with each year. The number of states increased from four in 2007 to seven in 2008, but the number of prescriptions per state has decreased; in all states but Maine, pharmacies dispensed a total of fewer than 237 prescriptions.

Map 505 illustrates the number of unduplicated pharmacies localized by their state. The table associated with Map 504-505 in Appendix A shows that by FY2008 the other states have only one pharmacy each, except Florida with two.

Valid Location Data

Table 1 (located in the Methods section) displays the total number of unduplicated patients, prescribers, and pharmacies by fiscal year. With each of these three subsets a slightly different percentage of prescription records had valid location data. Table 2 (Methods section) shows the number of prescriptions associated with pharmacies that have valid location data. These differ slightly from the totals for prescribers and patients in FY2008. The dataset had 2,276,321 prescription records for which we had complete locations and identification numbers for prescribers. These 2,276,321 prescriptions were written by 18,444 unduplicated prescribers (e.g., individual physicians, nurses, dentists). The vast majority (95%) of the prescriptions were written by 5,478 Maine-based prescribers. However, Maine's 5,478 prescribers constitute only 29% of the 18,450 total of unduplicated prescribers in the database. Thus 71% of the unduplicated prescribers of prescriptions for controlled substances filled in Maine are in fact based in states other than Maine. This pattern reflects the following: (a) a mostly-seasonal influx of non-Maine residents who bring prescriptions from elsewhere; (b) the use by Maine residents of health care providers in other states; or (c) prescribers associated with Internet prescribing sites. In addition, (d) a small number of physician prescribers, about 10-15 at any one time (according to the Director of the Maine Board of Licensure in Medicine) are employed in Maine in temporary *locum tenens* positions, usually substituting for other physicians who are on vacation; many of these physicians have out-of-state addresses.

Similarly, in FY2008 (see PMP Map 501), the dataset had 2,339,032 prescription records for which we had complete zip code locations and identification numbers for patients. These 2,339,032 prescriptions were written for 547,650 unduplicated patients with a Maine zip code. Maine's 547,650 unduplicated patients comprise 97% of the total 562,471 unduplicated patients for whom Maine-filled prescriptions were written; 14,821 of the patients were from outside the state.

Prescribers Lacking Valid Location Data

We probed the problem of prescribers who lack valid location data, about 13% of unduplicated prescribers (see Table 3). Did this lack of data occur more with some types of prescriptions than with others? We selected four index drugs with relatively high prescription rates with which to perform a pilot test: Adderall XR Cap 20 mg and Methadone Tab 10 mg for C-II, APAP/Codeine Tab 300/30 mg for C-III, and Lorazepam Tab 1 mg for C-IV. We performed a 2 by 2 cross-tabulation using Pearson Chi-Square to test statistical significance, comparing each drug with all others in their class in terms of whether the prescriber did or did not have valid location data. Prescribers of Adderall ($p < .001$), APAP/Codeine ($p < .001$), and Lorazepam ($p < .05$) are statistically significantly more likely to have location data, whereas methadone 10 mg ($p < .001$) prescribers are statistically significantly less likely to have location data.

We also requested a preliminary analysis of the data quality for DEA numbers. GHS checked the percent invalid DEA# for all the transactions in the 3rd quarter of FY2008; 8.6% were invalid, defined as numbers that could not be found in the DEA Federal Feed or the Override table. This excluded DEA numbers for buprenorphine prescriptions, which are masked, and were all considered valid.

Although these two analyses are very preliminary, their results suggests that more analytical attention may need to be given to issues around getting complete prescriber data, particularly given that so many of the prescribers are from out-of-state.

Spatial Analysis of Prescriber Participation in the Online PMP

We focused particular attention on the distribution of prescribers who had enrolled to use the online PMP, normalized to reflect enrollment rates within Healthy Maine Partnership (HMP) areas. We tabulated the number of prescribers enrolled in 2007 and the number enrolled in 2008, according to their location. Rates were adjusted for population density, prescriber density, and prescription density and mapped (see Maps 100,109-115 and related tables in Appendix A). Map 100 is a visual key of the Healthy Maine Partnership areas.

PMP Enrollment Levels: Various Measures

PMP Map 109 compares the absolute number of prescribers enrolled in 2007, with the number enrolled in 2008, displayed as the percent increase or decrease. The number of enrollees increased in most HMP areas, the exception being the St. Croix Valley, which decreased slightly. The highest percent increase is seen in the HMP area associated with Cary Medical Center and the Healthy Peninsula HMP located in the Ellsworth-Mt.Desert Island area, both with an increase over 50%. The HMPs in the southern quarter of the state had rates around 50%.

PMP Map 110 compares the 2007 rate of enrollment per 1,000 population with the rate in 2008, mapped in HMP areas. The two maps are shown side by side. The Bangor area shows as the HMP with

the highest rate according to population density, and the Augusta-Waterville area is second highest. This pattern continues into 2008, when these two areas are joined by the Waldo County HMP. To the extent that areas of greater population density also have a greater density of prescribers, these patterns could be anticipated on the basis of population density alone. However, the Portland area south seems to have fewer enrollees in 2007 or 2008, despite its greater population density, and despite the fact that, according to Map 109, the number of enrollees had increased.

PMP Map 111 displays the percent of prescribers who are enrolled in 2008, relative to the total number of prescribers who appear in the PMP database. That is, we used the Maine prescribers of PMP drugs in each HMP area as the denominator, and the number of PMP enrollees in each HMP area as the numerator. This map represents the marketing success of the PMP, showing the percentage of the target population (providers who prescribe PMP-type controlled substances) have enrolled within each HMP area. Percentages above 50% can be seen in the HMP areas including Wiscasset (Youth Promise), Machias, Sebasticook Valley, Dover, Lincoln, and northern Aroostook County. Lower percentages are again seen in the Portland area, as well as the Bangor and Calais areas.

PMP Map 114 portrays the rate of PMP enrollees per 100,000 prescriptions by HMP area in 2008. It shows that the greatest participation, when viewed as a function of prescription density, is in the Augusta and Wiscasset areas, with northern Aroostook County and the Ellsworth area second highest.

Levels of Need for the PMP

PMP Map 112 focuses on the density of prescriptions per 100,000 population, one indication of where the need for PMP participation and potential impact is greatest. The prescription density is greatest in the Bangor area, with Waterville and Lewiston-Auburn areas second greatest. Similarly, PMP Map 115 displays the rate of prescribers per 100,000 population. Again, the Bangor area is highest, with Ellsworth and the Portland area second.

PMP Map 113 focuses on the density of controlled-substance prescribers per 100,000 prescriptions, an indication of where the potential PMP-participation numbers would be greatest, and perhaps where PMP marketing and training might have the greatest pay-off. The prescriber density is greatest in the Kittery area (York Hospital) and the Bangor and Ellsworth areas, indicating fewer prescriptions per prescriber, but relatively more prescribers to recruit. Conversely, recruiting prescribers in the Lincoln and Sebasticook areas would impact a greater proportion of prescriptions.

RESULTS: SURVEY OF LICENSED PHARMACISTS AND PRESCRIBERS

Response Rate

As of July 10, 2009, 1,352 questionnaires had been received: 203 (18.9% of distributed) completed the Pharmacist Survey, and 1,101 (20.2% of distributed) completed the Prescriber Licensee Survey. Questions in the survey focused on two aspects of the PMP, the threshold reports and the online PMP system.

Pharmacist Survey

Of the 203 pharmacists who completed the Pharmacist Survey, about half (51.7%) practice in pharmacy chains, 21.7% practice in hospitals, and 14.8% are independent (Table 9). The vast majority, 192 (94.5%) dispense controlled substances: our analysis focuses on those respondents (Table 10). Of these, 80 (41.7%) pharmacist respondents are registered to use the online PMP. (OSA listed a total of 138 enrollees at the time of this survey). Of the 80 respondents who are registered, 55 (68.7%) respondent say they are using the online PMP.

Table 9: All Pharmacists: by Practice Specialty (n=203)

Group and Practice Specialty	Number of Respondents	Percent
Chain	105	51.7%
Other: Hospital	44	21.7%
Independent	30	14.8%
Other	13	6.4%
Other: Long term care	7	3.4%
Unknown	2	1.0%
Mail Order	2	1.0%

A majority of pharmacist respondents (62.5%) have dispensed controlled substances to between 1% and 50% of their patients over the previous year (Table 10). The majority of the respondents dispense controlled substances either to 1-25% of their patients (24%) or to 26 – 50% of their patients (39%).

Table 10: All Pharmacists: Dispensing of Controlled Substances (n=203)

	Number of Respondents	Percent
Do not dispense controlled substances	11	5.5%
1%-25% of patients	48	23.6%
26%-50% of patients	79	38.9%
51% - 75% of patients	36	17.7%
76% + of patients	12	5.9%
Unknown	17	8.4%

After January 5, 2009, registrants were asked to re-register because of the rollout of a new web portal design. As of July 10, 2009, 17 pharmacists (8.4%) indicate that they have reenrolled since January 5, five of whom (2.5%) indicated that they had completed online registration with the PMP both

prior to and following January 5. Results indicate an additional 54 pharmacists (26.6%) whose status is unknown (did not answer Question 1b about status), but who had completed registration prior to January 5.

Pharmacist Respondents Who Have Not Registered to Use the PMP

Respondents who are not registered to use the PMP indicated this by responding to Question 2, “I have not registered online with the PMP to request patient history reports.” Almost two-thirds of responding pharmacists (63.0%) indicated that they are not currently enrolled with the PMP online service. Of the 128 respondents who are not currently enrolled, 60.9% had never attempted to enroll, 22.6% do not have internet access at work, 14.1% are unsure how to use the PMP system, and 11.7% commented that their own computer network problems and/or organization policy barriers precluded their registration (Table 11).

Table 11: Pharmacists Not Registered: Reasons Cited for Non-Registration with PMP
multiple choice response (n=128)

	Number of Responses	Percent
Never attempted to enroll	78	60.9%
Do not have internet access at work	29	22.6%
Unsure how to use PMP system	18	14.1%
Other: Is a hospital pharmacist, does not apply	17	13.3%
Organization policy barriers	9	7.0%
My network at work did not allow me to use PMP	6	4.7%
Unsure how I would use information about “doctor shopping	5	3.9%
Inconvenient to have timely access	4	3.1%
Do not have an email address that only I can access	4	3.1%
Other: Did not know about the PMP system	3	2.3%
Attempted to enroll but PMP crashed my computer	2	1.6%
Unsure how to use computer	2	1.6%
Forgot user name or password	1	0.8%

Pharmacist Respondents Who Have Registered But Do Not Use the PMP

Pharmacist respondents who are registered but do not use the PMP were identified by a positive response to Question 3, “I am registered and do not use the PMP to request patient history reports.” Twenty-five pharmacists responded. The most common multiple choice reasons cited for being registered but not using the PMP were not yet having the opportunity to use it (32%) followed by forgetting user name and password (28.%) (Table 12). Organizational barriers and uncertainty about how to use the system were each cited by 20% of respondents.

**Table 12: Pharmacists Registered/Do Not Use PMP:
Reasons Cited for Non-Use of PMP Service**
multiple choice response (n=25)

	Number of Responses	Percent
Enrolled but have not yet had the opportunity to use PMP	8	32.0%
Forgot user name and password	7	28.0%
Organizational Barriers	5	20.0%
Unsure how to use PMP	5	20.0%
Do not have internet access at work	3	12.0%
Do not have an email address that only I can access	3	12.0%
System design problems at the PMP's end	1	4.0%
Inconvenient to have timely access	1	4.0%

Pharmacist Respondents Who Have Registered and Use the PMP

Pharmacist respondents who were registered online with the PMP and use it were identified with their response to Question 4, “I am registered and use the PMP to request patient history reports.” Fifty-five pharmacists responded. The most common responses were that they use the service “occasionally” in order to check patient history (48.1%), monitor a current patient (67.3%), or check suspicions of doctor shopping (50.9%) (Table 13). Of the 55 respondents, 88.9% state that they use the PMP for approximately 1% to 25% of their patients.

**Table 13: Pharmacists Registered/Use PMP:
in the past year how often have you used the PMP service for the following:**

	Very Rarely/ Never	Occasionally	Usually/ Always
To check history for a new patient (<i>n=52</i>)	40.4%	48.1%	11.5%
To monitor a current patient (<i>n=55</i>)	29.1%	67.3%	3.6%
To check suspicions of “doctor shopping” (<i>n=49</i>)	24.5%	50.9%	24.5%

For the 55 pharmacists who are or have been registered, when a pharmacist finds through PMP that a patient is receiving prescriptions from multiple providers, he/she will “usually/always” look up the patient’s history in PMP (62.0%), call prescribers (52.9%), and add the information to the patient’s file (52.2%) (Table 14).

Table 14. Registered Pharmacists: in the past year how often have you taken the following actions if you find that a patient is receiving prescriptions from multiple providers:

	Very Rarely/ Never	Occasionally	Usually/ Always
Call other prescribers listed in PMP (<i>n</i> =51)	19.6%	28.2%	52.2%
Look up patient history in PMP (<i>n</i> =50)	4.3%	32.6%	63.0%
Discuss the situation with the patient (<i>n</i> =47)	29.5%	36.4%	34.1%
Call other pharmacies (<i>n</i> =50)	15.2%	50.0%	34.8%
Add this information to the patient’s file (<i>n</i> =46)	18.6%	25.6%	62.8%

When asked how the PMP has affected their practice, comments were received from 112 pharmacist respondents. The most common response (38.4%) was that the Prescription Monitoring Program was a great tool. Pharmacists used descriptors like “excellent,” “wonderful,” and “invaluable.” Of these registered user respondents, 14.3% felt the PMP had done nothing for them, 10.7% would like to have access to the program if their employers would allow, and 6.2% registered but have not yet used the PMP service.

Suggestions for improvement were received from 67 pharmacist respondents. The most common responses were: there should be better education about and awareness of the program (16.2%), the new interface was too cumbersome and logging in was difficult (16.2%), and make the information more “up-to-date” (14.7%).

Reasons for Non-Registration or Non-Use of the PMP by Pharmacists: Further Analysis

We examined pharmacy types (chain, independent, and other)¹⁰ in terms of PMP registration patterns and reasons for non-use of the PMP. We grouped the reasons respondents selected for not registering with the PMP or registering and using the PMP that could be conceivably be mitigated with training, including: inconvenient to have timely access; unsure how to use computer; unsure how to use PMP system; and unsure how I would use information about doctor shopping. We grouped two of the reasons for not registering or not using the PMP into a category that could be mitigated by design changes, including: system design problems at the PMP’s end and forgot user name or password. And we grouped the following reasons for not registering or not using the PMP into an organizational issues category: organizational policy barriers; attempted to enroll but my network did not allow me to use the PMP; do not have internet access at work; do not have an email address that only I can access.

There is no statistically significant difference among the respondents from these three types of pharmacies or in terms of whether pharmacist respondents have ever registered or re-registered, in terms of (a) whether the respondent selected organizational issues as a reason for non-use or non-registration, (b) selected training issues, or (c) selected design issues.

Selected Pharmacist Key Informant Interviews

Three key informant interviews were done with pharmacists representing chains and one independent pharmacy to help illuminate survey results. The individuals interviewed were current PMP

¹⁰ Hospital pharmacies were removed from this analysis.

users. They stress that organizations differ greatly in their policies and procedures. None of the three reported any policy barriers in their organizations regarding use of the PMP. Two mentioned that the system is not particularly fast to access, as much as 5-6 minutes per patient. Respondents commented that using the PMP system required they get out of their organization's system and onto an internet browser, go the PMP site, enter user name and password, wait for verification, enter data about the patient they are looking up, wait for the system to make matches, and then review findings, eliminating erroneous data matches if present. They say the new design beginning January 2009 is a bit faster. The second problem, and one for which they see no apparent solution, is that the data are at least two weeks old. Nevertheless they see the PMP as very necessary and helpful.

Prescriber Survey

Of the 1,101 respondents who completed the Prescriber Licensee Survey, 974 (88.5%) are considered "prescribers"--they had prescribed controlled substances to at least 1% of their patients within the previous year. Table 15 and the associated discussion presents the practice specialty frequency distribution and the reported behaviors for prescribers as one population. Following that, we have included a section that examines several of the high frequency categories as individual subgroups.

Family medicine, internal medicine, dentistry, and emergency medicine had the most respondents. Of the 156 prescribers who indicated multiple specialties, 30.1% reported a combination of Family Medicine/General Practice plus some other specialty.

Table 15: Prescribers: Participation by Practice Specialty (n=974)

Group and Practice Specialty	Respondents	Percent
Multiple specialties	156	16.1%
Family Medicine/General Practice	138	14.2%
Dentistry, General	92	9.4%
Internal Medicine	67	6.9%
Emergency Medicine	58	5.9%
Family Nurse Practitioner	54	5.5%
Pediatrics	53	5.4%
Surgery	51	5.2%
Psychiatry	47	4.8%
Orthopedics	44	4.5%
Obstetrics/Gynecology	25	2.6%
Dental Surgery	17	1.7%
Advanced Practice Nurse	17	1.7%
Other	16	1.6%
Podiatry	13	1.3%
Neurology	11	1.1%
Physical Medicine/Rehab	10	1.0%
Cardiovascular Diseases	10	1.0%
Oncology	9	0.9%
Urology	9	0.9%
Occupational Medicine	8	0.8%
Ophthalmology	7	0.7%
Osteopathic Manipulative Medicine	7	0.7%
Geriatrics	7	0.7%
Physician Assistant	6	0.6%
Other: Palliative care/Hospice	6	0.6%
Pulmonary Diseases	5	0.5%
Gastroenterology	5	0.5%
Anesthesiology	4	0.4%
Nurse Midwife	4	0.4%
Other: Rheumatology	4	0.4%
Unknown	3	0.3%
Otorhinolaryngology	3	0.3%
Radiology	3	0.3%
Other: Endocrinology	3	0.3%
Addiction Medicine	2	0.2%
Pain Management	2	0.2%
Other: Allergy/Immunology	2	0.2%
Nephrology	1	0.1%
Dermatology	1	0.1%

Of 974 prescribers, 29.9% have been in practice for 1-10 years, 27.3% for 11-20 years, and 42.8% for more than 20 years. Three-quarters of prescribers (75.2%) prescribe controlled substances to between 1% and 25% of their patients (Table 16).

Table 16: Prescribers: Prescription of Controlled Substances Over the Previous Year (n=974)

	Number of Respondents	Percent
1% - 25% of patients	732	75.2%
26% - 50% of patients	107	11.0%
51% - 75% of patients	57	5.9%
76% + of patients	56	5.7%
Unknown	22	2.3%

Of the 974 prescribers who completed a questionnaire, almost all gave additional information about their practice. A majority of prescriber respondents prescribe for at least some patients with anxiety/sleep disorders (83.8%), surgery patients (70.5%), patients with ADD/ADHD (73.9%), cancer patients (68.8%), and patients with substance abuse issues (61.1%). Table 17 presents patient type and percent of practice for those respondents who prescribe controlled substances.

Table 17: Prescribers: Percent Patients in Practice, by Category

	0%	1%-25%	26%-50%	51%-75%	76% +
Cancer patients (n=863)	31.2%	63.5%	2.2%	0.9%	2.2%
Chronic pain patients (n=872)	18.6%	64.6%	10.7%	3.8%	2.4%
Patients being treated for substance abuse (n=855)	38.9%	53.8%	4.2%	1.8%	1.3%
Patients being treated for anxiety and/or sleep disorders (n=877)	16.2%	56.1%	21.4%	4.8%	1.5%
Patients being treated for ADD/ADHD and related disorders (n=865)	26.1%	67.4%	4.7%	0.9%	0.8%
Surgery patients with post-operative pain (n=907)	29.5%	49.1%	7.4%	5.0%	9.0%

Medication Threshold Reports

The PMP sends quarterly notification reports to prescribers when threshold numbers of prescribers or pharmacies have been reached or exceeded by any of their patients, or when acetaminophen thresholds have been reached. When asked if they had received medication threshold reports, 847 prescribers responded. Of those, about half (51.9%) had received a PMP threshold notification report (Question 3), 40.9% had not, and 7.2% did not know.

Table 18 outlines actions and frequency for Prescribers who responded to Question 4, “Within the past year, how often have you taken the following actions after receiving a patient threshold notification report?” More than half of the respondent prescribers will “usually/always” add this information to the patient’s file (61.1%) but will “very rarely/never” call other prescribers listed in the threshold report (65.3%), discharge the patient from the practice (68.5%), or refer the patient to a licensed substance abuse treatment professional (59.8%). Prescribers tend to discuss the situation with the patient usually (31.3%) or occasionally (40.3%), or look up patient history in the PMP usually (29.3%) or occasionally (38.8%). About half of the respondents said they establish a controlled substances agreement usually (29.8%) or occasionally (19.2%), or conduct a substance abuse screening and brief intervention usually (18.5%) or occasionally (28.0%).

Table 18: Prescribers: In the past year how often have you taken the following actions after receiving a patient threshold notification report

	Very Rarely/ Never	Occasionally	Usually/ Always
Call other prescribers listed in the threshold report (n=504)	65.3%	29.2%	5.6%
Look up patient history in PMP (n=516)	32.0%	38.8%	29.3%
Discuss the situation with the patient (n=581)	28.4%	40.3%	31.3%
Call the pharmacist(s) (n=507)	43.2%	46.4%	10.5%
Add this information to the patient’s file (n=525)	19.6%	19.2%	61.1%
Establish a controlled substances agreement (“narcotics contract”) (n=496)	51.0%	19.2%	29.8%
Conduct a substance abuse screening and brief intervention (n=503)	53.5%	28.0%	18.5%
Refer the patient to a licensed substance abuse treatment professional (n=502)	59.8%	33.9%	6.4%
Discharge the patient from the practice (n=489)	68.5%	31.1%	0.4%

Additional clarifying comments were received from 86 Prescribers. Most commonly: the prescriber was already aware of the problem (12.7%) or would call the Primary Care Physician (7.6%); prescribing had in fact been appropriate (8.9%); the patient in the report was not part of their practice (6.3%); or, the reports arrived too late to help/patient had already been discharged (6.3%).

After January 5, 2009, registrants were asked to reset passwords as part of the rollout of a new web portal. As of July 10, 2009, a total of 134 (13.8%) Prescribers indicated that they are currently enrolled. Of those, 83 indicated that they had completed online registration with the PMP both prior to and following January 5. Results also indicate an additional 266 Prescribers (27.3%) whose status is unknown (did not answer Question 5b), but who reported completing registration prior to January 5.

Prescriber Respondents Who Have Not Registered With the PMP

Whether or not a prescriber was registered online with the PMP to request patient history reports was determined by responses to Question 6, “I have not registered online with the PMP to request patient history reports (choose all that apply).” A total of 476 Prescribers responded. Of these, 72.3% indicated that they had never attempted to enroll. Complete responses are presented in Table 19.

When asked to give “other” reasons for non-registration, 85 Prescribers responded. Of these, 36.5% did not know or had forgotten about the program and 20.0% felt they would not use it or that it did not apply to their practice. When asked to give additional clarification to PMP system design, 19 Prescribers responded. Most (15 respondents) cited login/registration problems in accessing the PMP system as the primary reason for non-registration.

Table 19: Prescribers Not Enrolled: Reasons Cited for Non-Registration with PMP
multiple choice response (n=476)

	Number of Responses	Percent
Never attempted to enroll	344	72.3%
Unsure how to use PMP system	86	18.1%
Inconvenient to have timely access	27	5.7%
Do not have an email address that only I can access	18	3.8%
Unsure how I would use information about “doctor shopping”	16	3.4%
Do not have internet access at work	15	3.1%
System design problems at the PMP’s end	15	3.1%
Attempted to enroll but PMP crashed my computer	10	2.1%
Attempted to enroll but my network at work did not allow me to use PMP	10	2.1%
Unsure how to use computer	10	2.1%
Forgot user name or password	9	1.9%
Organization policy barriers	7	1.5%

Prescriber Respondents Who Have Registered But Do Not Use PMP

We used the response to Question 7 (“I am registered and do not use the PMP to request patient history reports (choose all that apply)”) to identify prescribers who were registered online with the PMP but did not use the service. A total of 160 Prescribers responded. Of these, 39.4% had forgotten their user name and/or password, and 30.0% were unsure how to use the PMP system. See complete responses in Table 20.

When asked to give “other” reasons for not using the PMP system, 41 Prescribers responded. Almost half (41.7%) stated that the PMP did not apply to their practice or they currently have too few patients. When asked to give additional clarification to specific PMP system design issues, 28 Prescribers responded. More than three-quarters (78.6%) stated that they had password/login problems in accessing the website.

**Table 20: Prescribers Enrolled/Do Not Use the PMP:
Reasons Cited for Non-Use of PMP Service**
multiple choice response (n=160)

	Number of Responses	Percent Response
Forgot user name and password	63	39.4%
Unsure how to use PMP system	48	30.0%
Inconvenient to have timely access	40	25.0%
Enrolled but have not yet had the opportunity to use PMP	33	20.6%
System design problems at the PMP's end	26	16.2%
Do not have internet access at work	6	3.8%
Do not have an email address that only I can access	6	3.8%
Unsure how I would use information about "doctor shopping"	3	1.9%
Unsure how to use computer	2	1.2%
Organization policy barriers	0	0.0%

Prescriber Respondents Who Are Registered And Use the PMP

Among respondents to Question 8, a total of 332 Prescribers selected one or more responses under "I am registered and use the PMP to request patient history reports (choose all that apply)." Table 21 presents those Prescriber responses and their frequencies.

**Table 21: Prescribers Enrolled/Use the PMP:
In the past year, how often have you used the PMP service for the following:**

	Very Rarely/ Never	Occasionally	Usually/ Always
To check history for a new patient (<i>n=316</i>)	21.5%	44.3%	34.2%
To monitor a current patient (<i>n=323</i>)	14.6%	61.3%	24.1%
To check suspicions of "doctor shopping" (<i>n=319</i>)	13.5%	39.2%	47.3%

Almost all (81.1%) stated that they use the PMP for approximately 1% to 25% of their patients, while 9.1% have used it for between 26% and 50% of their patients, and 2.1% have used it for 76% or more of their patients.

The 332 Prescribers who are registered with the PMP and use the online service were asked how often they would take a series of actions if they found that a patient was receiving prescriptions from multiple user (Table 22). Nearly all respondents add this information to the patient's file "usually/always" (76.1%) or "occasionally" (18.9%). Most respondents choose one or more of the actions listed in Table 22, either occasionally or usually, although a majority (54.5%) said they "very rarely/never" discharge the patient from the practice. Of the 37 Prescribers who gave "Other" actions

taken, nine (24.3%) respondents stated they discontinued prescribing and six (16.2%) stated they contacted or referred back to the Primary Care Physician.

**Table 22: Prescribers Enrolled/Use the PMP:
If you find that a patient is receiving prescriptions from multiple providers, how often do you take the following actions**

	Very Rarely/ Never	Occasionally	Usually/ Always
Call other prescribers listed in PMP (<i>n=305</i>)	36.4%	43.9%	19.7%
Look up patient history in PMP (<i>n=305</i>)	7.5%	26.9%	65.6%
Discuss the situation with the patient (<i>n=325</i>)	5.3%	26.8%	67.7%
Call the pharmacist(s) (<i>n=312</i>)	30.1%	50.0%	19.9%
Add this information to the patient's file (<i>n=318</i>)	5.0%	18.9%	76.1%
Establish a controlled substances agreement ("narcotics contract") (<i>n=307</i>)	36.8%	19.9%	43.3%
Conduct a substance abuse screening and brief intervention (<i>n=305</i>)	32.1%	36.1%	31.8%
Refer the patient to a licenses substance abuse treatment professional (<i>n=302</i>)	39.1%	48.3%	12.6%
Discharge the patient from the practice (<i>n=290</i>)	54.5%	39.7%	5.9%

In Question 12, all 974 Prescribers were offered an opportunity to comment on how the PMP had affected their practice. Of 490 Prescriber respondents who commented, 64.5% gave positive responses or examples. Respondents stated the system was "helpful" and "useful." Descriptors like "great" and "wonderful" were also used. These respondents gave examples like: another good tool, good for confirming suspicions of drug abuse, excellent resource, has made practice easier, valuable information, gave peace of mind, helpful when confronting a patient, good to know the PMP was there, and it was a good resource even when it was not used often. Additionally, 4.3% did not know the PMP existed or had forgotten about it, and 3.9% either look forward to enrolling or have just enrolled. Of the remaining responses, 12.0 % stated it had no or limited effect on their practice and 6.7% stated it did not apply to their practice.

In Question 13, all 974 Prescribers were asked to share any suggestions for improving the Prescription Monitoring Program online service (respondents gave multiple responses). Of 229 Prescriber respondents who commented, the most common responses were: the new interface is "clunky," not "user-friendly," confusing, hard to navigate, and has too many steps (34.1%); login/password accessibility is confusing or frustrating (17.9%); PMP information should be more up-to-date (17.9%); more training/ information would be beneficial (10.9%); other states should be included (3.5%); and methadone clinics should be included (3.9%). Only 2.2% of respondents reported liking the new interface.

Reasons for Non-Registration or Non-Use of the PMP by Prescribers: Further Analysis

We looked at whether reasons for non-registration or non-use of the PMP could be associated specifically with lack of training, or PMP design, or respondent organization policies. We found that all three of these types of issues were significantly associated with non-registration or non-use. We also examined how years in practice might be associated, and found that those with fewer years in practice were more likely to register and use the PMP. We analyzed whether receiving a threshold report was associated with registration and use, and found that it is.

Training Issues

We grouped the reasons for not registering with the PMP or registering and using the PMP that could be mitigated with training, including: inconvenient to have timely access; unsure how to use computer; unsure how to use PMP system; and unsure how I would use information about doctor shopping. Respondents who had not registered or were not using the PMP were significantly more likely ($p < .05$) to cite training issues as the reason for not registering. Specifically 16% of ever-registered respondents compared with 21% of non-registered respondents cited training issues. When we compared those who re-registered with those who only said they registered in the first round, we found that that the latter group (the ones who did not say they had re-registered) was significantly ($p=.003$) more likely to cite training issues as a reason for not using the PMP: 16% compared with 4%.

Design Issues

We grouped two of the reasons for not registering or not using the PMP into a category that could be mitigated by design changes, including: system design problems at the PMP's end and forgot user name or password. Respondents who had never registered were significantly less likely ($p < .001$) to cite design issues than those who had been registered: 4% versus 18% respectively. When we compared those who had re-registered with those who only said they had registered earlier than January 5 this year, the latter group was more likely to cite design issues than those who had re-registered: 19% compared with 5%.

Organizational Issues

We grouped the following reasons for not registering or not using the PMP into an organizational issues category: organizational policy barriers; attempted to enroll but my network did not allow me to use the PMP; do not have internet access at work; do not have an email address that only I can access. Respondents who had ever registered were significantly less likely ($p < .005$) to cite organizational issues at work as a reason for non-use. Specifically, 3% of ever-registered compared to 7% of never registered respondents cited organization issues as the reason.

Years in Practice

Respondents with more years in practice are significantly ($p < .001$) less likely to have registered or to use the PMP. Whereas 40% of respondents who had been in practice 1-10 years were never registered, 50% of those in practice 11-20 years were never registered, and 55% in practice over 20 years were never registered.

Receiving a Threshold Report

There were 346 respondents who had not received a threshold report and 451 who had. Those who had received a threshold report were significantly ($p < .001$) more likely to register than those who had not: 73%

compared to 27%. Those who had received a threshold report were also significantly ($p < .05$) more likely to have re-registered after January 5, 27% compared to 16%.

Registration and Use By Specialty Category

Of the 1,101 total Prescriber Licensee Survey respondents, 127 (11.5%) do not write scripts for controlled substances (“Non-Prescribers”), and 974 respondents have prescribed controlled substances to at least 1% of their patients over the past year (“Prescribers”). Categories for Prescriber licensee specialties were broken out for further examination: Primary Care, Nursing, Surgical, Dental, Emergency Medicine, and “All Others.” Unfortunately, although the “all others” category includes specialties that are often involved with controlled substances (e.g., pain, psychiatry) there were not enough respondents in individual specialties to present them separately. In comparing differences in registration and use of the PMP, Table 23 presents the distribution of questionnaire respondents by specialty and by prescriber type. Note that the frequency distributions in the four columns to the right are within the column. For example, the number of Primary Care respondents who are not registered is 149, which is 31.4% of the 475 respondent prescribers who are not registered, slightly fewer than the 34.5% of prescribers in the respondent population as a whole. Respondents in Primary Care, Nursing, and Emergency Medicine are more likely to be registered than would be expected on the basis of the specialty frequency distribution among all respondent prescribers.

Using the raw number frequencies provided in Table 23, we calculated the percentages within each specialty category of controlled substance prescribers that are registered: 187 (55.7%) out of 336 in Primary Care; 77 of 125 (61.6%) in Nursing; 17 (31.5%) out of 54 Surgical; 39 (33.1%) out of 118 Dental; and 54 (83.1%) out of 65 Emergency Medicine. Of those who have registered, the percent of those who use the PMP are as follows: Primary Care 68.6%; Nursing 68.3%; Surgical 53.3%; Dental 55.8%; Emergency Medicine 79.3%. Emergency Medicine respondents are more likely to be registered users than any other category, and years in practice does not make any statistical difference here.

Among Primary Care respondent prescribers, more than half (55.7%) have registered. 31% have never attempted to register, and 9.5% are unsure how to use the PMP. There is no statistically significant difference in terms of years in practice. Of the 70 prescribers who offered suggestions, nearly all suggested fixing login/password and accessibility problems (program is described as cumbersome), and 7 recommended having real-time data.

Among Nursing respondent prescribers, more than half (61.6%) have registered, 21.6% have never attempted to register, and 12.0% are unsure how to use the PMP. There is no significant difference in terms of years in practice. Of the 52 prescribers who offered comments on how the PMP had affected their practice, nearly all provided positive statements. Of the 38 who provided suggestions for PMP improvement, 18 commented on fixing login/access problems, and 5 stated real-time information would be helpful.

Surgical and Dental specialties are less likely to be registered PMP users. The most common reason is that they never attempted to enroll or are unsure how to use the PMP. Additionally, Surgical specialties comment on timely access, and Dental specialties comment on unavailability of email or internet.

Surgical specialties prescribe controlled substances to more patients (35.5% prescribe to more than half of their patients) than other specialties, but are least likely to use the PMP. More than half of

them have never attempted to enroll, 9.3% are unsure how to use the PMP, and 5.6% say it is inconvenient to have timely access. There is no statistically significant difference in PMP use in terms of years in practice.

Most (66.9%) of Dental specialty respondents have not registered. More than half (53.4%) have never attempted to enroll, 6.8% do not have an email address only they can access, 6.8% are unsure how to use the PMP, and 5.9% do not have internet access at work. There is no statistically significant difference in terms of years in practice.

Table 23: All Prescriber Survey Respondents: Distribution of Respondents by Specialty Categories (n=1,101)

Specialty Categories	Total Prescribers	Percent of Total	Non-Prescribers Number/Percent	“Prescribers”		
				Not Registered with PMP Number/Percent	Registered/ Do Not Use PMP Number/Percent	Registered/ Use PMP Number/Percent
Primary Care*	336	34.5%	19 (15.0%)	149 (31.4%)	59 (36.9%)	129 (38.8%)
Nursing*	125	14.9%	20 (15.7%)	48 (10.1%)	26 (16.2%)	56 (16.9%)
Surgical	54	5.5%	2 (2.4%)	37 (7.8%)	7 (4.4%)	8 (2.4%)
Dental*	118	12.1%	7 (5.5%)	79 (16.6%)	19 (11.9%)	24 (7.2%)
Emergency Medicine	65	6.7%	0 (0.0%)	11 (2.3%)	12 (7.5%)	46 (13.9%)
All Others	273	28.0%	79 (62.2%)	151 (31.8%)	37 (23.1%)	69 (20.8%)
Unknown	3	0.3%	---	---	---	---
Total Responses	974	100%	127 (100.0%)	475 (100.0%)	160 (100.0%)	332 (100.0%)

Note: Number of “Prescribers” plus “Non-Prescribers” may be more than Total Responses within a specialty category due to overlap in responses. (e.g., a responder who was *previously* registered with the PMP may answer Q6 about current non-enrollment as well as Q8 about previous use of PMP.

*Primary Care Category: Family Medicine/General Practice, Internal Medicine, Obstetrics/Gynecology, Pediatrics.

*Nursing Category: Advanced Practice Nurse, Family Nurse Practitioner, Nurse Anesthetist, and Nurse Midwife.

*Dental Category: General and Surgical Dentists

Non-Prescribers by Specialty Category

Of the 1,101 Prescriber Licensee Survey respondents, 127 (11.5%) do not prescribe controlled substances (“Non-Prescribers”). Within each specialty group: 2 (3.6%) of Surgical, 7 (5.6%) of Dental, 19 (5.3%) of Primary Care, 20 (13.8%) of Nursing, and 79 (22.4%) of “All Others” do not write scripts for controlled substances. All Emergency Medicine respondents have prescribed to at least 1% of their patients over the previous year.

Prescriber Registration Types by Specialty Category

Table 24 provides the frequency with which Prescribers within each specialty category write scripts for controlled substances. Most surgeons (77.9%) tend to prescribe controlled substances for more than 25% of their patients. Most primary care specialists (87.5%), on the other hand, report prescribing controlled substances for only 1%-25% of their patients.

Table 24: Prescribers: Dispensing of Controlled Substances Over the Previous Year

	0% of patients	1%-25% of patients	26%-50% of patients	51%-75% of patients	76% + of patients
Primary Care (<i>n</i> =330)	-	87.5%	7.7%	1.5%	1.5%
Nursing (<i>n</i> =125)	-	76.0%	10.4%	8.0%	5.6%
Surgical (<i>n</i> =53)	-	32.1%	26.4%	24.5%	11.0%
Emergency Medicine (<i>n</i> =63)	-	74.6%	15.9%	9.5%	0.0%
Dental (<i>n</i> =115)	-	86.1%	4.3%	3.5%	6.1%
All Others (<i>n</i> =264)	-	67.8%	14.4%	7.2%	10.6%

Respondents were asked whether or not they had received a PMP threshold notification report within the previous year (Table 25). Emergency medicine respondents (74.6%) were most likely to say they had received a report while Dental specialty respondents (35.1%) were least likely.

Table 25: Prescribers: Have you received a patient threshold report in the past year

	Yes	No	Don't Know
Primary Care (<i>n</i> =332)	54.2%	37.7%	8.1%
Nursing (<i>n</i> =122)	45.1%	50.0%	4.9%
Surgical (<i>n</i> =52)	63.5%	26.9%	9.6%
Emergency Medicine (<i>n</i> =63)	74.6%	19.0%	6.3%
Dental (<i>n</i> =114)	35.1%	60.5%	4.4%
All Others (<i>n</i> =262)	52.3%	39.7%	8.0%

Prescriber respondents were asked if they are registered and use the PMP online service. Responses are presented below in three groups: “Have not registered with the PMP,” “Registered and do not use the PMP,” and “Registered and use the PMP.” Table 25 above presents distribution of responses for these three categories.

Prescribers Who Are Not Registered With the PMP, by Specialty Category

Of Prescriber respondents who write scripts for controlled substances, 149 (44.3%) of primary care, 48 (38.4%) of nursing, 37 (68.5%) of surgical specialties, 11 (16.9%) of emergency medicine, 79 (66.9%) of dental, and 151 (55.3%) of “All Other” respondents gave reasons for non-registration with the PMP. As presented in Table 26, those in Surgical specialty were more likely (83.8%) to say they had never attempted to enroll compared to those in Emergency medicine (36.4%). Those in Nursing specialties (31.3%) and Emergency Medicine (27.3%) were more likely to state they were unsure how to use PMP as a reason for non-registration than those in Surgical (13.5%) or Dental (10.1%) specialties.

**Table 26: Prescribers Not Enrolled:
Reasons Cited for Non-Registration with PMP, by Specialty (multiple choice)**

	Primary Care <i>n= 149</i>	Nursing <i>n=48</i>	Surgical <i>n=37</i>	Emergency Medicine <i>n=11</i>	Dental <i>n=79</i>	All Others <i>n=151</i>
Have not attempted to enroll	69.8%	56.3%	83.8%	36.4%	76.7%	76.2%
Attempted to enroll but PMP crashed my computer	2.0%	2.1%	0%	18.2%	1.3%	2.0%
Attempted to enroll but my network at work did not allow me to use PMP	0.7%	10.4%	0%	9.1%	0%	2.0%
Organization policy barriers	0.7%	0%	5.4%	9.1%	2.5%	0.7%
System design problems at the PMPs end	4.7%	2.1%	0.0%	27.3%	1.3%	2.0%
Forgot user name or password	2.7%	2.1%	0.0%	0.0%	1.3%	2.0%
Inconvenient to have timely access	5.4%	4.2%	8.1%	18.2%	7.6%	4.0%
Unsure how to use computer	2.0%	0%	0%	9.1%	3.8%	2.0%
Do not have internet access at work	2.0%	2.1%	0%	0%	8.9%	2.6%
Do not have an email address that only I can access	3.4%	4.2%	2.7%	0.0%	10.1%	1.3%
Unsure how to use PMP	21.5%	31.3%	13.5%	27.3%	10.1%	15.2%
Unsure how I would use information about “doctor shopping”	1.3%	2.1%	5.4%	0%	5.1%	4.6%

Prescribers Who Are Registered With the PMP But Do Not Use It, by Specialty Category

Of Prescribers, 59 (17.6%) of primary care, 26 (20.8%) of nursing, 7 (13.0%) of surgical specialties, 12 (18.5%) of emergency medicine, 19 (16.1%) of dental, and 37 (13.5%) of “All Other” Prescribers cited reasons for being registered but not using the PMP.

Reasons cited by enrolled Prescribers for not using the online service are presented in Table 27. The most common reasons cited by 52.5% of Primary Care and 58.3% of Emergency Medicine specialties were “forgot user name or password.” This reason is also relatively high in frequency among Nursing (28.5%) and Dental (26.3%) categories. For Surgical specialties (42.9%) and Emergency Medicine (41.7%) the most common reason was “inconvenient to have timely access.” This reason is also relatively high in frequency for the Nursing category (34.6%). For Dental specialties, (36.8%) it was “enrolled but have not yet had the chance to use the PMP. Of the 25 respondents who gave qualitative comments to expand on “system design problems at the PMPs end,” 76.0% cited login or access problems as the reason for not using the PMP service.

**Table 27: Prescribers Enrolled/Do Not Use PMP:
Reasons Cited for Non-use of PMP, by Specialty (multiple choice)**

	Primary Care <i>n</i> = 59	Nursing <i>n</i> = 26	Surgical <i>n</i> = 7	Emergency Medicine <i>n</i> = 12	Dental <i>n</i> = 19	All Others <i>n</i> = 37
Organization policy barriers	0%	0%	0%	0%	0%	0%
Do not have internet access at work	0%	3.8%	0%	0%	15.8%	5.4%
Do not have an email address that only I can access	3.4%	7.7%	0%	0%	5.3%	2.7%
System design problems at the PMPs end	20.3%	7.7%	0%	25.0%	31.6%	8.1%
Forgot user name or password	52.5%	38.5%	14.3%	58.3%	26.3%	24.3%
Inconvenient to have timely access	20.3%	34.6%	42.9%	41.7%	21.1%	18.9%
Unsure how to use computer	1.7%	0%	0%	0%	5.3%	0%
Unsure how to use the PMP system	25.4%	38.5%	0%	16.7%	10.5%	51.4%
Unsure how I would use information about “doctor shopping”	1.7%	3.8%	11.3%	0%	0%	0%
Enrolled but have not yet had the opportunity to use PMP	5.1%	30.8%	28.6%	0%	36.8%	35.1%

Prescribers Who Are Registered With the PMP And Use It, by Specialty Category

Whether or not a prescriber was registered with the PMP and uses this online service was determined by responses to Question 8, “I am registered and use the PMP to request patient history reports (choose all that apply).” Details about the frequency of on-line PMP use were provided by 129 (38.4%) of Primary Care, 56 (44.8%) of Nursing, 8 (14.8%) of Surgical specialties, 46 (70.8%) of Emergency Medicine, 24 (20.3%) of Dental specialties, and 69 (25.3%) of “All Other” respondents (see Tables 28-30). A substantial proportion of Nursing (44.4%), Emergency Medicine (45.0%), and Primary Care (36.5%) respondents report “usually/always” using it to check history for a new patient, whereas fewer of those in the Surgical (25.0%) and Dental (0%) specialties do so.

**Table 28: Prescribers Enrolled/Use the PMP:
How often have you used the PMP to check history for a new patient**

	Very Rare/Never	Occasionally	Usually/ Always
Primary Care (<i>n</i> = 126)	17.5%	46.0%	36.5%
Nursing (<i>n</i> = 54)	18.5%	37.0%	44.4%
Surgical (<i>n</i> = 8)	50.0%	25.0%	25.0%
Emergency Medicine (<i>n</i> = 40)	5.0%	50.0%	45.0%
Dental (<i>n</i> = 23)	60.9%	39.1%	0%
All Others (<i>n</i> = 65)	24.6%	47.7%	27.7%

**Table 29: Prescribers Enrolled/Use the PMP:
How often have you used the PMP to monitor a current patient**

	Very Rare/Never	Occasionally	Usually/ Always
Primary Care (<i>n=129</i>)	7.0%	66.7%	26.4%
Nursing (<i>n=56</i>)	14.3%	50.0%	35.7%
Surgical (<i>n=8</i>)	37.5%	50.0%	12.5%
Emergency Medicine (<i>n=40</i>)	32.5%	40.0%	27.5%
Dental (<i>n=23</i>)	34.8%	60.9%	4.3%
All Others (<i>n=67</i>)	9.0%	74.6%	16.4%

**Table 30: Prescribers Enrolled/Use the PMP:
How often have you used the PMP to check suspicions of “doctor shopping”**

	Very Rare/Never	Occasionally	Usually/ Always
Primary Care (<i>n=127</i>)	11.0%	40.2%	48.8%
Nursing (<i>n=55</i>)	10.9%	34.5%	54.5%
Surgical (<i>n=8</i>)	37.5%	37.5%	25.0%
Emergency Medicine (<i>n=42</i>)	4.8%	31.0%	64.3%
Dental (<i>n=22</i>)	36.4%	36.4%	27.3%
All Others (<i>n=65</i>)	15.4%	47.7%	36.9%

Most of the PMP users report occasional use, rather than routine use for current patients (Table 33). Respondents in the Primary Care (48.8%), Nursing (54.5%) and Emergency Medicine (64.3%) are likely to use the PMP “usually/always” to check suspicions of “doctor shopping,” although fewer respondents in the Dental (25.0%) and Surgical (25.0%) specialties do (Table 34). Most PMP users in all specialties report they use the system for “1% - 25%” of their patients (Table 35).

**Table 31: Prescribers Enrolled/Use the PMP:
Within the past year, for approximately what percent of your patients have you used the PMP service?**

	0% of patients	1%-25% of patients	26%-50% of patients	51%-75% of patients	76% + of patients
Primary Care (<i>n=127</i>)	0.8%	92.1%	5.5%	0.8%	0.8%
Nursing (<i>n=54</i>)	7.4%	74.1%	11.1%	1.9%	5.6%
Surgical (<i>n=8</i>)	12.5%	62.5%	25.0%	0%	0%
Emergency Medicine (<i>n=45</i>)	0%	84.4%	15.6%	0%	0%
Dental (<i>n=23</i>)	17.4%	78.3%	4.3%	0%	0%
All Others (<i>n=67</i>)	3.0%	79.1%	11.9%	1.5%	4.5%

332 on-line PMP users responded to the question about actions taken as a result of PMP threshold report information that their patient is “receiving prescriptions from multiple providers. Tables 32-40 present their responses by practice specialty.

1. More prescribers in the Primary Care and Nursing specialties are likely to “occasionally” or “usually/always” call other prescribers compared to Surgical, Emergency Medicine, or Dental specialties (Table 32).

Table 32: Prescribers Enrolled/Use the PMP: If you find that a patient is receiving prescriptions from multiple providers, how often do you... Call other Prescribers Listed in the PMP

	Very Rare/Never	Occasionally	Usually/ Always
Primary Care (<i>n</i> =118)	29.7%	44.1%	26.3%
Nursing (<i>n</i> =49)	30.6%	51.0%	18.4%
Surgical (<i>n</i> =8)	50.0%	50.0%	0%
Emergency Medicine (<i>n</i> =40)	60.0%	35.0%	5.0%
Dental (<i>n</i> =20)	60.0%	25.0%	15.0%
All Others (<i>n</i> =62)	25.8%	53.2%	21.0%

2. While a majority of surgical specialty respondents (62.0%) will look up a patient history in PMP “occasionally,” respondents in other specialties say they “usually/always” do so (range: 62.1% to 78.4%) (Table 33).

Table 33: Prescribers Enrolled/Use the PMP: If you find that a patient is receiving prescriptions from multiple providers, how often do you... Look up Patient History in PMP

	Very Rare/Never	Occasionally	Usually/ Always
Primary Care (<i>n</i> =120)	4.2%	30.0%	65.8%
Nursing (<i>n</i> =51)	7.8%	13.7%	78.4%
Surgical (<i>n</i> =8)	12.5%	62.5%	25.0%
Emergency Medicine (<i>n</i> =40)	7.5%	27.5%	65.0%
Dental (<i>n</i> =20)	15.0%	15.0%	70.0%
All Others (<i>n</i> =58)	8.6%	29.3%	62.1%

3. More respondents in the Nursing (80.0%) and Primary Care (75.2%) specialties “usually/always” discuss the situation with the patient compared with Dental specialties (30.0%) (Table 34).

Table 34: Prescribers Enrolled/Use the PMP: If you find that a patient is receiving prescriptions from multiple providers, how often do you... Discuss the Situation with the Patient

	Very Rare/Never	Occasionally	Usually/ Always
Primary Care (<i>n</i> =125)	3.2%	21.6%	75.2%
Nursing (<i>n</i> =55)	3.6%	16.4%	80.0%
Surgical (<i>n</i> =8)	12.5%	37.5%	50.0%
Emergency Medicine (<i>n</i> =44)	4.5%	43.2%	52.3%
Dental (<i>n</i> =20)	30.0%	40.0%	30.0%
All Others (<i>n</i> =65)	3.1%	29.2%	67.7%

4. Most respondents in the Primary Care (74.8%) and Nursing (82.7%) categories say they either “occasionally” or “usually/always” call the pharmacist, whereas fewer in Surgical (57.2%), Dental (55.0%), or Emergency Medicine (58.5%) specialties do (Table 35).

Table 35: Prescribers Enrolled/Use the PMP: If you find that a patient is receiving prescriptions from multiple providers, how often do you... Call the Pharmacist(s)

	Very Rare/Never	Occasionally	Usually/ Always
Primary Care (<i>n</i> =123)	25.2%	56.1%	18.7%
Nursing (<i>n</i> =52)	17.3%	51.9%	30.8%
Surgical (<i>n</i> =7)	42.9%	42.9%	14.3%
Emergency Medicine (<i>n</i> =41)	58.5%	34.1%	7.3%
Dental (<i>n</i> =20)	45.0%	20.0%	35.0%
All Others (<i>n</i> =61)	29.5%	54.1%	16.4%

5. Primary Care, Nursing, and Surgical specialists are much more likely to add a threshold report to the patient’s file (Table 36).

Table 36: Prescribers Enrolled/Use the PMP: If you find that a patient is receiving prescriptions from multiple providers, how often do you... Add this Information to the Patient’s File

	Very Rare/Never	Occasionally	Usually/ Always
Primary Care (<i>n</i> =124)	0.8%	14.5%	84.7%
Nursing (<i>n</i> =51)	3.9%	11.8%	84.3%
Surgical (<i>n</i> =8)	0%	25.0%	75.0%
Emergency Medicine (<i>n</i> =42)	14.3%	42.9%	42.9%
Dental (<i>n</i> =20)	25.0%	20.0%	55.0%
All Others (<i>n</i> =65)	1.5%	16.9%	81.5%

6. A majority of respondents in the Primary Care (62.5%) and Nursing (64.7%) specialties report they “usually/always” establish a controlled substances agreement with a patient who is receiving prescriptions from multiple providers, whereas Dental (100.0%) and Emergency Medicine (95.1%) specialties “very rarely/never” do so (Table 37).

Table 37: Prescribers Enrolled/Use the PMP: If you find that a patient is receiving prescriptions from multiple providers, how often do you... Establish a Controlled Substances Agreement

	Very Rare/Never	Occasionally	Usually/Always
Primary Care (<i>n</i> =120)	12.5%	25.0%	62.5%
Nursing (<i>n</i> =51)	11.8%	23.5%	64.7%
Surgical (<i>n</i> =7)	57.1%	28.6%	14.3%
Emergency Medicine (<i>n</i> =41)	95.1%	2.4%	2.4%
Dental (<i>n</i> =19)	100.0%	0%	0%
All Others (<i>n</i> =61)	42.6%	24.6%	32.8%

7. Not surprisingly, many more respondents in the Primary Care (81.6%) and Nursing (89.8%) specialties conduct a substance abuse screening and intervention compared to Surgical (14.3%) or Dental (5.3%) specialties (Table 38). Similarly, more Primary Care (68.6%) and Nursing (82.0%) respondents refer a patient to a licensed substance abuse treatment professional (Table 39).

Table 38: Prescribers Enrolled/Use the PMP: If you find that a patient is receiving prescriptions from multiple providers, how often do you... Conduct a Substance Abuse Screening and Brief Intervention

	Very Rare/Never	Occasionally	Usually/Always
Primary Care (<i>n</i> =119)	18.5%	42.9%	38.7%
Nursing (<i>n</i> =49)	10.2%	46.9%	42.9%
Surgical (<i>n</i> =7)	95.7%	14.3%	0%
Emergency Medicine (<i>n</i> =31)	50.0%	35.7%	14.3%
Dental (<i>n</i> =18)	94.7%	5.3%	0%
All Others (<i>n</i> =59)	34.4%	27.9%	37.7%

**Table 39: Prescribers Enrolled/Use the PMP: If you find that a patient is receiving prescriptions from multiple providers, how often do you...
Refer the Patient to a Licensed Substance Abuse Treatment Professional**

	Very Rare/Never	Occasionally	Usually/ Always
Primary Care (<i>n=121</i>)	31.4%	56.2%	12.4%
Nursing (<i>n=50</i>)	18.0%	54.0%	28.0%
Surgical (<i>n=7</i>)	57.1%	28.6%	14.3%
Emergency Medicine (<i>n=41</i>)	56.1%	39.0%	4.9%
Dental (<i>n=19</i>)	94.7%	5.3%	0%
All Others (<i>n=56</i>)	39.3%	51.8%	8.9%

8. Most respondents in Emergency Medicine (93.5%) and Dental (77.8%) specialties will “very rarely/never” discharge the patient from their practice, while more respondents in other specialties reported “very rarely” or “occasionally” doing so (Table 40).

**Table 40: Prescribers Enrolled/Use the PMP: If you find that a patient is receiving prescriptions from multiple providers, how often do you...
Discharge the Patient from the Practice**

	Very Rare/Never	Occasionally	Usually/ Always
Primary Care (<i>n=120</i>)	43.3%	50.0%	6.7%
Nursing (<i>n=46</i>)	41.3%	41.3%	17.4%
Surgical (<i>n=8</i>)	62.5%	37.8%	0%
Emergency Medicine (<i>n=31</i>)	93.5%	6.5%	0%
Dental (<i>n=18</i>)	77.8%	16.7%	5.6%
All Others (<i>n=59</i>)	59.3%	40.7%	0%

CONCLUSIONS AND RECOMMENDATIONS

APPENDIX A

MAPS AND ASSOCIATED TABLES

PMP MAP 100: HEALTHY MAINE PARTNERSHIPS

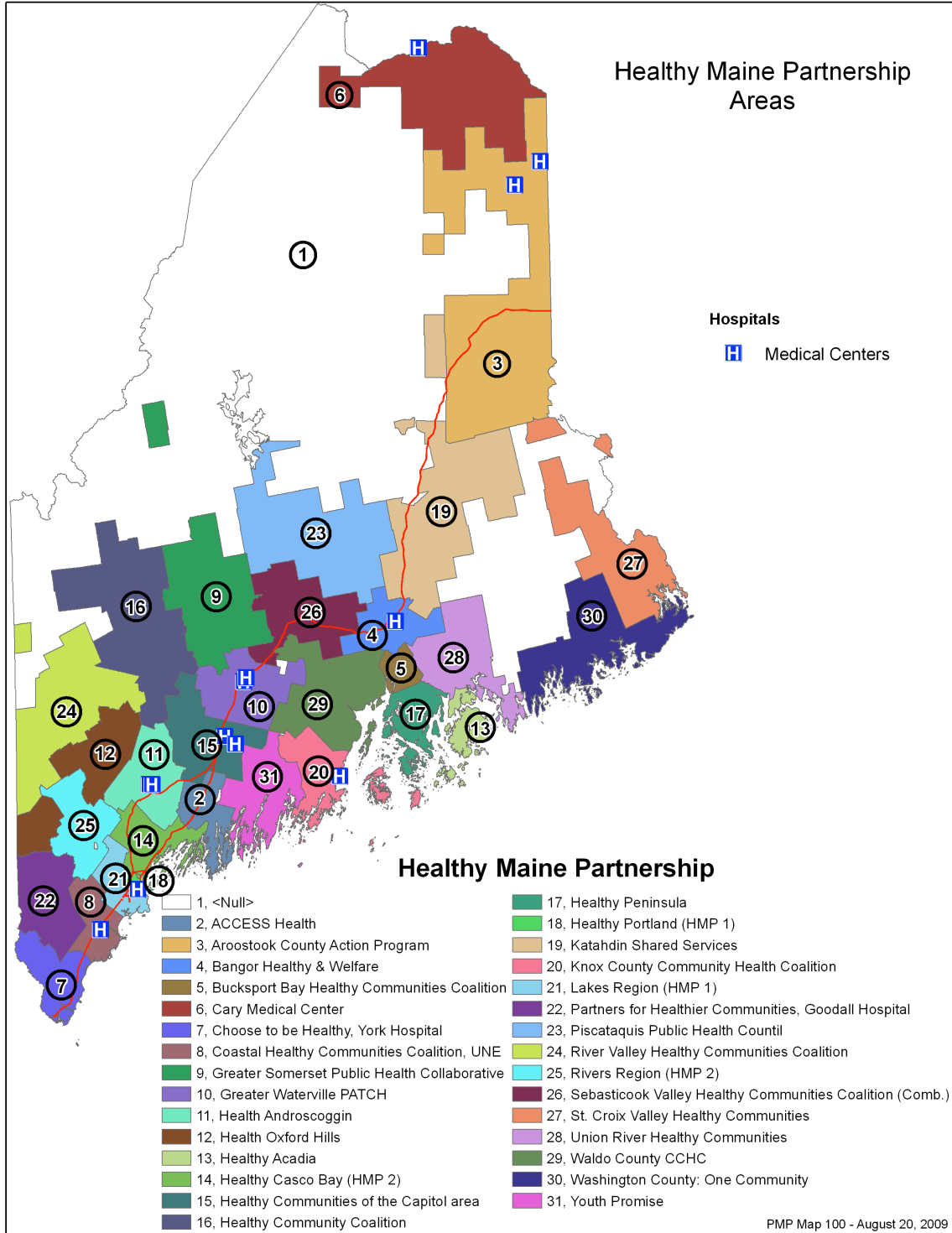


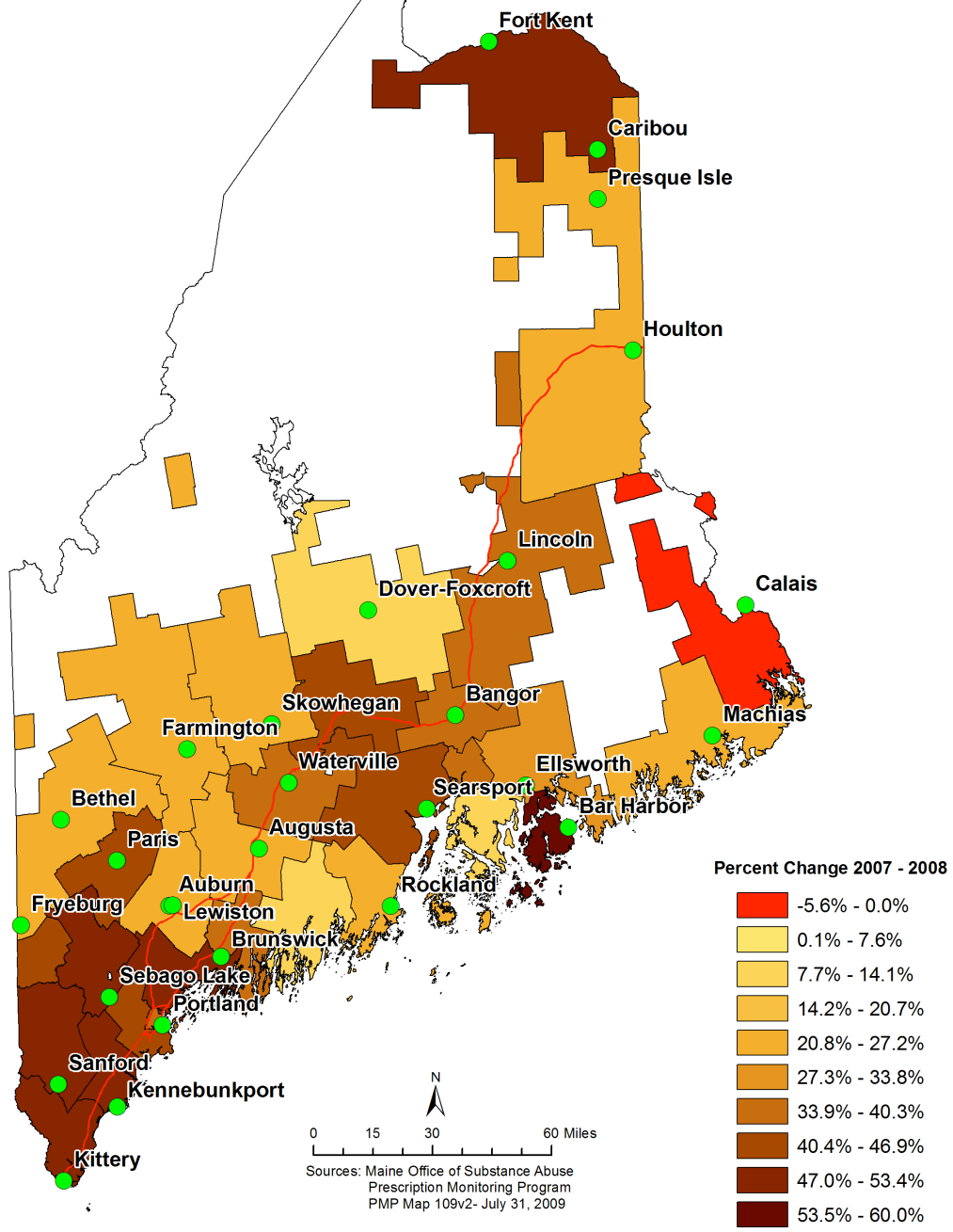
Table Map 100

Medical Center Names

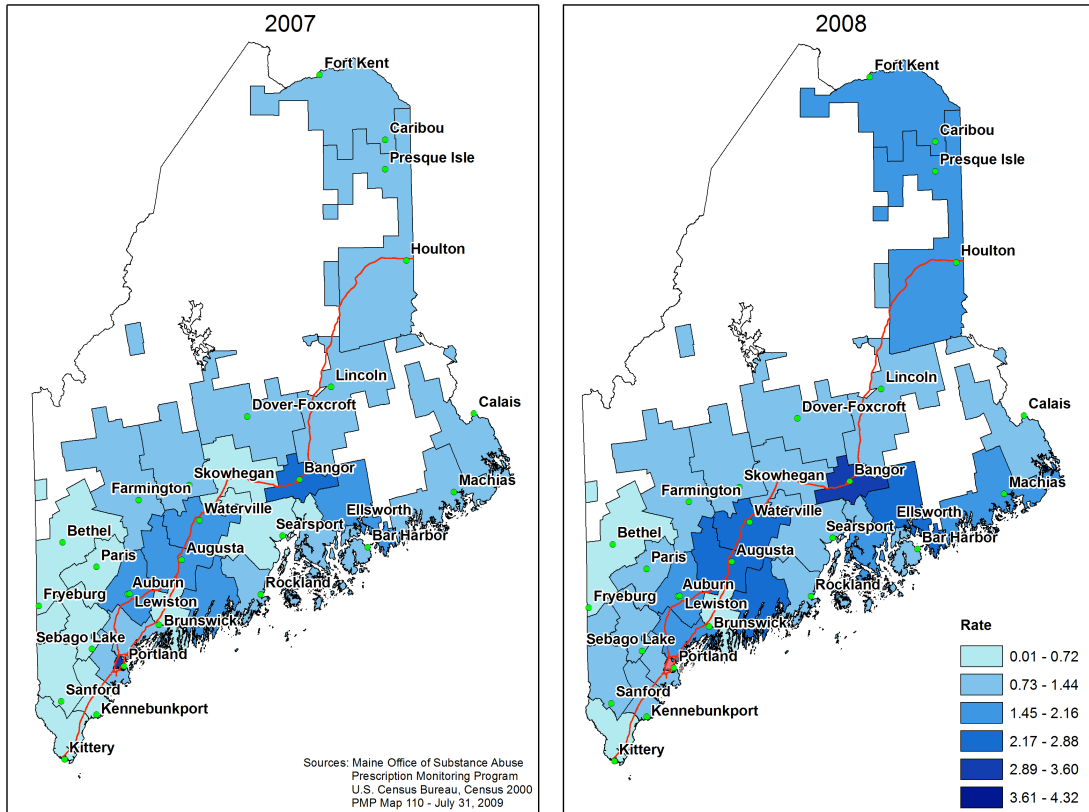
- ✓ AROOSTOOK MEDICAL CENTER - COMMUNITY GENERAL DIVISION, FORT FAIRFIELD
- ✓ AROOSTOOK MEDICAL CENTER, PRESQUE ISLE
- ✓ CENTRAL MAINE MEDICAL CENTER, LEWISTON
- ✓ EASTERN MAINE MEDICAL CENTER, BANGOR
- ✓ MAINE MEDICAL CENTER, PORTLAND
- ✓ MAINEGENERAL MEDICAL CENTER SETON DIVISION, WATERVILLE
- ✓ MAINEGENERAL MEDICAL CENTER THAYER DIVISION, WATERVILLE
- ✓ MAINEGENERAL MEDICAL CENTER, AUGUSTA
- ✓ NORTHERN MAINE MEDICAL CENTER, FORT KENT
- ✓ PENOBSCOT BAY MEDICAL CENTER, ROCKPORT
- ✓ SAINT MARYS REGIONAL MEDICAL CENTER, LEWISTON
- ✓ SOUTHERN MAINE MEDICAL CENTER, BIDDEFORD
- ✓ TOGUS VETERANS ADMINISTRATION MEDICAL CENTER, AUGUSTA

ID#	Healthy Maine Partnership	Lead Agency
1	Unincorporated of Unenrolled	
2	ACCESS Health	Mid Coast Hospital
3	Aroostook County Action Program	Aroostook County Action Program
4	Bangor Healthy & Welfare	Bangor Health & Welfare
5	Bucksport Bay Healthy Communities Coalition	Town of Bucksport
6	Cary Medical Center	Cary Medical Center
7	Choose to be Healthy, York Hospital	York Hospital
8	Coastal Healthy Communities Coalition, UNE	University of New England
9	Greater Somerset Public Health Collaborative	Redington-Fairview General Hospital
10	Greater Waterville PATCH	Greater Waterville PATCH
11	Health Androscoggin	Central Maine Community Health Corp.
12	Health Oxford Hills	Western Maine Health
13	Healthy Acadia	Acadia Community Association
14	Healthy Casco Bay (HMP 2)	City of Portland
15	Healthy Communities of the Capitol area	Health Communities of the Capitol area
16	Healthy Community Coalition	Franklin Community Health Network
17	Healthy Peninsula	Child and Family Opportunities
18	Healthy Portland (HMP 1)	City of Portland
19	Katahdin Shared Services	Katahdin Shared Services
20	Knox County Community Health Coalition	Penobscot Bay YMCA
21	Lakes Region (HMP 1)	People's Regional Opportunity Program
22	Partners for Healthier Communities, Goodall Hospital	Goodall Hospital, Inc.
23	Piscataquis Public Health Council	Mayo Regional Hospital
24	River Valley Healthy Communities Coalition	River Valley Healthy Communities Coalition
25	Rivers Region (HMP 2)	People's Regional Opportunity Program
26	Sebasticook Valley Healthy Communities Coalition (Comb.)	Sebasticook Valley Hospital
27	St. Croix Valley Healthy Communities	Downeast Health Services
28	Union River Healthy Communities	Downeast Health Services
29	Waldo County CCHC	Waldo County General Hospital
30	Washington County: One Community	Washington County
31	Youth Promise	Youth Promise

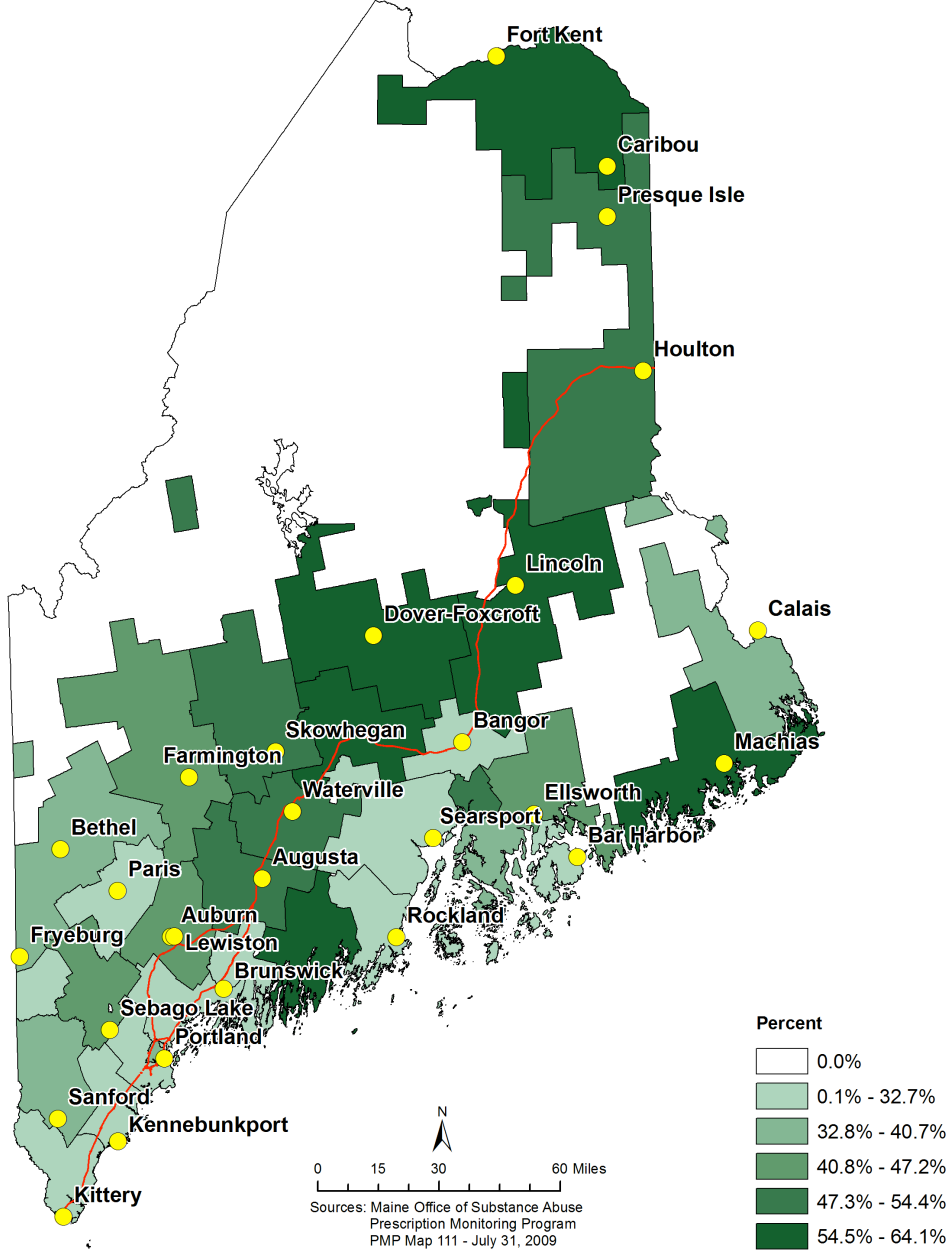
**PMP Map109: Percent Change in Number of On-Line PMP Participants
by Healthy Maine Partnership Areas
2007 to 2008**



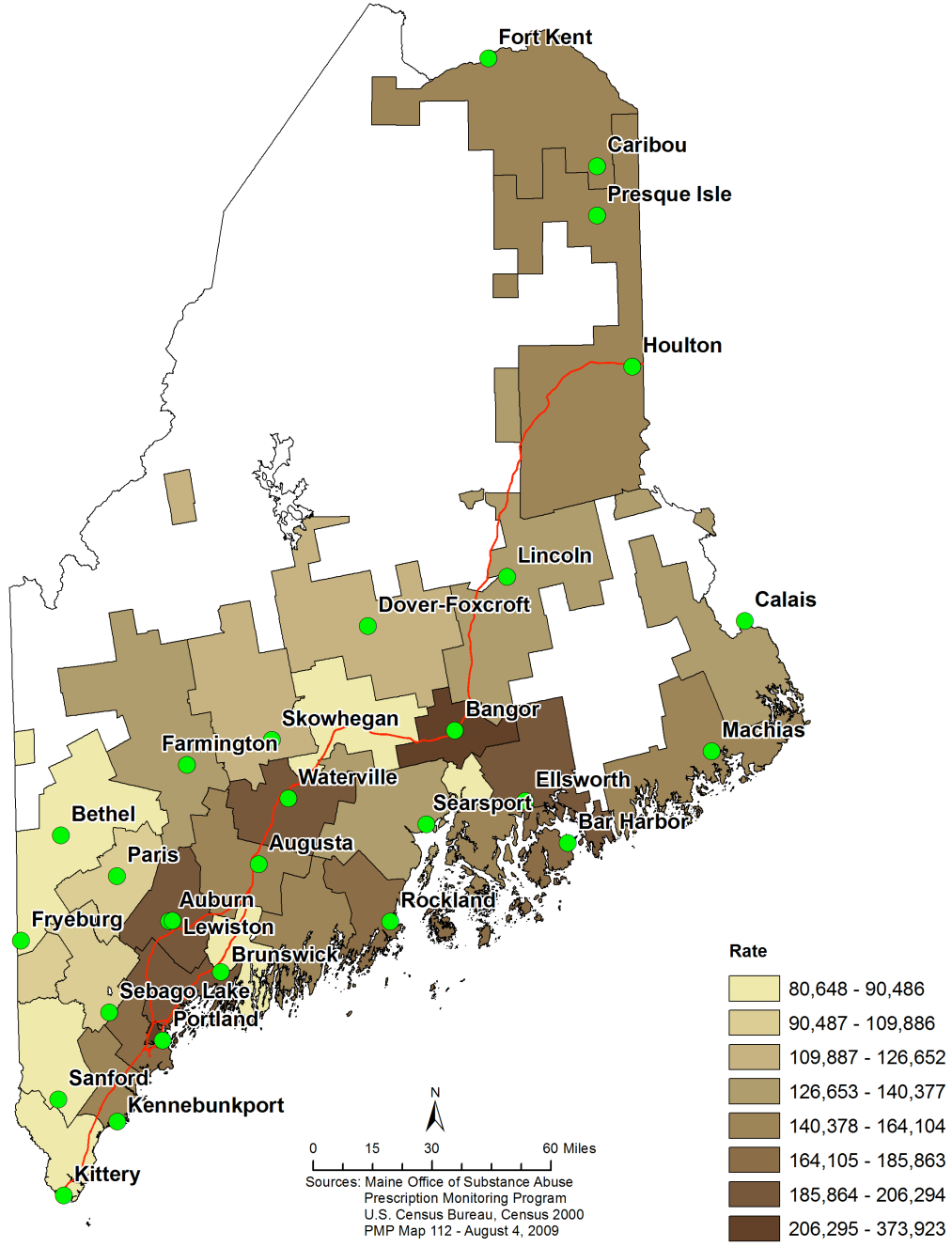
PMP Map 110: PMP On-Line Participants, Rate Per 1,000 Population, by Healthy Maine Partnership Areas
2007 and 2008



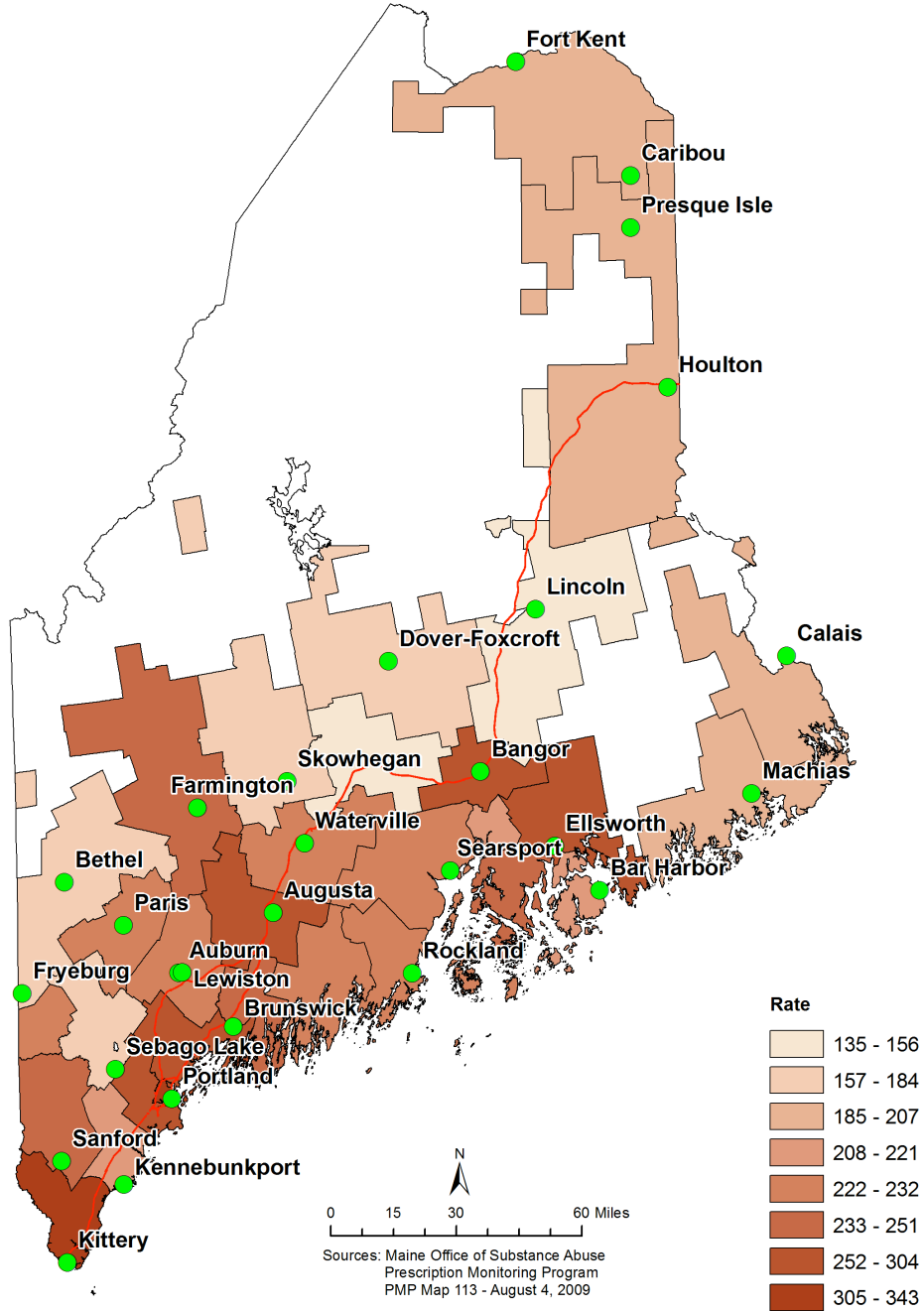
**PMP Map 111: Percent of Prescribers Who Are On-Line PMP Participants
by Healthy Maine Partnership Areas
2008**



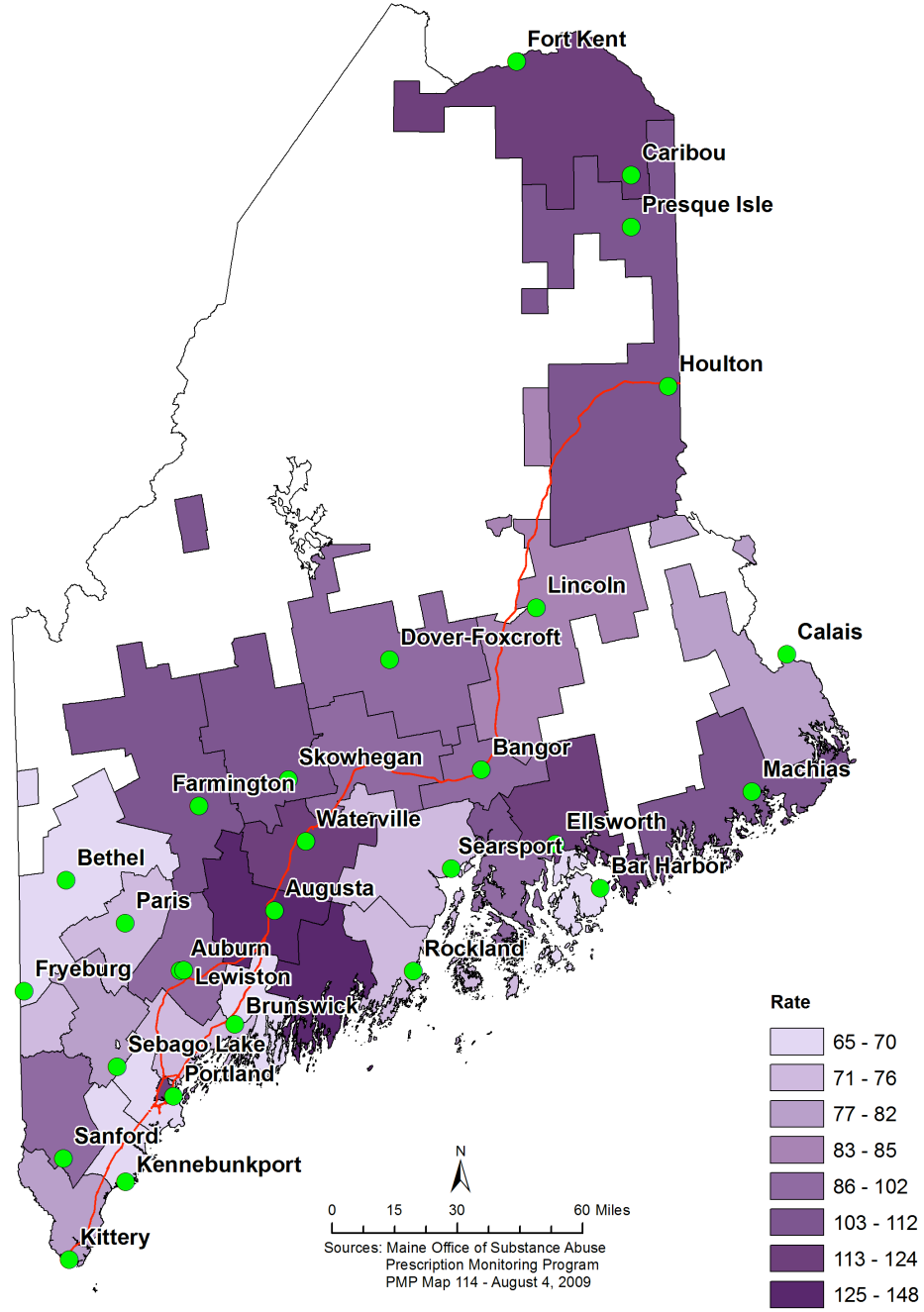
**PMP Map 112: Rate of Prescriptions Per 100,000 Population
by Healthy Maine Partnership Areas
2008**



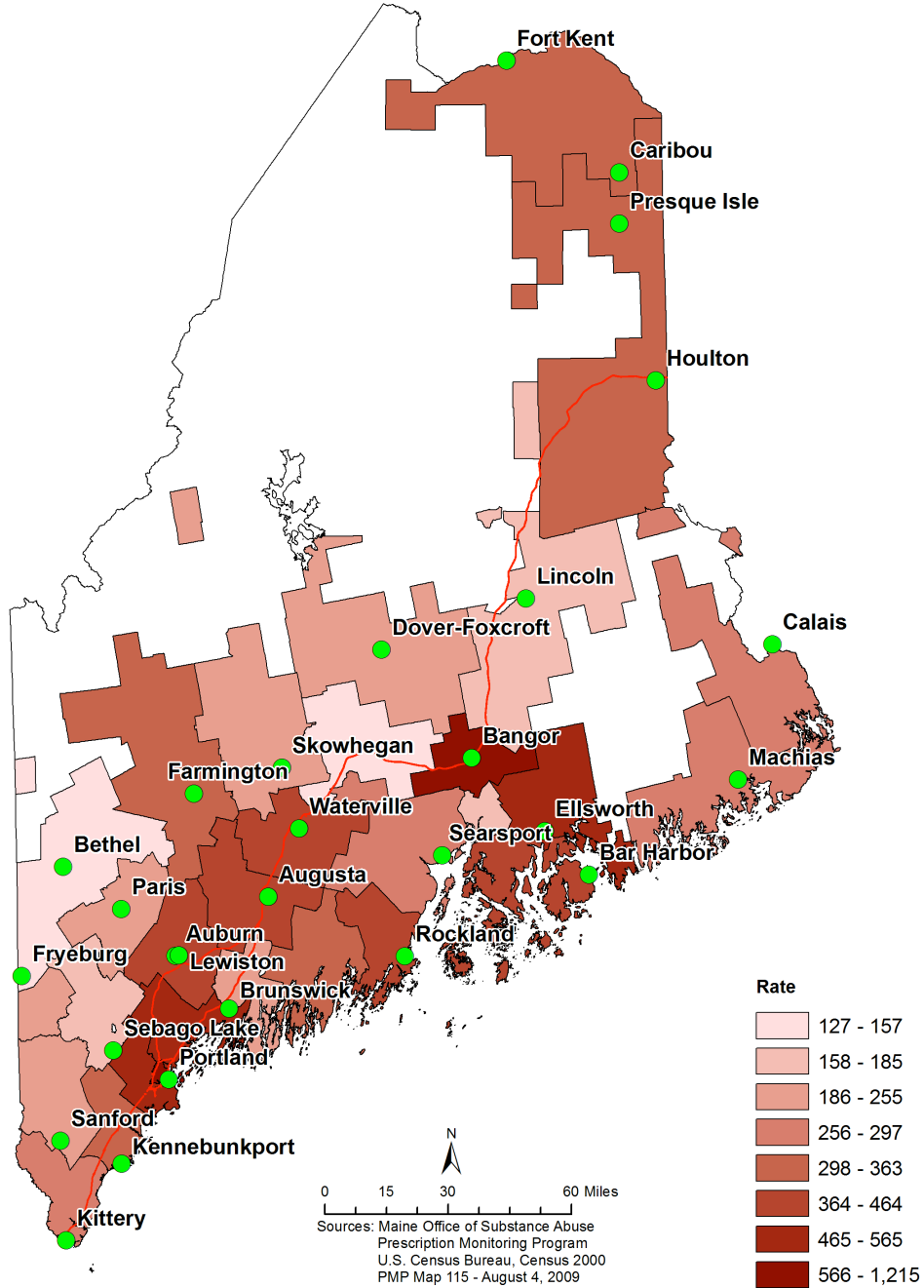
**PMP Map 113: Rate of Prescribers Per 100,000 Prescriptions
by Healthy Maine Partnership Areas
2008**



PMP Map 114: Rate of On-Line PMP Participants Per 100,000 Prescriptions by Healthy Maine Partnership Areas 2008



**PMP Map 115: Rate of Prescribers Per 100,000 Population
by Healthy Maine Partnership Areas
2008**



Partnership Area	Rate Range (2008)
Fort Kent	298 - 363
Caribou	256 - 297
Presque Isle	256 - 297
Houlton	256 - 297
Lincoln	158 - 185
Dover-Foxcroft	186 - 255
Calais	256 - 297
Machias	256 - 297
Bangor	364 - 464
Skowhegan	186 - 255
Farmington	186 - 255
Waterville	186 - 255
Ellsworth	256 - 297
Searsport	186 - 255
Bar Harbor	256 - 297
Bethel	127 - 157
Paris	127 - 157
Augusta	256 - 297
Fryeburg	127 - 157
Auburn	256 - 297
Lewiston	256 - 297
Brunswick	256 - 297
Rockland	256 - 297
Sebang Lake	127 - 157
Portland	256 - 297
Sanford	256 - 297
Kennebunkport	256 - 297
Kittery	256 - 297