SNOHOMISH HEALTH DISTRICT
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Data and Sources on Medicine Sales, Abuse, Preventable Poisonings and Pharmaceutical Pollution

Section List:

Medicine Sales Amounts

There's no single publicly available source for complete information on amounts of prescription and over-the-counter medicines sold, so information has to be pieced together from several sources. National and state level data has to be extrapolated to Snohomish County. The pharmaceutical industry will have accurate information of sales patterns, but it is not all publicly available.

Estimated Medicine Sales In Snohomish County, 2014	**Sales in Dollars**	**Sales in Units**
Prescription Medicines[1]	$489,743,027	9,748,290
Over-the-Counter Medicines[2]	$ 71,579,200	13,379,268
Total	**$561,322,227**	**23,127,558**

[1] Based on retail pharmacy sales in WA State in 2014. Does not include mail-order prescriptions which represent about 11% of total prescriptions dispensed in U.S. Source: Kaiser Family Foundation

[2] Based on sales at all outlets in U.S. in 2014. Source: Consumer Healthcare Products Association

Source information and calculations used for the table above:

Total Number of Retail Prescription Drugs Filled at Pharmacies – 2014

Washington State: 91,965,000 prescriptions for sales of $4,620,217,239

Retail pharmacies include independent pharmacies, chain pharmacies, food stores, and mass merchandisers. This total excludes prescriptions filled by mail order, and captures only some of repackaging sales.

Source: Kaiser Family Foundation. http://kff.org/other/state-indicator/total-retail-rx-drugs/, accessed 03/01/2016.

In 2014, Snohomish County's population (741,000) was 10.6% of WA State population (6,968,170).

Extrapolating per capita: there were approximately **9,748,290 prescriptions filled in Snohomish pharmacies in 2014 for $489,743,027**.

11.2% of Prescriptions were filled By Mail-Order - 2014

Source: Analysis of 2014 drug sales data from IMS Health by the "Drug Channels" blog from Pembroke Consulting. http://www.drugchannels.net/2015/06/2014s-winners-and-losers-prescription.html

Over-the-Counter Medicine Sales – 2014

$30.8 Billion in U.S.

5,757,000,000 units of products in U.S. (i.e. 5.757 billion)

Source: CHPA (Consumer Healthcare Products Association) website citation of The Nielsen Company data for OTC Sales for 2014, in all U.S. outlets (food, drug, mass, select club and dollar store retailers, convenience, and military stores). http://www.chpa.org/OTCRetailSales.aspx and http://www.chpa.org/SalesVolume.aspx accessed 03/01/2016.

In 2014, Snohomish County's population (741,000) was 0.2324% of total U.S. population (318,857,056).

Extrapolating per capita: approximately **13,379,268 units of over-the-counter medicines sold in Snohomish County in 2014 for $71,579,200.**

Amounts of Unused Medicines

About one-third of medicines sold to households go unused.

This is an estimate based on results from a number of studies using different methodologies to estimate or measure the amount of medicines that go unused.

Reasons for leftover medicines include:

- Overprescribing of prescription drugs.
- Overpurchasing of over-the-counter medicines by consumers.
- Patient doesn't finish a course of medications.
- Medicines are "used as needed" for a symptom and expire before used.
- Changes in medications: Patient cannot tolerate a medicine. Medicine is not effective. Prescriber changes treatment plan.
- Serious Illness or Health Event: Lots of medicines needed. Patient recovers, but some medicines not used.
- End-of-Life: Lots of medicines, including strong pain relievers needed. Patient dies with some medicines leftover.

1. One recent survey of 238 residents in California found that 2 out of 3 prescription medicines were reported unused. Reasons included: disease/condition improved (40.4%), forgetfulness (10.6%), and side effects (8.0%).
   Source: Law *et al*. "Taking stock of medication wastage: Unused medications in US household". 2015. Research in Social and Administrative Pharmacy 11; 571-578.
   http://www.sciencedirect.com/science/article/pii/S1551741114003337

2. Example of medication changes: Only about 50% of patients respond to a first trial of antidepressant medication, therefore, a large majority of patients require multiple trials of medication prior to achieving remission of depression symptoms. On average, patients receiving medication for the treatment of depression require 5 different trials before symptoms remit.
   Source: Washington State Psychological Association, 2009

3. A small survey* of individuals returning unwanted medicines to Alameda County's drug drop box program found:

    a. 56% were returning their own medicines
    b. 44% were returning medicines for more than just themselves (others in household)
    c. 23% were returning drugs for a deceased person

4. Data was collected using a voluntary written survey on location set in a visibly convenient place on the take-back bin at nine of the 31 sites. Sixty-two responses were collected in a three-month period.

Medicine Abuse and Poisonings

1. Overdoses are the number-one cause of unintentional injury deaths in Snohomish County. About two-thirds of these overdose deaths involve opioid prescription drugs or heroin.

    "Heroin in Snohomish County – Mortality and Treatment Trends". SHD, Snohomish County. http://www.snohd.org/Portals/0/Snohd/Reports/files/HeroinReport_Final_Jan%202015.pdf

    a. Snohomish County has ~ 300 unintentional injury deaths per year. 44% of the 300 deaths are due to overdose poisonings (~132 deaths per year). Of those 2/3 involve prescription opioids and/or heroin (~ 87 deaths per year).
    b. The number of heroin related deaths has exceeded prescription opioid deaths in the past few years. It is difficult for medical examiners to distinguish between these drugs as a cause of death.

    Snohomish Health District. "Intentional and Unintentional Injuries in Snohomish County." February,
    2011. http://www.snohd.org/Portals/0/Snohd/Reports/files/FinalInjuryReport_2_11.pdf

    a. Data in this 2011 report was from 2005-2007.
    79% of poisonings involved a combination of opioids drugs (prescription or not)
    63% of all poisoning deaths involved at least 1 prescription opioid medicine.

2. *SHD data:* Over half people injecting heroin have also abused prescription drugs like opioids or amphetamines. Of those 91% abused the prescription drugs first, before switching to heroin.
    Source: Kathy Perkins, Snohomish Health District in October 2015 based on 2014 health surveys of people accessing needle exchange and/or naloxone distribution programs.

3. *National data:* 45% of heroin users are also addicted to prescription opioid painkillers "Today's Heroin Epidemic. More people at risk, multiple drugs abused" CDC VitalSigns. July 2015. http://www.cdc.gov/vitalsigns/heroin/

4. Many teens think prescription medicines are safer to abuse than street drugs.
    Partnership for Drug-Free America. 2012 PARTNERSHIP ATTITUDE TRACKING STUDY
    http://www.drugfree.org/newsroom/pats-2013-full-report-key-findings

5. 73% of teens say it's easy to get prescription drugs from parents' medicine cabinets. Partnership for Drug-Free America. 2012 PARTNERSHIP ATTITUDE TRACKING STUDY http://www.drugfree.org/newsroom/pats-2013-full-report-key-findings

6. Nonmedical use of Adderall, a medication used to treat attention deficit hyperactivity disorder (ADHD), rose 67% among young adults between 2006 and 2011. The number of emergency room visits involving misuse of the drug among 18- to 25-year-olds also rose from 862 visits in 2006 to 1,489 in 2011. During this period the number of Adderall prescriptions remained unchanged among young adults.
   Source: Lian-Yu Chen et al. "Prescriptions, Nonmedical Use, and Emergency Department Visits Involving Prescription Stimulants" J Clin Psychiatry. Feb. 2016 doi:10.4088/JCP.14m09291
   http://www.psychiatrist.com/jcp/article/Pages/2016/aheadofprint/14m09291.aspx

7. Poisonings and ER visits are common from household medicines, especially among kids and seniors. Many studies support this statement:

   a. About 165 young kids — or roughly four school busloads of children — are seen in emergency rooms every day in the US after getting into medications (both over-the-counter and prescription).

      Centers for Disease Control and Prevention. Put Your Medicines Up and Away and Out of Sight. CDC Website. Available from: http://www.cdc.gov/features/medicationstorage/. Accessed February 9, 2012.

   b. Washington Poison Center (2014). Top Ten of 2014. Available online at: http://www.wapc.org/2014-top-ten/

   c. In 2009 national data, 71,224 emergency department visits made annually for medication overdoses by children under age 18. 82% involved children under age 5. 34% of these ER visits involved commonly available over-the-counter medications. Acetaminophen, cold and cough products, NSAIDs and antihistamines were the most frequently reported.

      Schillie, S.F., et al. 2009. Medication overdoses leading to emergency department visits among children. Am J Prev Med 2009. Available online at: http://www.ajpm-online.net/webfiles/images/journals/amepre/AMEPRE_2545.pdf

   d. 26% of child poisoning deaths in Washington were caused by someone else's over-the-counter medications and 32% were caused by someone else's prescription medications. 2004 data.

      Sabel, J. (2004). Washington State Childhood Injury Report – Poisoning Chapter. WA DOH. Available online at: http://www.doh.wa.gov/hsqa/emstrauma/injury/pubs/wscir/WSCIR_Poisoning.pdf

   e. Washington State Department of Health. (2013). "Poisoning and drug overdose." Washington State Injury and Violence Prevention Guide. Available online at: http://www.doh.wa.gov/Portals/1/Documents/2900/InjuryReportFinal.pdf

Abuse/Poisonings from Over-the-Counter (nonprescription) Medicines

1. OTC cough medicines, antihistamines, decongestants, and diet pills are often abused, especially by teenagers. See https://www.drugabuse.gov/publications/drugfacts/cough-cold-medicine-abuse and http://abovetheinfluence.com/drugs/over-the-counter/

    a. WA and about 9 other states now ban the sale of OTC cough medicines containing DXM to minors under age 18. The WA law went into effect in July 2015.
    Source: Consumer Healthcare Products Association, http://www.chpa.org/dex.aspx

2. Several OTC medicines (e.g., ibuprofen, Tylenol, and antihistamines) are among the top ten causes of poisonings in Washington homes, especially for children.
Source: WA Poison Center 2014 Top Ten List

3. One study found that 34% of ER visits for children poisoned by medicines in the home were a result of over-the-counter medicines .
Source: Schillie *et al*. "Medication overdoses leading to emergency department visits among children" 2009. Am J Prev Med 37: 181-187.
http://www.ncbi.nlm.nih.gov/pubmed/19666156

4. 26% of child poisoning deaths in Washington were caused by someone else's over-the-counter medications and 32% were caused by someone else's prescription medications.
Source: Sabel, J. (2004). Washington State Childhood Injury Report – Poisoning Chapter. WA DOH. Available online at:
http://www.doh.wa.gov/hsqa/emstrauma/injury/pubs/wscir/WSCIR_Poisoning.pdf

5. The regulatory distinction between prescription and over-the-counter drugs reflects whether the FDA deems the drug safe for self-medication when used as instructed, not whether the drug poses a risk of poisoning or abuse if accidentally or intentionally misused. And not whether the drug is safe in our environment.

Pharmaceutical Pollution

Pharmaceuticals are an emerging contaminant of concern in freshwater and marine water ecosystems, and in drinking water supplies.
See WA Ecology's webpage:
http://www.ecy.wa.gov/programs/hwtr/pharmaceuticals/pages/pie.html

Research is demonstrating harm to fish and other aquatic species from exposure to the low levels of pharmaceuticals commonly found in the environment. *For an overview of some representative studies, see this 2011 background document: http://www.takebackyourmeds.org/pdf-files/pharmaceuticals-in-environment*

Pharmaceutical pollution comes from many sources, including:

- Human excretion
- Agricultural uses
- Manufacturing releases
- Improper disposal from healthcare facilities & businesses
- Improper disposal of residential waste medicines

1. A 2010 study by the US EPA and Washington State of Ecology concluded that the "2008 screening study detected pharmaceuticals and personal care products in every influent, effluent, and biosolids sample analyzed from five Pacific Northwest wastewater treatment plants."
   Source: Control of Toxic Chemicals in Puget Sound Phase 3: Pharmaceuticals and Personal Care Products in Municipal Wastewater and Their Removal by Nutrient Treatment Technologies, USEPA 2010 Pub. Number 10-03-004

2. Pharmaceuticals are commonly found in landfill leachate. See sampling results from the US.G.S. http://toxics.usgs.gov/highlights/2014-08-12-leachate_pharm.html

3. Pharmaceutical are released by septic systems. A USGS study of Liberty Bay near Poulsbo, Washington, found a range of pharmaceuticals, personal care products, and pesticides in a sensitive estuary where there are no nearby point sources, such as wastewater treatment facilities. The study, designed to determine whether a coastal community served primarily by septic systems could release PPCPs, herbicides and plasticizers into their surface and groundwaters, was conducted where 70% of nearby residents use septic systems. Pharmaceutical compounds were detected that include Carbamazepine (anticonvulsant) , Gemfibrozil (lipid reduction), Ibuprofen (anti-inflammatory), Ketoprofen (anti-inflammatory), Propranolol (hypertension medication) and Trimethoprim (antibiotic)
   Source: Dougherty, J.A., Swarzenski, P.W., Dinicola, R.S., and Reinhard, M. 2010. *Occurrence of Herbicides and Pharmaceutical and Personal Care Products in Surface Water and Groundwater around Liberty Bay, Puget Sound, Washington.* J. Environ. Qual. Vol. 39 No. 4, p. 1173-1180 Abstract online at: https://www.agronomy.org/publications/jeq/abstracts/39/4/1173, accessed 11/20/10.

Snohomish County Code: SCC 7.41.050 Types of wastes that are unacceptable. "(7) Pharmaceutical wastes including expired, unused or contaminated drugs and vaccines are not acceptable at any solid waste disposal sites."
http://www.co.snohomish.wa.us/Documents/Departments/Council/county_code/CountyCodeTitle7.pdf

Pharmaceuticals in Drinking Water

1. Levels of pharmaceutical compounds detected in drinking water are low, far below therapeutic doses, and potential health effects are not known. However, the presence of a mixture of drugs in some drinking water supplies suggests the need to reduce environmental contamination through safer disposal of waste medicines.
   JAMA review article**:** *Traces of Drugs Found in Drinking Water: Health Effects Unknown, Safer Disposal Urged*. Bridget M. Kuehn *JAMA*. 2008;299 (17):2011-2013 (doi:10.1001/jama.299.17.2011)

2. A 2008 Associated Press series published the results of a nationwide study that found medicines in the drinking water of 24 major metropolitan areas serving 41 million Americans. Some frequently detected compounds were atenolol (heart medication), carbamazepine (mood-stabilizer), gemfibrozil (anti-cholesterol), meprobamate (tranquilizer), naproxen (pain-killer), phenytoin (anti-seizure medication), sulfamethoxazole and trimethoprinm (antibiotics).

a. AP Investigation: *Pharmaceuticals Found in Drinking Water*. (2008) Web site with complete series of articles: http://hosted.ap.org/specials/interactives/pharmawater_site/
b. "Top 11 compounds in US drinking water", New Scientist, January 12, 2009. Available online at: http://www.newscientist.com/article/dn16397-top-11-compounds-in-us-drinking-water.ht
c. **"***AP Probe Finds Drugs in Drinking Water*", Seattle Times, March 12, 2008. Available online at: http://seattletimes.nwsource.com/html/nationworld/2004271213_appharmawateri.html accessed 08/25/08.

3. Some drinking water supplies, such as Seattle's and Spokane's, have tested negative for pharmaceuticals because their water sources are from pristine watersheds. This result is expected for any water supply which is protected from human activities. Municipalities that use water sources downstream of wastewater treatment facilities are those which might detect pharmaceuticals**.**

    a. "Drugs found in more drinking water" Seattle Post-Intelligencer, September 12, 2008. Available online at: http://www.seattlepi.com/national/378874_pharmwater12.html, accessed 11/22/09.
    b. "No drug in Spokane water" Spokesman Review, August 21, 2008. Available online at: http://www.spokesman.com/stories/2008/aug/21/no-drugs-in-spokane-water/, accessed 11/22/09.