

Portland State University

**PDXScholar**

---

Systems Science Faculty Publications and Presentations

Systems Science

---

6-2010

# Key Data Gaps for Understanding Trends in Prescription Opioid Analgesic Abuse and Diversion Among Chronic Pain Patients and Nonmedical Users

Wayne W. Wakeland

*Portland State University, wakeland@pdx.edu*

John Fitzgerald

*Purdue Pharma L. P.*

Aaron Gilson

*University of Wisconsin - Madison*

J. David Haddox

*Purdue Pharma L.P.*

Jack Homer

*Homer Consulting*

Follow this and additional works at: [https://pdxscholar.library.pdx.edu/sysc\\_fac](https://pdxscholar.library.pdx.edu/sysc_fac)

 [next page for additional authors](#)

Part of the [Chemical Actions and Uses Commons](#), and the [Pharmaceutical Preparations Commons](#)

**Let us know how access to this document benefits you.**

---

## Citation Details

Wakeland, W., Lee, L., McCarty, D., Haddox, J. D., Fitzgerald, J., Gilson, A., Homer, J., Macovsky, L., Webster, L., & Schmidt, T. (2010, June). Key data gaps for understanding trends in prescription opioid analgesic abuse and diversion among chronic pain patients and nonmedical users. Poster presentation at the College on Problems of Drug Dependence, 72nd Annual Scientific Meeting, Scottsdale, AZ

This Poster is brought to you for free and open access. It has been accepted for inclusion in Systems Science Faculty Publications and Presentations by an authorized administrator of PDXScholar. Please contact us if we can make this document more accessible: [pdxscholar@pdx.edu](mailto:pdxscholar@pdx.edu).

---

**Authors**

Wayne W. Wakeland, John Fitzgerald, Aaron Gilson, J. David Haddox, Jack Homer, Lewis Lee, Louis Macovsky, Dennis McCarty, Teresa D. Schmidt, and Lynn Webster

Wayne Wakeland, PhD, Portland St. Univ. (PSU); John Fitzgerald, PhD, Purdue Pharma L. P. (PPLP); Aaron Gilson, PhD, Univ. of Wisc.; J. David Haddox, DDS, MD, PPLP; Jack Homer, PhD, Homer Consulting; Lewis Lee, MS, Amiril Consulting; Louis Macovsky, DVM, MS, DynBioSys; Dennis McCarty, PhD, Oregon Health & Science Univ; Teresa Schmidt, MA, PSU; Lynn Webster, MD, LifeTree Medical

## Abstract

Population dynamics of medical and nonmedical prescription opioid usage and adverse outcomes were modeled. Critical parameter values were determined by their amount of influence on model behavior. Results suggest that closing these data gaps would help researchers to better identify ways to reduce the risk of adverse outcomes.

## Introduction

Increased use, misuse, and abuse of prescription opioid analgesics<sup>1</sup> reflects a complex interaction of:

- Access to the medications,
- Use characteristics, and
- Public policies to control chronic pain medications.

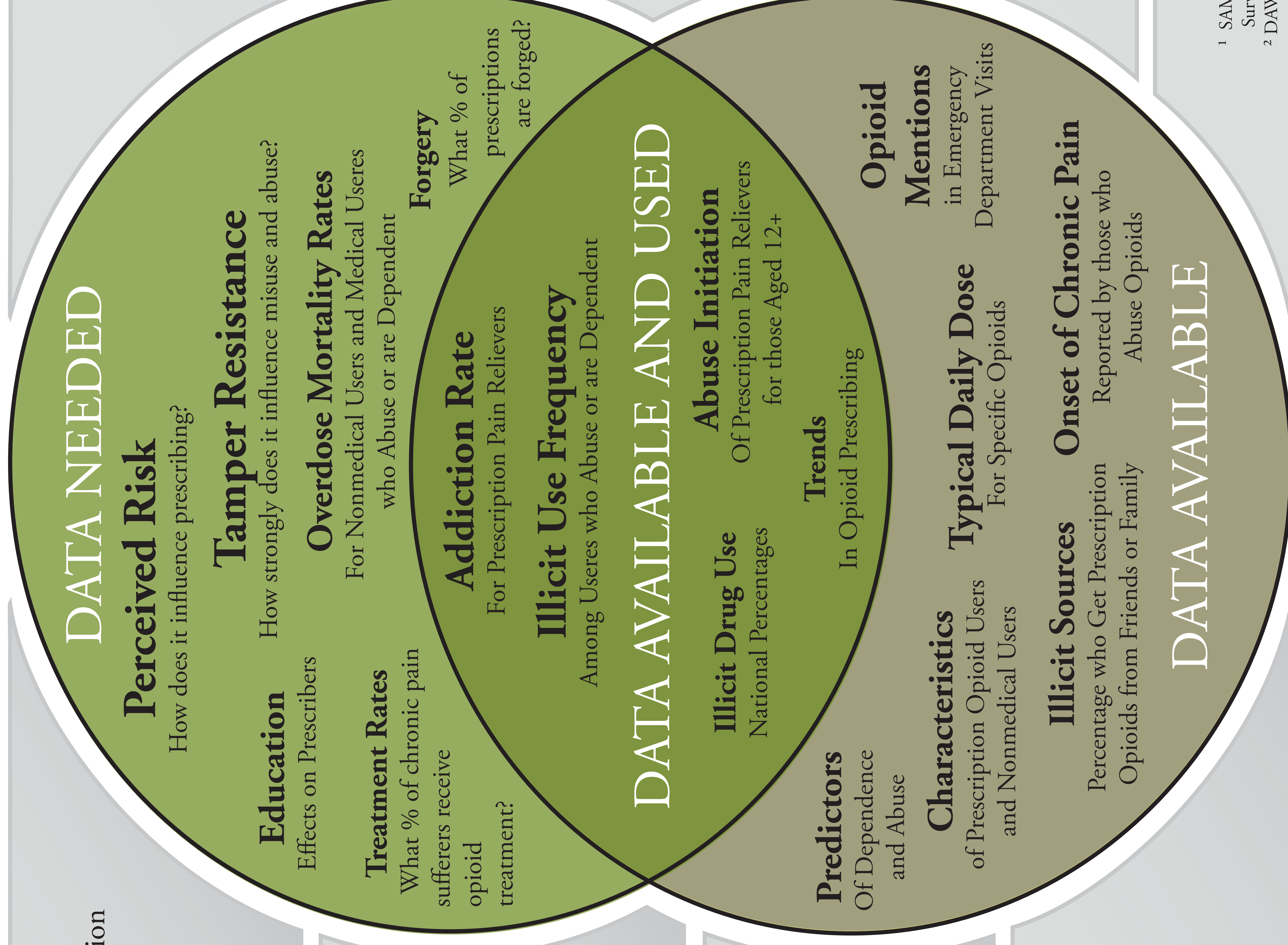
A high-level system dynamics model was created to interlink data on initiation, prevalence, and outcomes related to prescription opioid pain medications.

## Aims

1. Comprehensively review available data on medical use, misuse, abuse, diversion and nonmedical use of prescription opioids
2. Identify data needed to specify model parameters and create a well-supported dynamic model

## Methods

- a) Create dynamic model
- b) Comb peer-reviewed literature, published databases and presentations for parameter data
- c) Test sensitivity of model to parameter values
- d) Identify key parameters with insufficient data support



## Results

### Critical data deficits:

- Impact of perceived risk on prescribing behavior
- Impact of tamper-resistance on user behavior

### Other deficits:

- Impact of education on prescribing behavior
- Overdose mortality rates
- Percent of chronic pain sufferers that receive opioid treatment
- Percent of prescriptions forged

*Note: Font sizes in figure indicate degree of impact*

## Discussion

Despite plentiful data, significant gaps remain. Changes in the wording of some NSDUH<sup>1</sup> questions and the coding used in DAWN<sup>2</sup> could help to close these gaps. The distinction between medical abuse and non-medical use could be clarified by linking prescription data and overdose incident data at the case level.

## Conclusion

Closing the indicated data gaps will help researchers create models to:

- Explain system-level trends and dynamics
- Help determine the effectiveness of risk evaluation and mitigation strategies
- Identify policies likely to reduce negative outcomes without compromising pain treatment

## References

- <sup>1</sup> SAMHSA (2009) Trends in nonmedical use of prescription pain relievers: 2002-2007. The National Survey on Drug Use and Health (NSDUH) Report.
- <sup>2</sup> DAWN (2009) Drug Abuse Warning Network. <https://dawninfo.samhsa.gov/default.asp>