



Omaha System Partnership For Knowledge Discovery and Health Care Quality

Karen A. Monsen, RN, PhD, FAAN¹, Kathryn H. Bowles, RN, PhD, FAAN, FACMI², Semra Erdoğan, PhD³, Karen S. Martin, RN, MSN, FAAN⁴

¹University of Minnesota, Minneapolis, Minnesota, USA; ²University of Pennsylvania, Philadelphia, Pennsylvania, USA; ³University of Istanbul, Istanbul, Turkey; ⁴Martin Associates, Omaha, Nebraska, USA



University of Minnesota - School of Nursing - Center for Nursing Informatics



Background

Ontology-based Research

- an emerging eHealth specialty
- enabled by structured data
- resulting from the rational codification and representation of healthcare knowledge.

Omaha System Partnership

- first practice-based research network that leverages the power of ontologically structured healthcare data

Community of Practice

Multidisciplinary scientific teams of researchers with experience in advanced data analysis and data mining techniques

- University of Minnesota
- University of Pennsylvania
- University of Istanbul

Affiliate members from many countries and organizations who

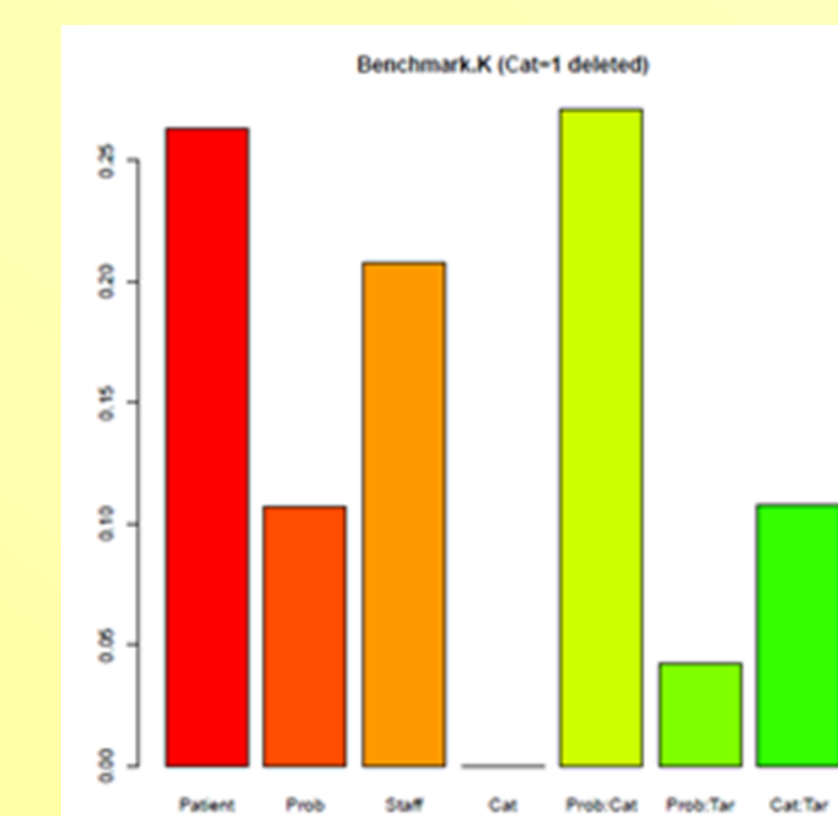
- contribute clinical Omaha System data
- suggest important clinical questions
- and work together with the scientific team on research and evaluation projects

Studies are conducted using de-identified **Omaha System data** from primary care, acute care, and community settings including

- client problems
- signs/symptoms
- interventions
- knowledge, behavior, and status outcomes

Practice settings	Populations	Problems
acute care	children with special needs	asthma
home care	community dwelling elders	caries
dentistry	firefighters	diabetes
midwifery	frail elders	noise-induced hearing loss
occupational health	healthcare workforce	obesity
primary care	high risk families	re-hospitalization
public health	mentally ill patients	social determinants health
school health	intellectual disabilities	mental illness

Results of Recent Projects



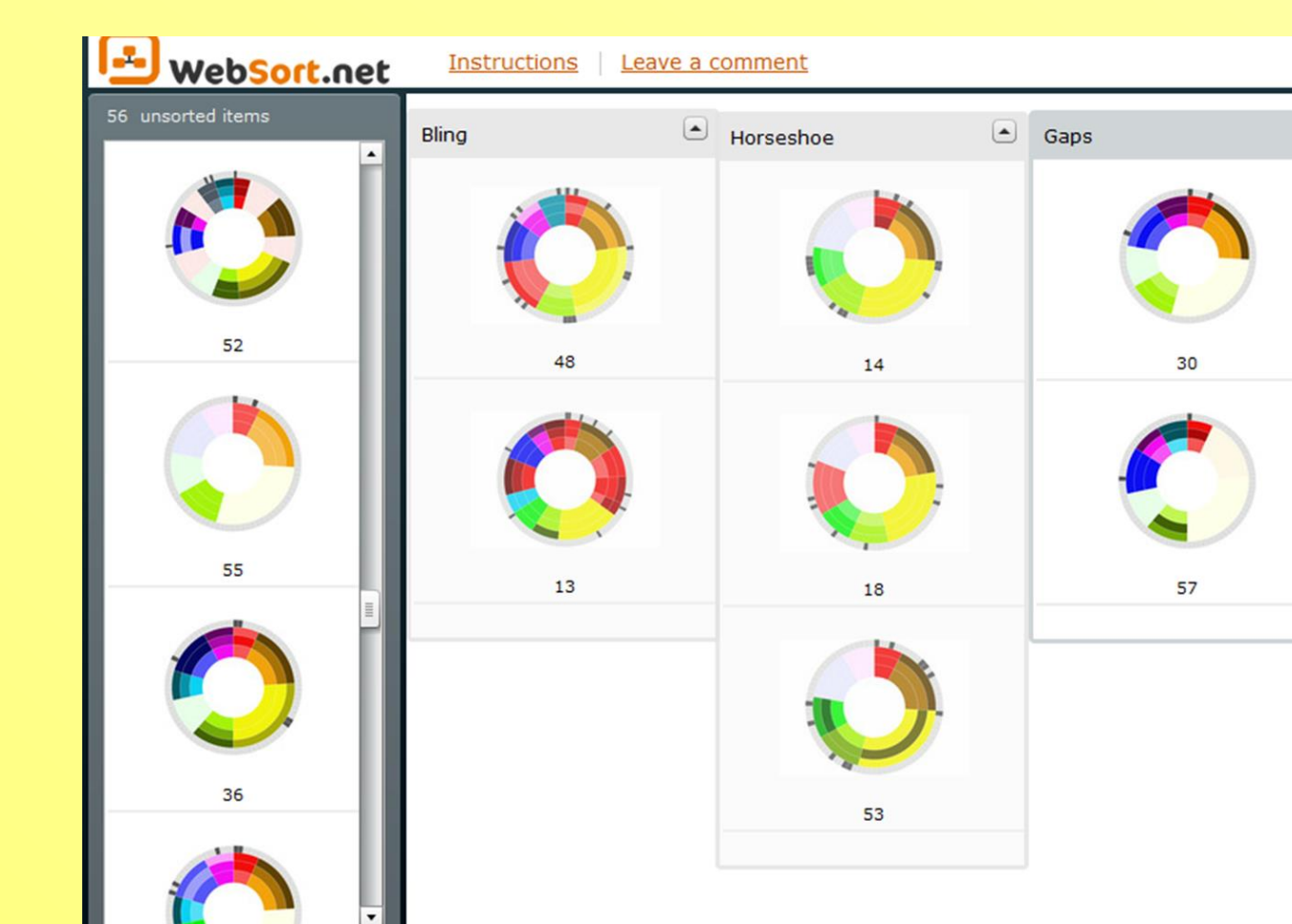
Factors Associated with Variation in Knowledge Benchmark Attainment
Chatterjee, S., Monsen, K. A.

Frequency and Duration of Acute Care Nursing Interventions on a Postoperative Surgical Unit
Fratzke, J., Melton-Meaux, G., & Monsen, K. A.

Problem	N	minutes
Health care supervision	2626	2426.32
Medication regimen	868	697.67
Circulation	421	234.58
Neighborhood/workplace safety	116	74.68
Skin	60	114.83
Urinary function	39	39.47
Personal care	11	15.48
Bowel function	6	29.45

Selected Publications

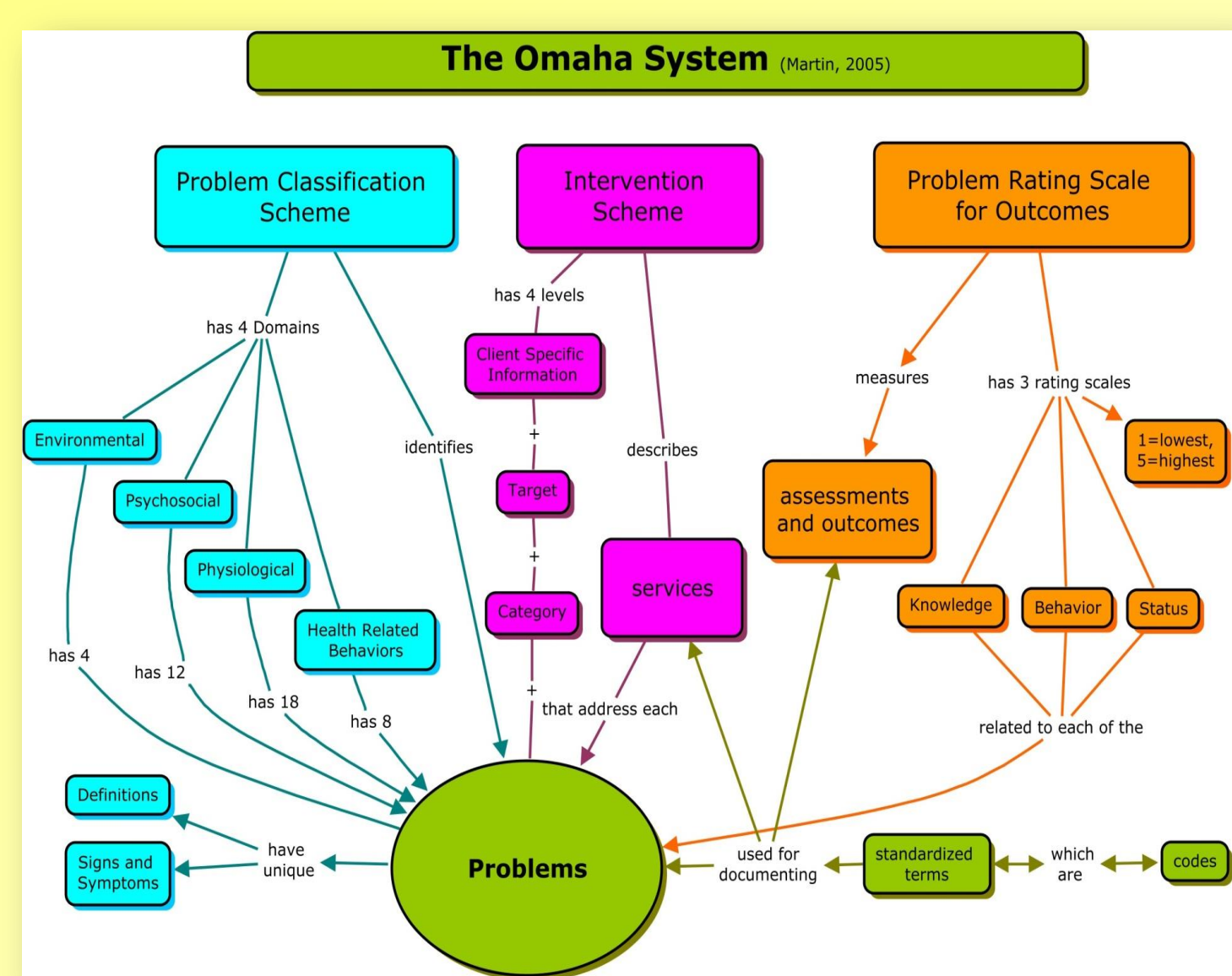
- Monsen, K. A., Radosevich, D. M., Kerr, M. J., & Fulkerson, J. A. (2011). **Public health nurses tailor home visiting interventions.** *Public Health Nursing, 28*(2), 119-128.
- Monsen, K. A., McNaughton, D. B., Savik, K., & Farri, O. (2011). **Problem stabilization: A metric for problem improvement in home visiting clients.** *Applied Clinical Informatics, 2*, 437-446.
- Monsen, K. A., Banerjee, A., & Das, P. (2010). **Discovering client and intervention patterns in home visiting data.** *Western Journal of Nursing Research, 32*(8), 1031-1054.
- Monsen, K. A., Fulkerson, J. A., Lytton, A. B., Taft, L. L., Schwichtenberg, L. D., & Martin, K. S. (2010). **Comparing maternal child health problems and outcomes across public health nursing agencies.** *Maternal and Child Health Journal, 14*(3), 412-421.
- Monsen, K. A., Sanders, A. N., Yu, F., Radosevich, D. M., & Geppert, J. S. (2011). **Family home visiting outcomes for mothers with and without intellectual disabilities.** *Journal of Intellectual Disabilities Research, 55*(5), 484-499.
- Monsen, K. A., Westra, B. L., Oancea, S. C., Yu, F., & Kerr, M. J. (2011). **Linking home care interventions and hospitalization outcomes for frail and non-frail elderly patients.** *Research in Nursing and Health, 34*(2), 160-168.
- Monsen, K. A., Radosevich, D. M., Johnson, S. C., Farri, O., Kerr, M. J., & Geppert, J. S. (2011). **Benchmark attainment of parenting clients across public health nursing agencies.** *Public Health Nursing, 29*(1), 11-18.
- Monsen, K. A., Swanberg, H. L., Oancea, S. C., & Westra, B. L. (2012). **Exploring the value of clinical data standards to predict hospitalization of home care patients.** *Applied Clinical Informatics, 4*, 410-436.
- Thompson, C. W., Monsen, K. A., Wanamaker, K., Augustyniak, A., & Thompson, S. L. (2012). **Using the Omaha System as a framework to demonstrate the value of nurse managed wellness center services for vulnerable populations.** *Journal of Community Health Nursing, 29*(1), 1-11.
- Monsen, K.A., Westra, B.L., Patlich, N., Ekstrom, D., Mehle, S.C., Kaeding, M., Abdo, S., Natarajan, G., & Rudestam, U. (2012) **Developing a shared personal health record for elders and providers: Technology and content.** *Journal of Gerontological Nursing, 38*(7), 21-5.
- Heng, O.S., Monsen, K.A., Kerr, M.J., Chin, D.L., Lytton, A.B., Martin, K.S. (2012) **Firefighter hearing health: An informatics approach to screening, measurement, and research.** *International Journal of Audiology, 51*, 765-70.
- Monsen, K.A., Elsbernd, S.A., Barnhart, L., Stock, J., Prock, C., Looman, W.S., & Nardella, M. (2013). **A state-wide children with special health care needs program evaluation using a standardized terminology.** *ISRN, 2013*, Article ID 793936, 7 pages
- Garcia, C., McNaughton, D., Radosevich, D.M., Brandt, J.K., Monsen, K.A. (2013). **Family home visiting outcomes for Latina mothers with and without mental health problems.** *Public Health Nursing.*
- Topaz M, Radhakrishnan K, Masterson-Creber R, Bowles KH. (2012, June). **Putting evidence to work: Using standardized terminologies to incorporate clinical practice guidelines within homecare electronic health records.** *Online Journal of Nursing Informatics* [online], 16(2), 1694-1699.
- Erdoğan, S., Seçginli, S., Cosanu, G., Nahçıvan, N., Esin, N., Aktas, E., Monsen, K. A. (2013). **Using the Omaha System to describe health problems, interventions, and outcomes in home care in Istanbul, Turkey: A student informatics research experience.** *CIN. epub ahead of print 2013 Feb 24* doi: 10.1097/NNN.0b013e318282ea1a



Visualization of Client Characteristics
Kim, E., Monsen, K. A., & Pieczkiewicz, D.

Omaha System

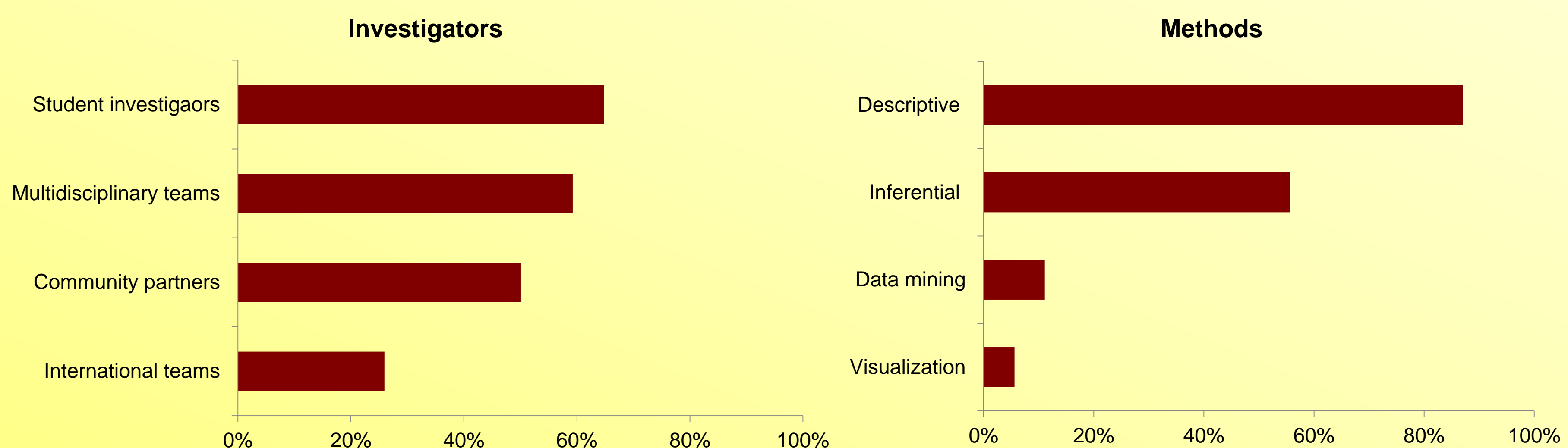
Ontology for Population Health



Martin KS. (2005). *The Omaha System: A key to practice, documentation, and information management* (Reprinted 2nd ed.). Omaha, NE: Health Connections Press.

Studies - Investigators - Methods

There are 54 studies completed or in-progress
Supported by our Universities, NIH, NSF, foundations, industry, and private donors



Conclusions

Ontology-based research using the Omaha System enables rational investigation of healthcare interventions and outcomes across settings and populations.

Practice-based research networks enable community participation in program evaluation and research.

