The Problem and Consequences of Multisite Pain in Older Adults

Suzanne Leveille, PhD RN

College of Nursing and Health Sciences
University of Massachusetts Boston
Department of Medicine
Beth Israel Deaconess Medical Center
Harvard Medical School
Boston, MA

DISCLOSURE INFORMATION:

No conflicts of interest

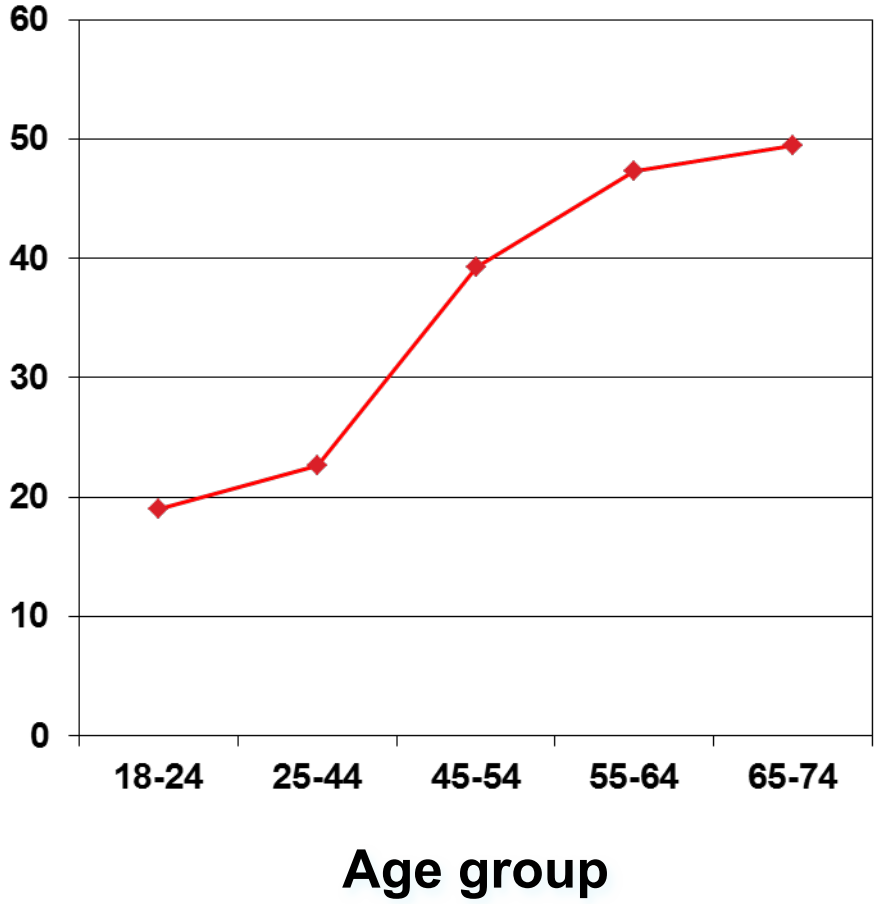
Research supported by:

National Institute on Aging
Arthritis Foundation

University of Massachusetts Boston

Pain and its Consequences

1. Background on pain
2. 2 population-based studies of older adults: WHAS and MOBILIZE Boston
3. Pain and Disability
4. Pain and Falls
5. A word about pain management



Prevalence of arthritic pain / joint symptoms in US, BRFSS 2010

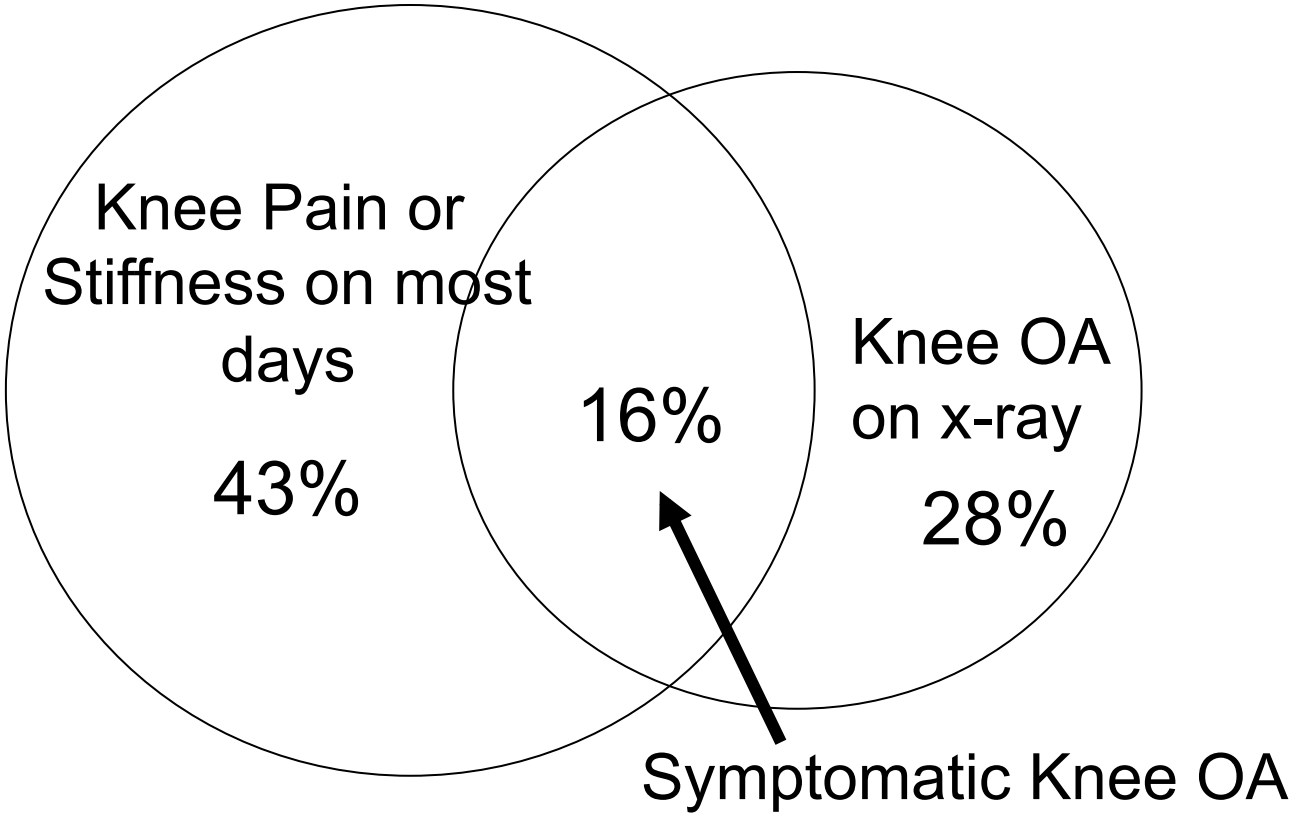
Arthritis vs. Chronic Pain

Self-reported arthritis has often been used as an indicator for musculoskeletal pain in the older population

Knee Pain or Stiffness

vs. Radiographic Knee Osteoarthritis (OA)

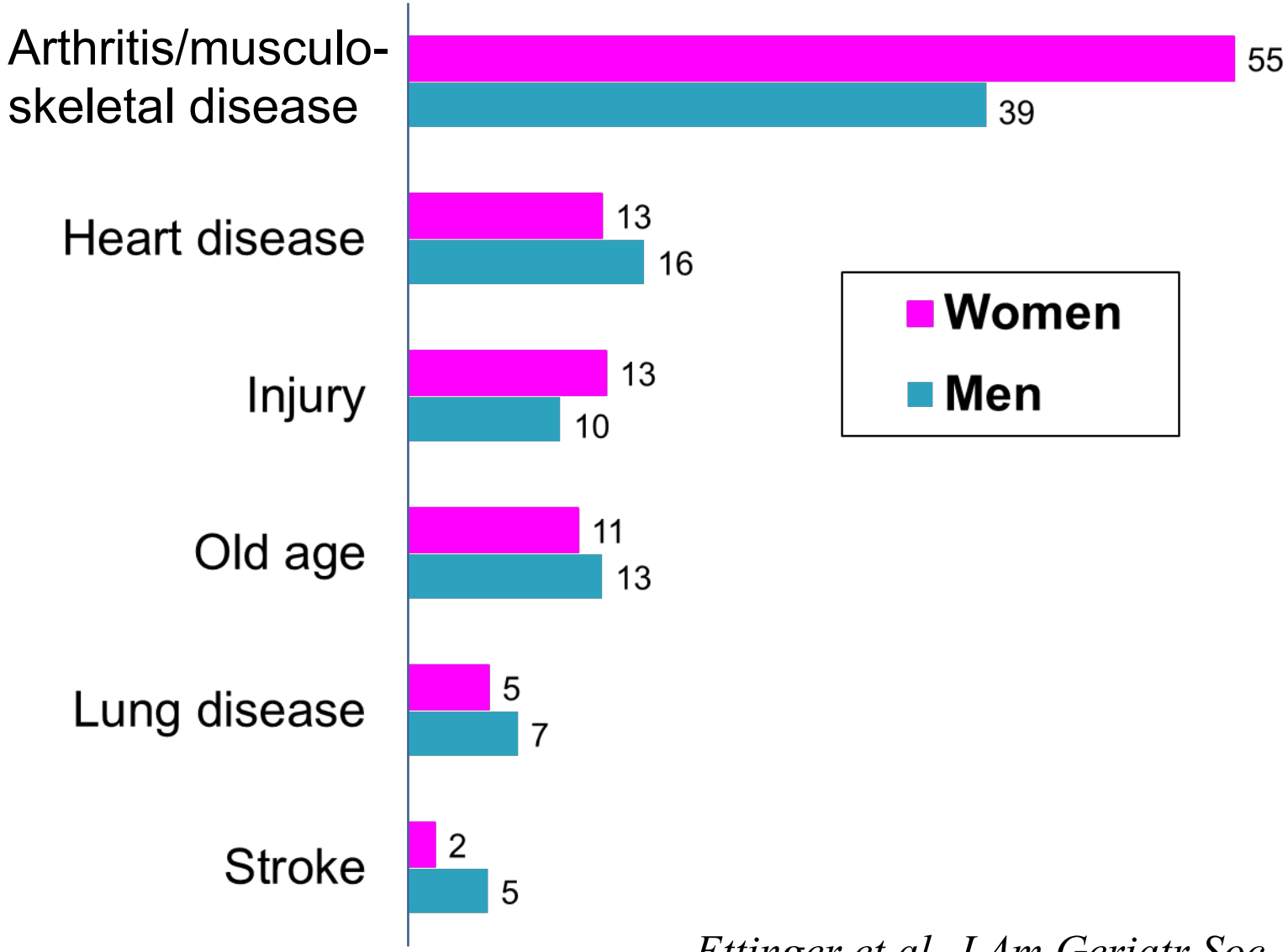
vs. Symptomatic Knee Osteoarthritis



Adults aged > 45y, Johnston County, NC

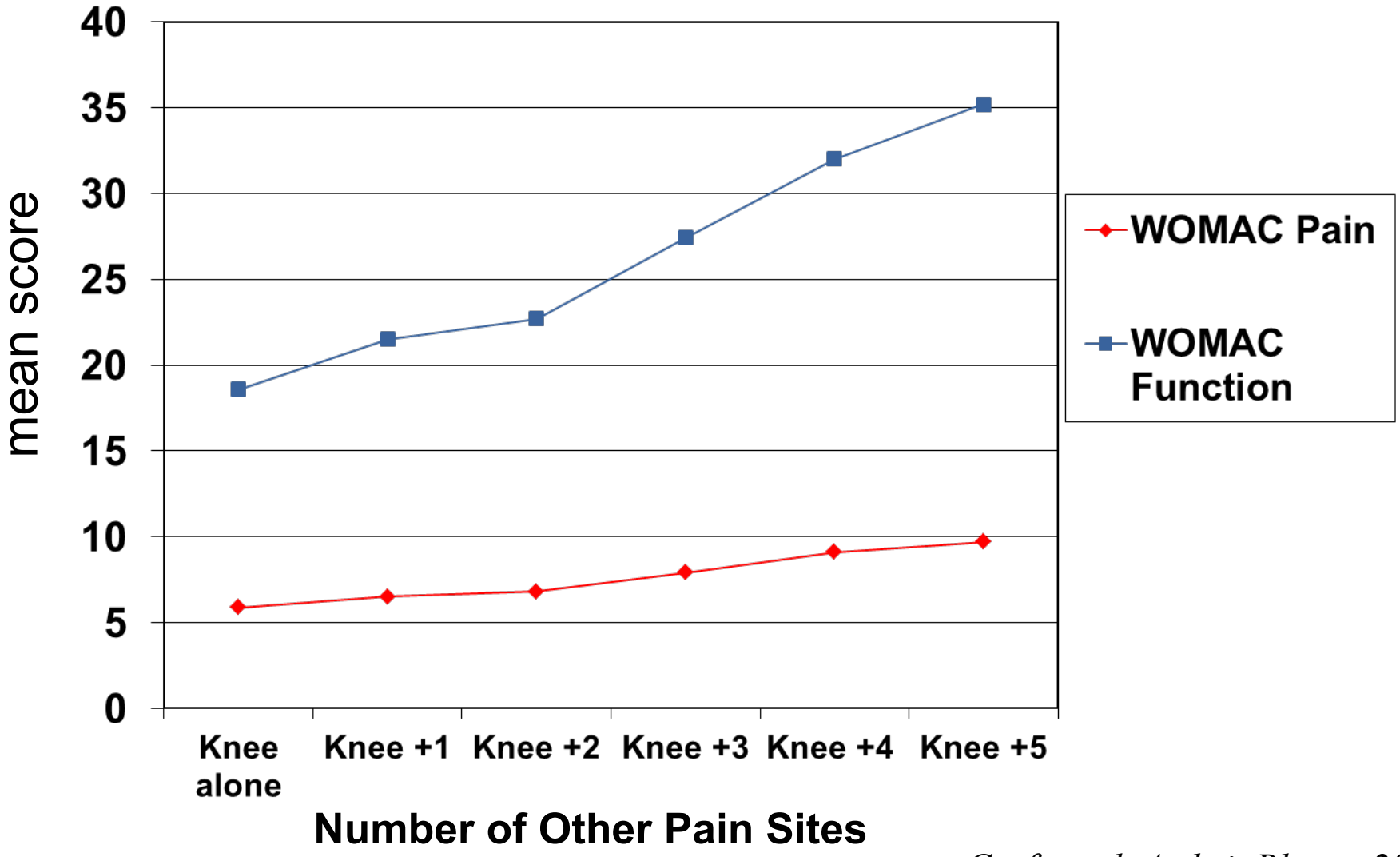
Jordan et al, 2007, J Rheumatol

Condition Responsible for Difficulty with Daily Tasks, Cardiovascular Health Study



Ettinger et al, J Am Geriatr Soc, 1994

Influence of "Pain Elsewhere" on the Impact of Knee Pain, 5,364 adults aged ≥ 65y, North Staffordshire, UK



Croft et al, Arthrit Rheum 2005

In population-based studies, pain symptoms in older adults are more disabling than pathology.

"It started with a pain I used to get regularly in my right heel…then eventually it worked its way up from my heel, to my knee...then the pain had moved from my right leg to my left and I noticed from time to time my hands hurt. My lower back has begun to be affected with pain as well. It has been so painful."

82 year old UK resident

Pain in Older People: Reflections and experiences from an older person's perspective
A. Kumar and **N. Allcock; Help the Aged 2008**

THE PAIN STARTS IN MY HUSBAND'S LOWER BACK,
THEN IT TRAVELS UP HIS SPINE TO HIS NECK,
THEN IT COMES OUT HIS MOUTH AND INTO MY EARS.
AND THAT'S WHY I GET THESE HEADACHES.

Women's Health & Aging Study (WHAS)

Participants: 1002 women aged 65-101, from East Baltimore Area

Eligibility: Difficulty in $\geq$ 2 of 4 domains of functioning; MMSE $\geq$ 18

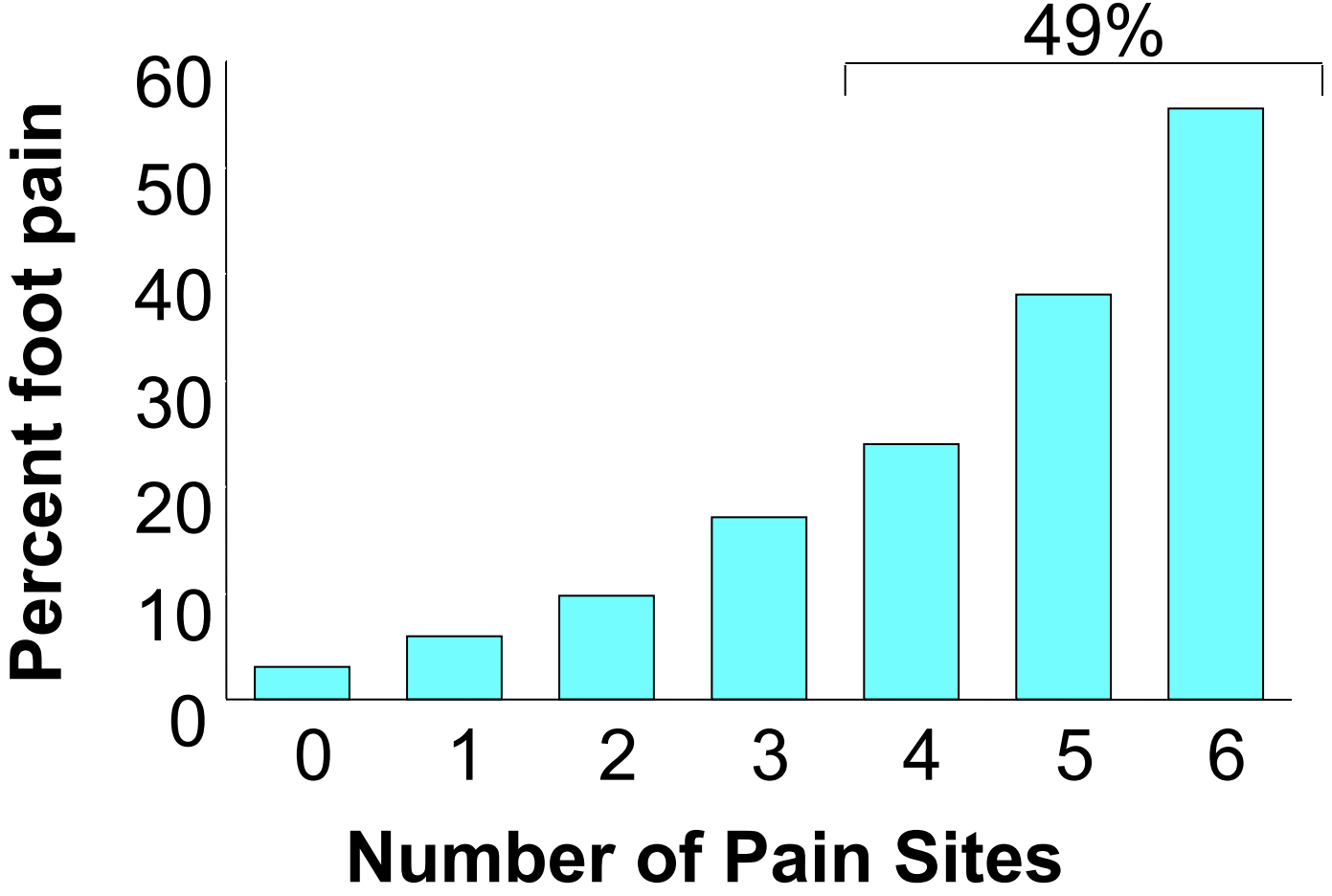
Design: 3-year Longitudinal Follow-up

In-Home Interviews and Nurse Exams every 6 months

Women's Health and Aging Study:

- 75% reported having pain on most days for at least 1 month in past year
- Women who had pain, often had pain in several sites
- Back and joint pain is associated with severe difficulty with daily activity

Percent of women with severe foot pain according to number of sites of pain



Leveille et al, *Am J Epidemiol* 1998

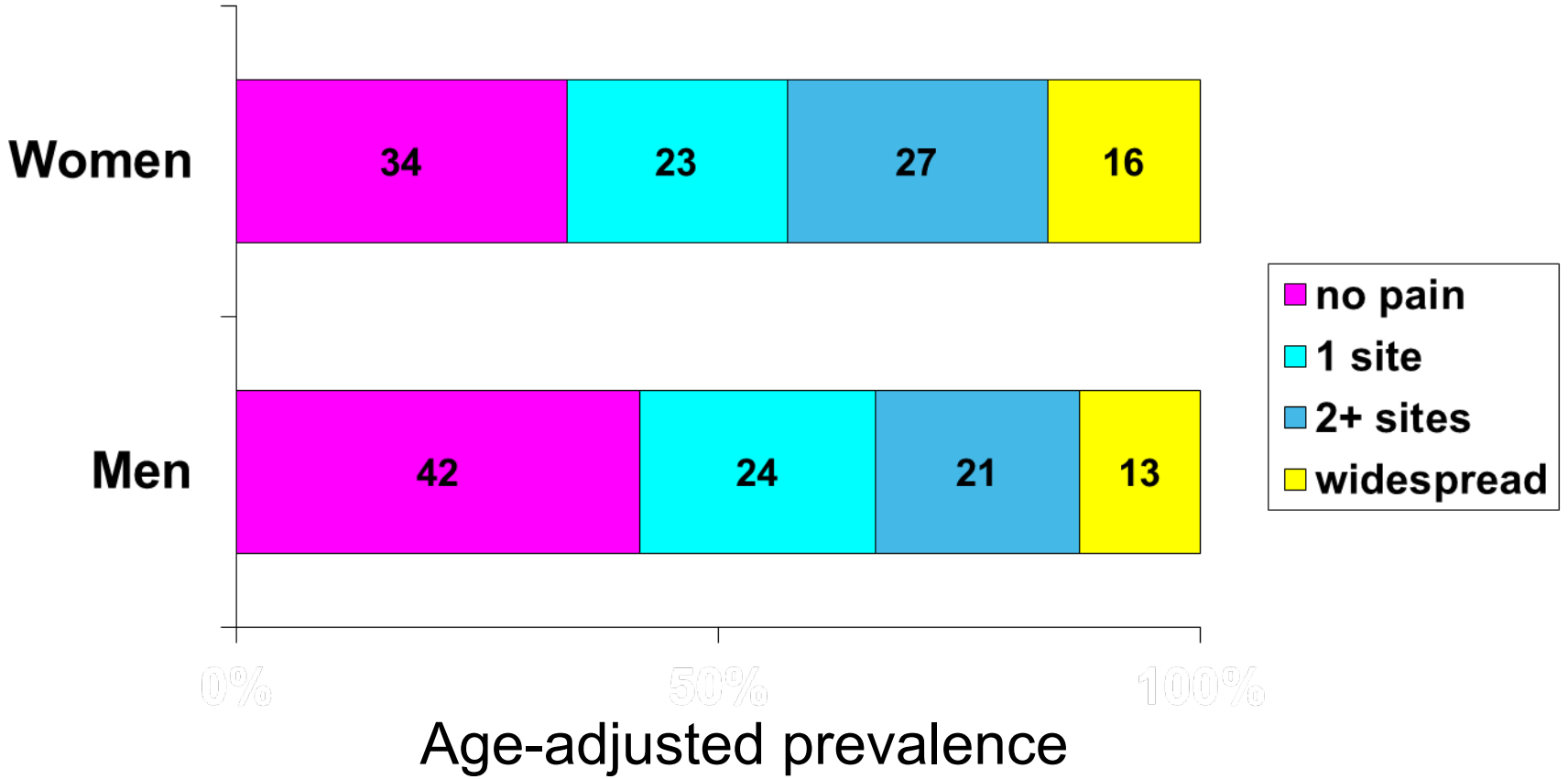
MOBILIZE Boston Study

Participants: 765 women and men aged ≥70 years

Eligibility: English language
walks independently
MMSE ≥ 18

Design: 2-year falls follow-up, monthly calendar postcards;
Home interviews & clinic exams at baseline and 18 months

Pain distribution in women and men aged ≥ 70, MOBILIZE Boston Study, 2005-2008.



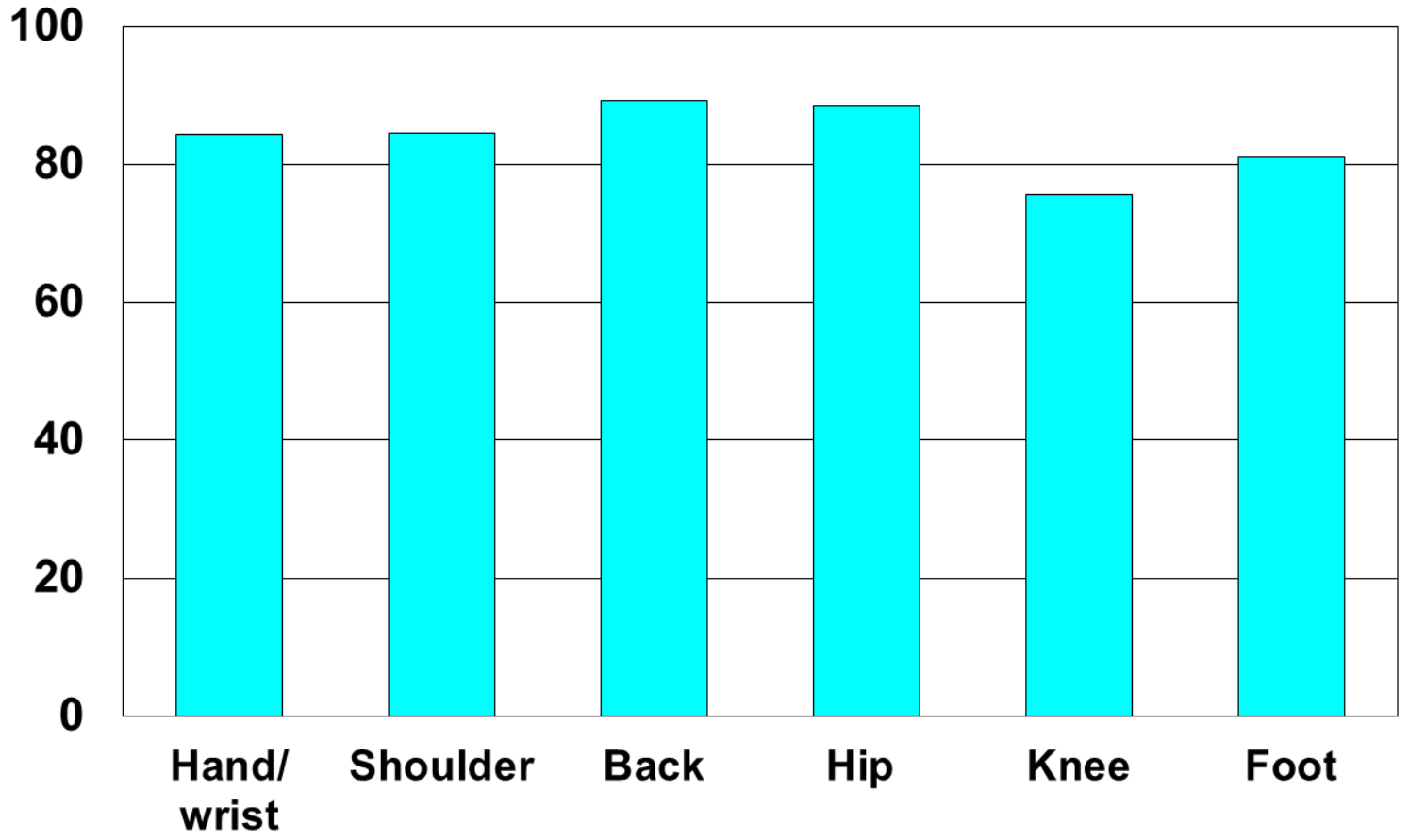
Pain in older adults varies from day to day:

Among the 62% who rated their pain ‘now’ as 0:

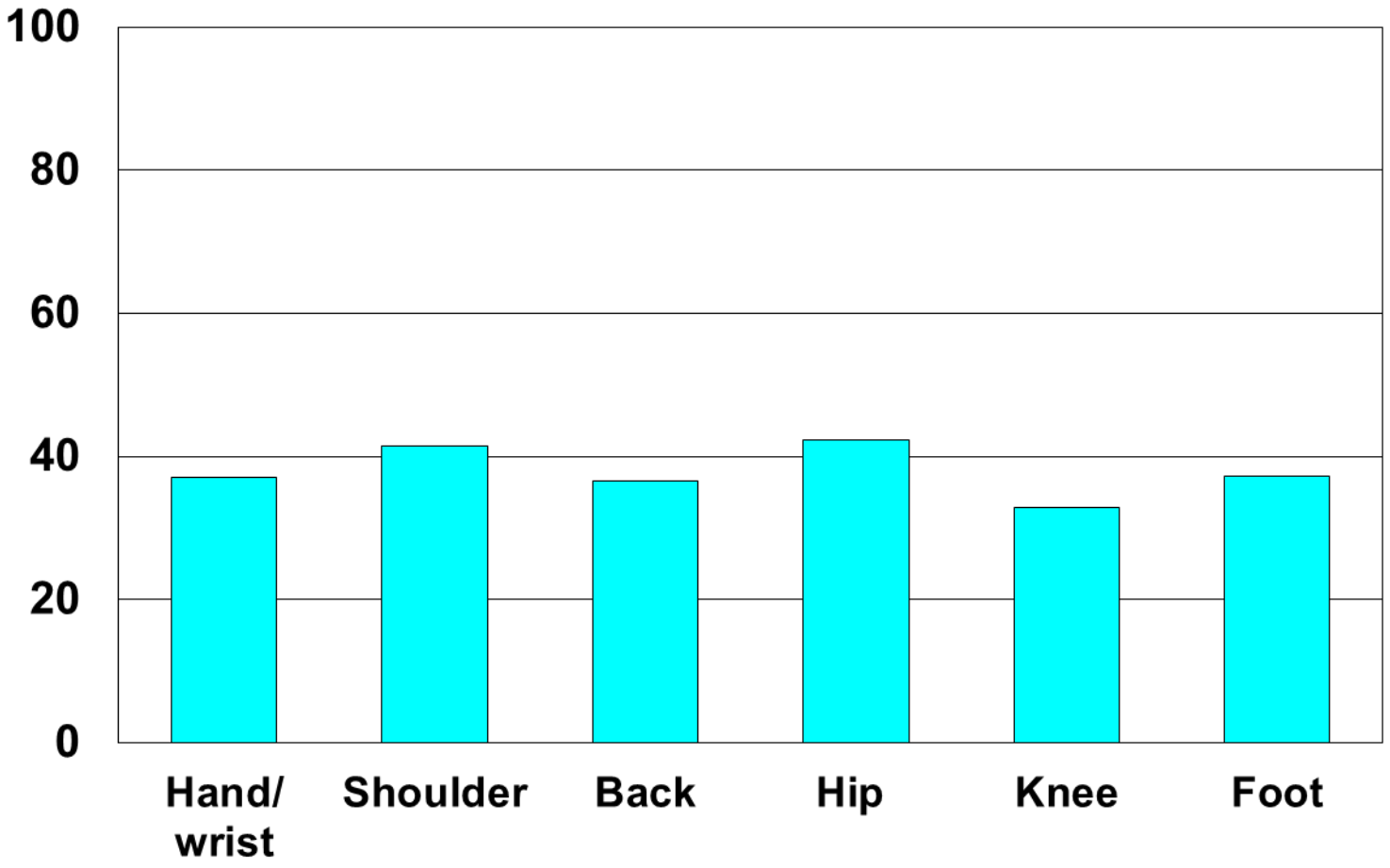
- 50% reported they had chronic joint pain
- 45% reported that pain interfered with daily life
- 26% reported moderate-severe pain in the past 4 weeks
- 30% reported ≥ 2 pain sites on the McGill Pain Map

MOBILIZE Boston Study

Percent of older adults aged 70 and older with 2 or more pain sites according to pain locations, MOBILIZE Boston

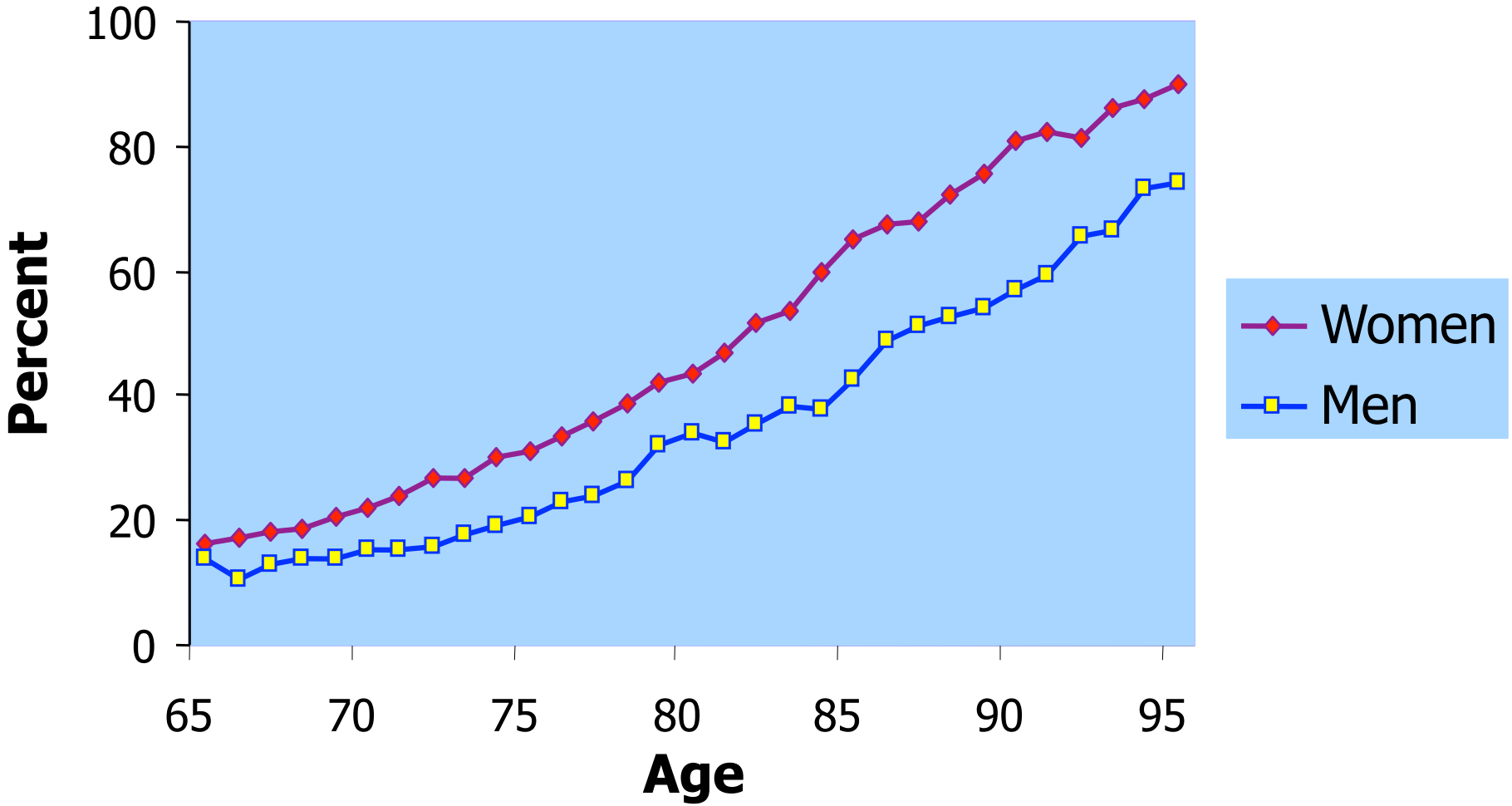


Percent with pain ≥ 3 other sites by pain site, MOBILIZE Boston Study



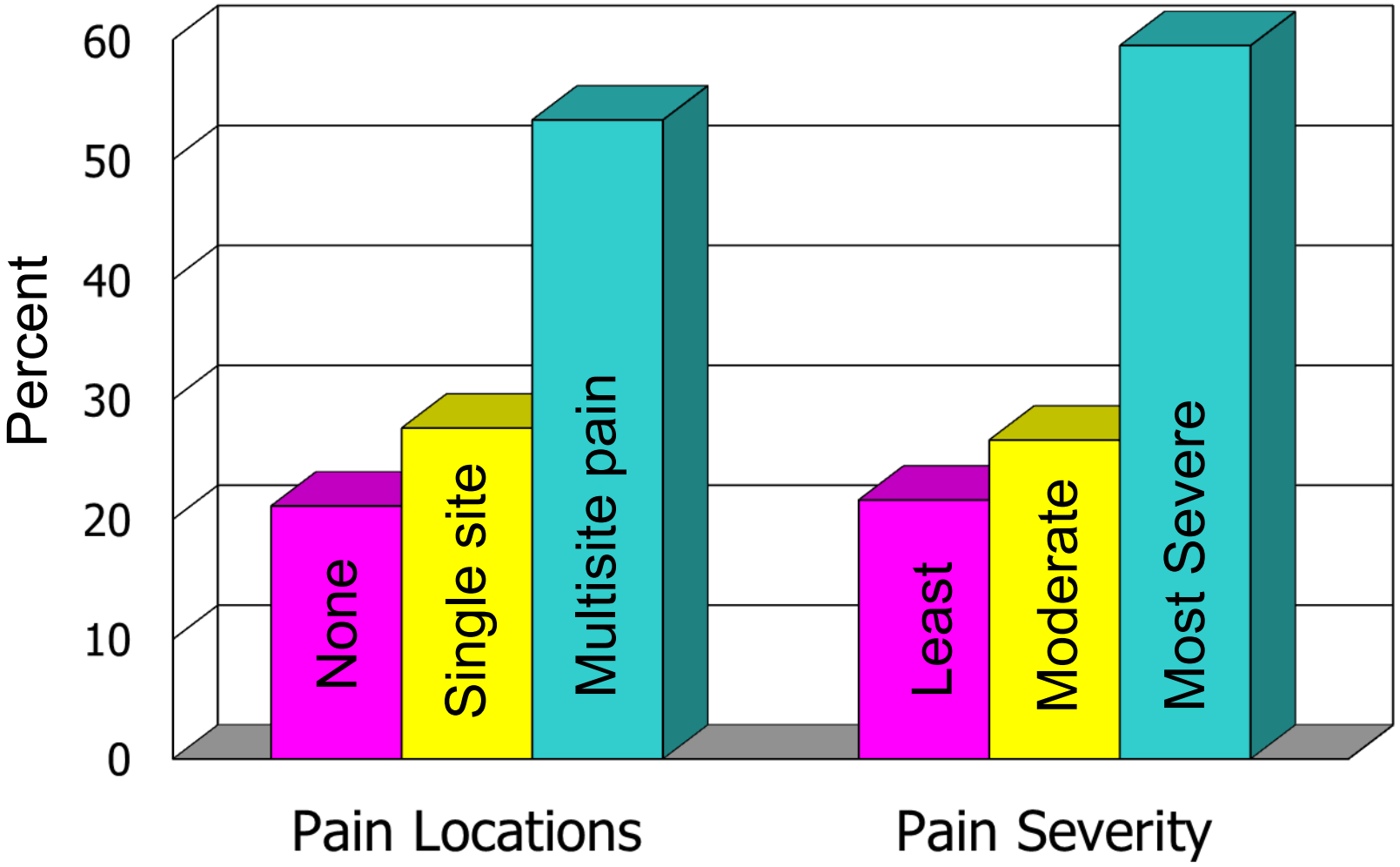
Chronic musculoskeletal pain and disability

If people live long enough, most people develop mobility disability

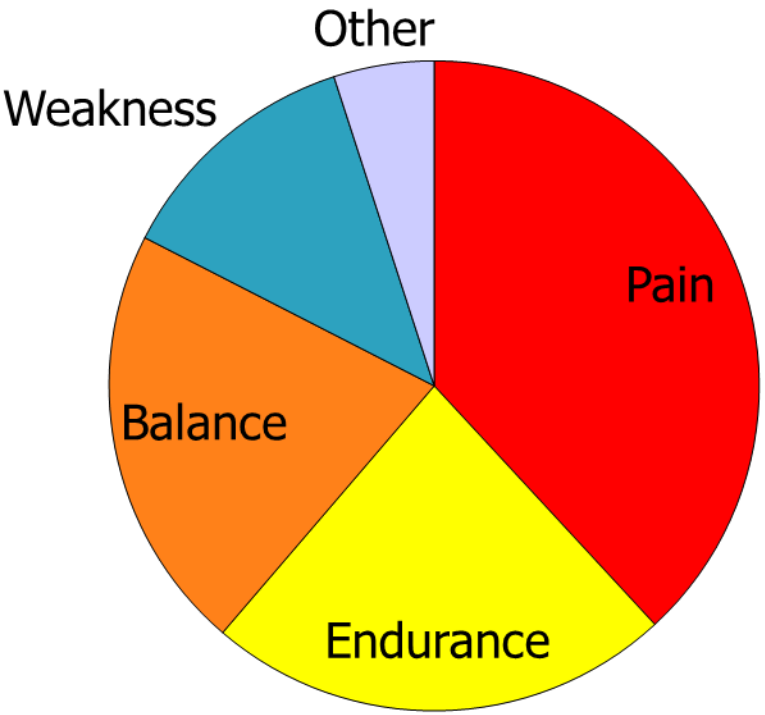


EPESE Study *Leveille et al. J Gerontol Soc Sci* 2000

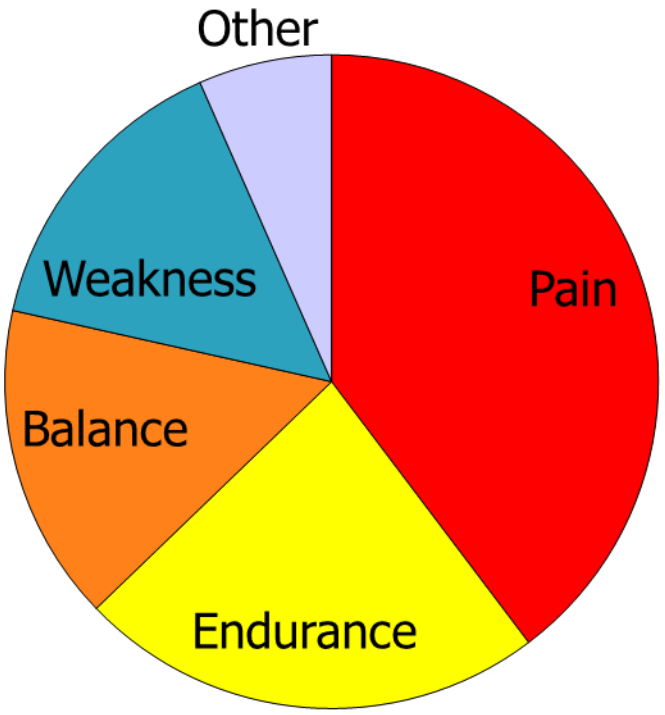
Older people who have more pain have the highest prevalence of mobility difficulty, MOBILIZE Boston



What do older adults report as the main cause of their mobility difficulty? MOBILIZE Boston



Walking difficulty
n = 207



Stair climbing difficulty
n = 159

Risk for onset of disability: mobility and Instrumental and Basic Activities of Daily Living according to pain in adults aged 70 and older, MOBILIZE Boston.

	Mobility difficulty	ADL difficulty	IADL difficulty
Pain categories	RR (95%CI)	RR (95%CI)	RR (95% CI)
No pain	1.0	1.0	1.0
One pain site	1.9 (0.97-3.6)	1.8 (0.8-3.9)	1.3 (0.8-2.0)
Multisite pain	2.9 (1.6-5.5)	3.6 (1.8-7.4)	2.1 (1.4-3.3)
Widespread pain	3.6 (1.7-7.5)	2.3 (0.9-5.6)	2.7 (1.6-4.5)

How do changes in pain vs. persistence of pain over time affect risk for developing disability?

	Mobility difficulty	ADL difficulty	IADL difficulty
Change in pain:	RR (95% CI)	RR (95% CI)	RR (95% CI)
No pain/single site → no pain/single site	1.0	1.0	1.0
Multisite pain → no pain/single site	1.1 (0.9-2.4)	2.1 (1.0-4.4)	1.6 (0.9-2.8)
No pain/single site → multisite pain	1.1 (0.5-2.6)	0.8 (0.2-2.9)	1.4 (0.8-2.5)
Persistent multisite pain	3.1 (2.0-4.8)	2.4 (1.3-4.3)	2.7 (1.9-4.0)

Chronic musculoskeletal pain and **falls**

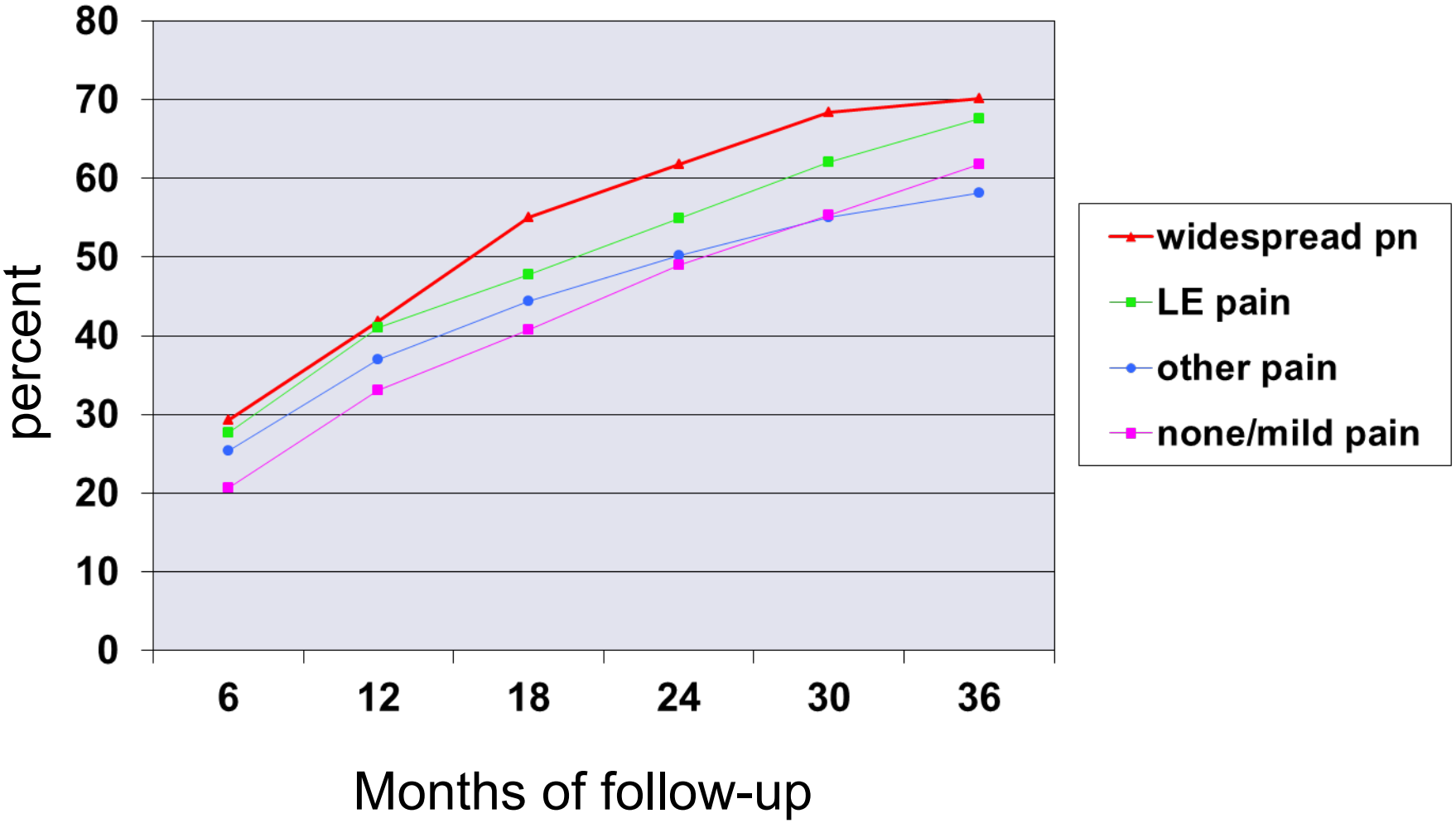
The tremendous burden of falls and their consequences in old age…

compared with active aging…

Does chronic musculoskeletal pain contribute to falls in older women with disabilities?

The Women's Health and Aging Study (WHAS)

Cumulative percentage of women who fell during follow-up by pain category



Leveille et al, *J Am Geriatr Soc 2002*

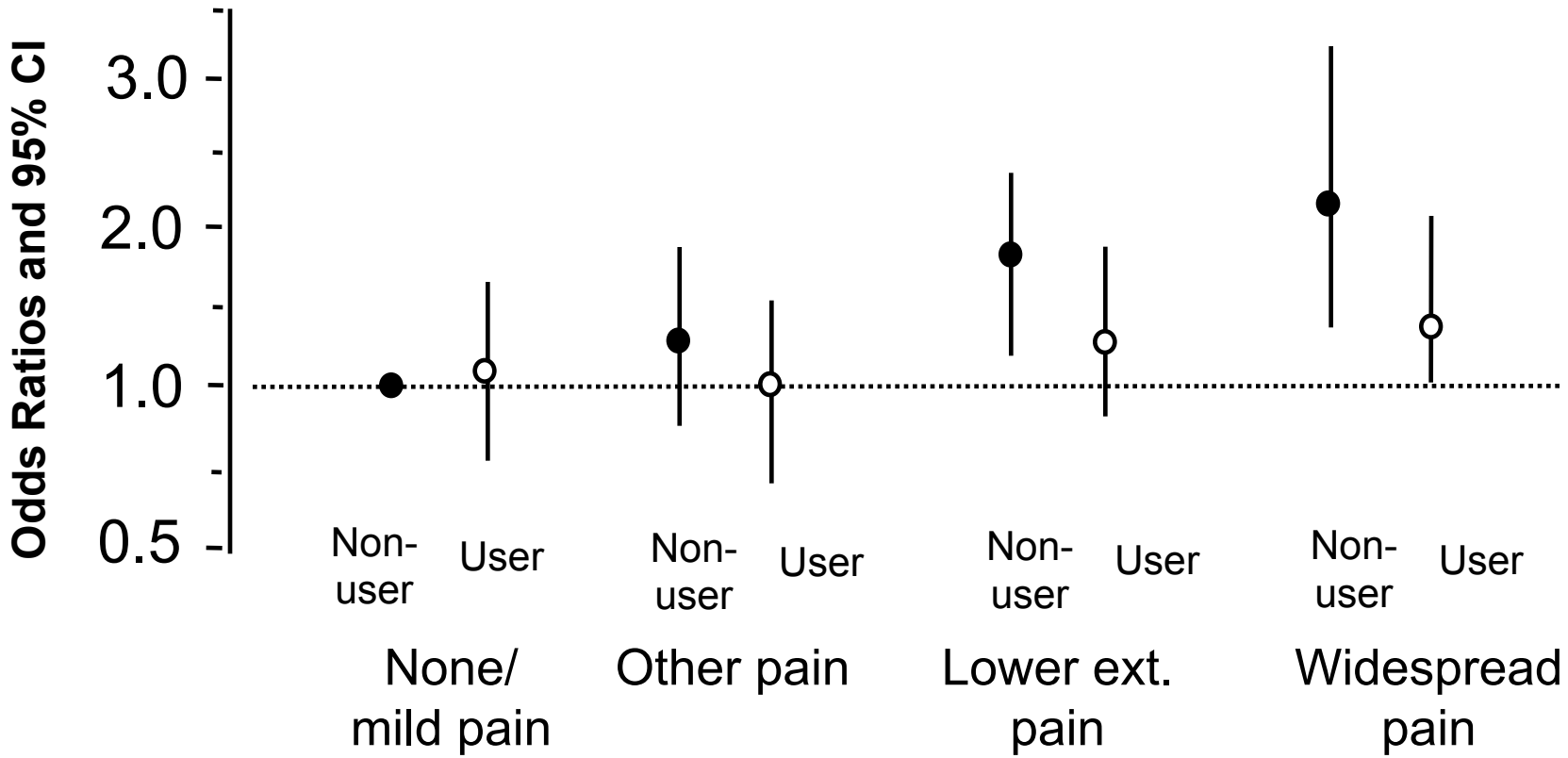
Risk for falls according to pain category during 3-year follow-up, WHAS

	Any falls OR (95% C.I.	**Recurrent falls** OR (95% C.I.)
No pain	**1.0**	**1.0**
Other pain	**1.4 (1.0-1.8)**	**1.5 (1.0 - 2.4)**
LE pain	**1.3 (0.97-1.7)**	**1.4 (0.9 - 2.0)**
Widespread	**1.7 (1.3-2.2)**	**1.7 (1.1 - 2.5)**

* Survival analysis models adj. for age, race, fair/ poor health, education, BMI, chronic diseases, prior falls, MMSE, meds, gait speed, balance

Leveille et al, *J Am Geriatr Soc 2002*

Risk for falls according to pain category and daily use of analgesic medications



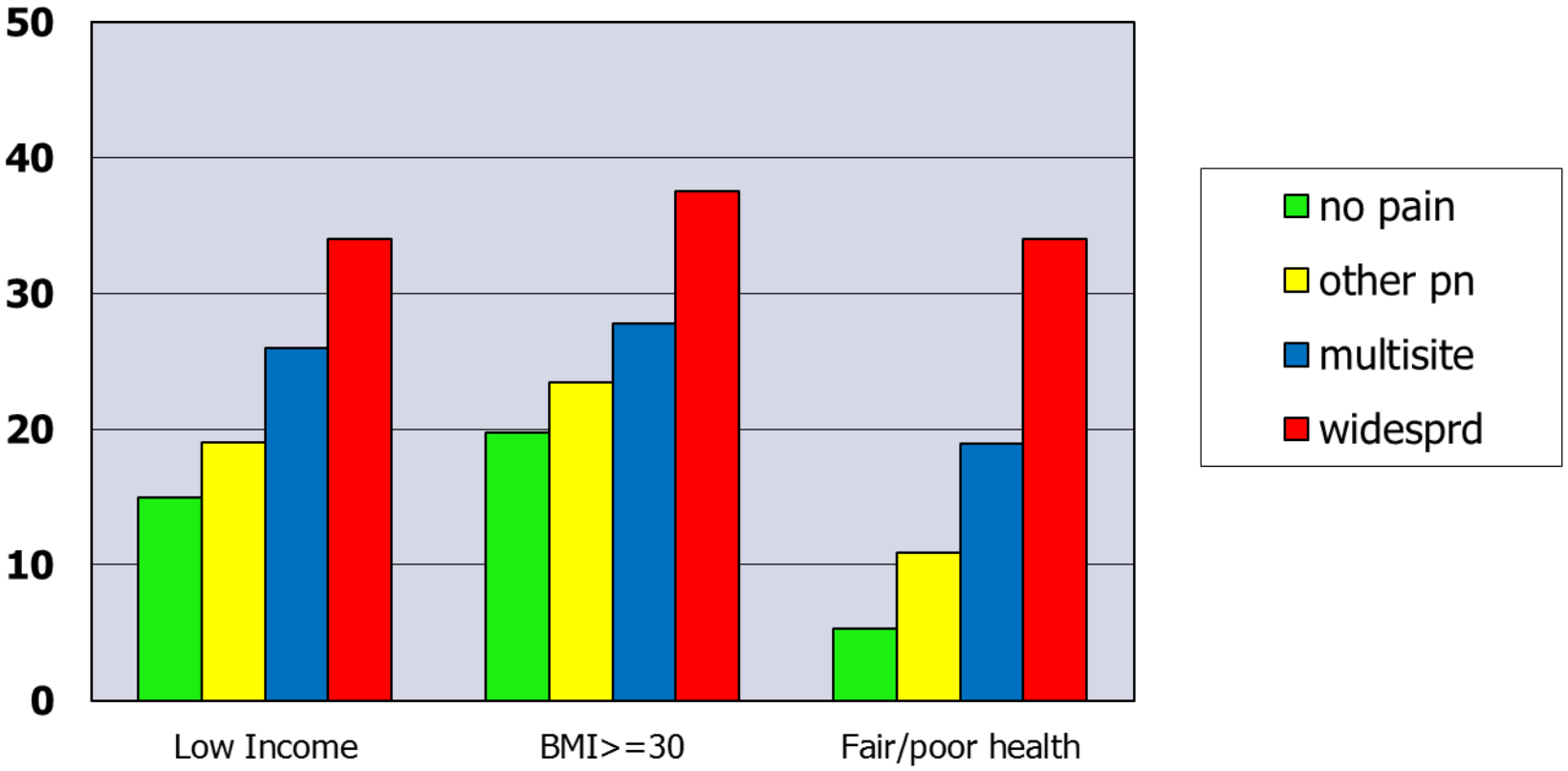
Leveille et al, *J Am Geriatr Soc 2002*

Next Step…

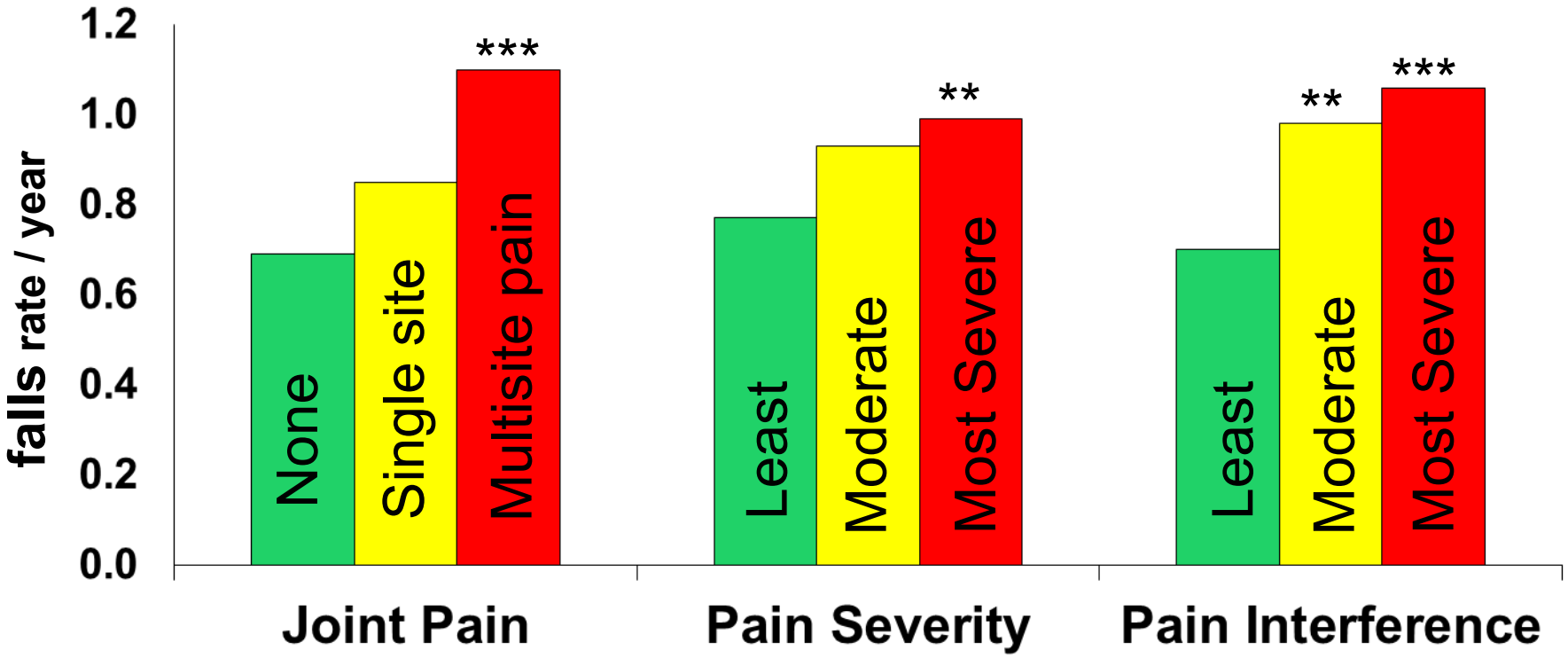
Does multisite musculoskeletal pain contribute to falls in the general community of older adults?

The MOBILIZE Boston Study

Characteristics associated with pain categories, MOBILIZE Boston



Age-adjusted fall rates according to pain measures in adults aged ≥70 years, MOBILIZE Boston Study 2005-2008



Leveille et al, *JAMA 2009*

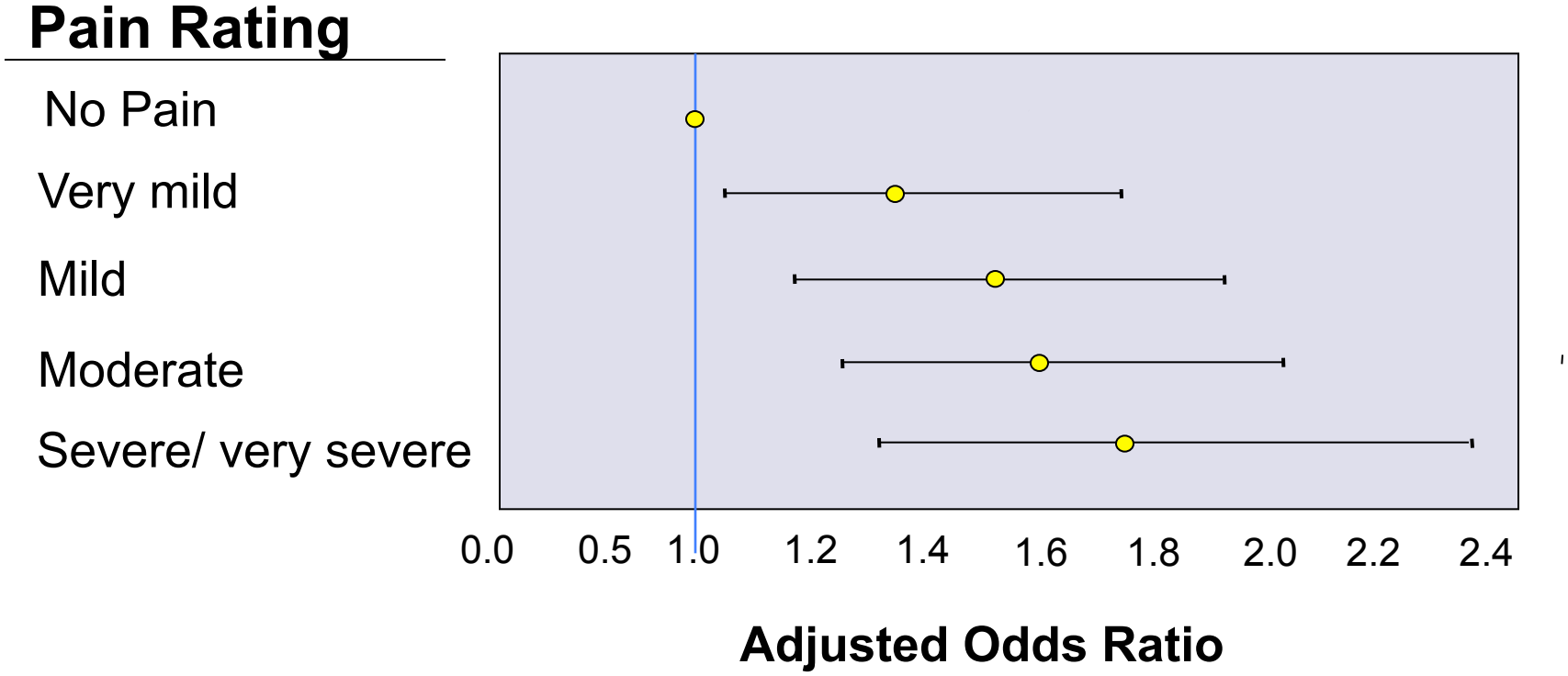
Incidence rate ratios for occurrence of falls according to baseline pain, MOBILIZE Boston

	Pain locations	Pain severity	Pain interference
	IRR (95% C.I.)	IRR (95% C.I.)	IRR (95% C.I.)
No pain	**1.0**	**1.0**	**1.0**
Middle gp	**1.2 (0.9-1.6)**	**1.2 (0.9 – 1.5)**	**1.5 (1.1-1.9)**
Highest gp	**1.8 (1.4-2.2)**	**1.6 (1.2 - 2.1)**	**1.6 (1.2-2.2)**

Negative binomial models adjusted for age, sex, race, education, fall risk factors, chronic conditions, cognitive function, psychiatric dugs, balance score, and chair stands time

Leveille et al, *JAMA 2009*

Short term effects: Odds ratios for falls in the subsequent month according to monthly pain ratings



Leveille et al, *JAMA 2009*

Discussion points

- Musculoskeletal pain in older adults is generally part of a multisite pain problem.
- Chronic pain, measured by location, severity, or pain interference, increases risk for disability and falls in older adults.
- Proposed mediators such as physical function and joint pathology may not explain the association between pain and falls – raising questions about underlying mechanisms

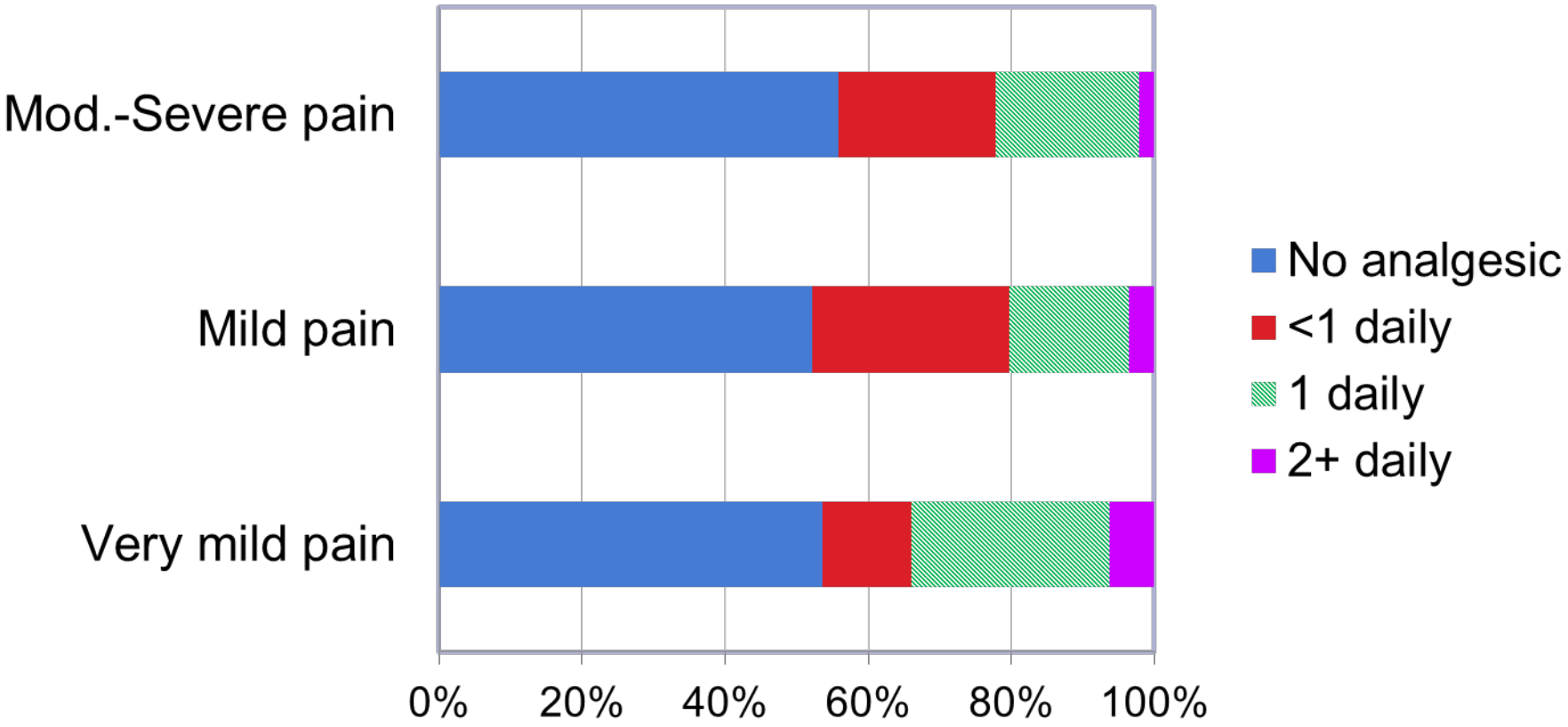
Closing comments about pain management…

Among 599 adults who reported chronic pain (78% of MOBILIZE participants),

- 38% reported using both pharmacologic and non-pharm. approaches to pain management
- 31% used non-pharm methods alone
- 11% used only pharmacologic approaches

Stewart et al, *J Am Geriatr Soc 2012*

Analgesic use in 599 older adults who report chronic pain, according to severity of their pain



Clinical Implications

- Clinically, measures of pain severity and physical function are essential for monitoring response to analgesic medications and pain management efforts.
- Ongoing attention to development of new sites of chronic pain as an indicator of worsening pain.
- Does better pain management in midlife limit the course (dissemination) and consequences of pain in late life?

Future Studies

- More work in best ways to measure pain over time in older adults – clinical tools
- Role of pharmacologic and non-pharmacologic management in the course and consequences of pain
- Search for factors that explain the pain-falls relationship continues: sway, attentional challenges to mobility, role of the brain in mobility

Team of Collaborators in This Work:

Jonathan Bean, MD, MS
Robert Shmerling, MD, MPH
Laura Eggermont, PhD
Rich Jones, ScD
Dan Kiely, MS
Jeffrey Hausdorff, PhD
Jack Guralnik, MD, PhD

The MOBILIZE Boston and
WHAS Collaborative teams

PhD Students:
Carrie Lee Stewart
Manu Thakral
Ampicha Nawai

Post Doctoral Fellow:
Guusje van der Leeuw

Time for Questions and Discussion…