

# Home Time as a Patient-Centered Outcome in Pragmatic Trials: Promise, Pitfalls, and the Path Forward



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- Moderator will review questions from chat box and ask them at the end
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# Home Time as a Patient-Centered Outcome: Motivation, Definitions, and Concepts

*IMPACT Grand Rounds*  
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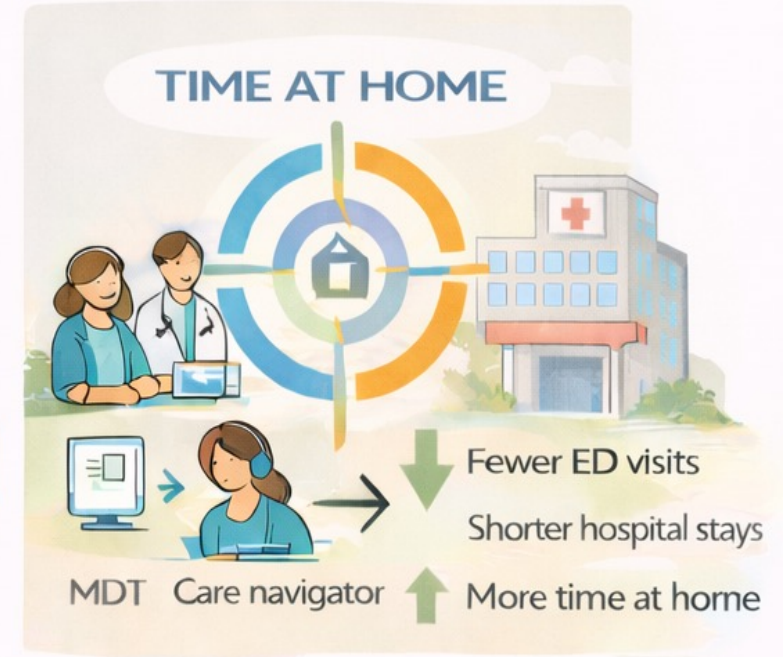
2011



2012



2013



***“Outcome measures that reflect what truly matters to patients can define performance in ways that increase the engagement of patients, clinicians, and provider organizations”***

*(Groff et al. Days Spent at Home – A Patient-Centered Goal and Outcome.  
N Engl J Med 2016; 375: 1610-1612)*

**Home time is the number of days alive  
and spent outside healthcare institutions**

# Why home time?

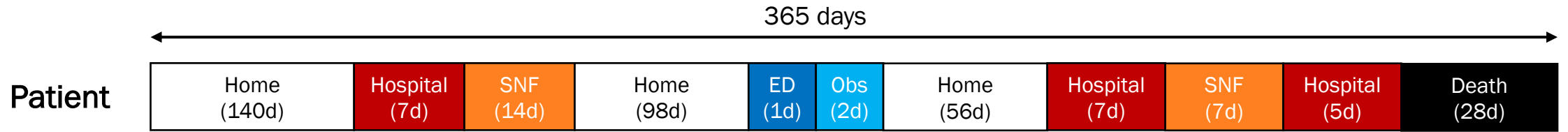
- **Patient-centered:** Captures where life is lived (i.e., home) – a priority for older adults
- **System-relevant:** Integrates survival, acute care, and post-acute care use into a single, intuitive metric
- **Scalable:** Readily calculated from administrative claims data

# Same concept, different operational choices

- Home time
- Home and Community Days (HCD)
- Healthy Days at Home (HDAH)
- Days Alive and spent Out of Hospital (DAOH)

*1-year home time = 365 days*

- *(days in short-term acute care hospital*
- + *days in inpatient rehab facility*
- + *days in long-term care hospital*
- + *days in inpatient psychiatric facility*
- + *days in skilled nursing facility*
- + *days in observation status, emergency department, dialysis centers, etc.*
- + *mortality days)*



Care setting	Patient-Days
Days in short-term acute care hospital	19
Days in skilled nursing facility	21
Days in observational status	2
Days of emergency department use	1
Mortality days	28

**Home time in 1 year** **294**

**Home time loss in 1 year** **71**

**Proportion of home time in 1 year** **0.81 (=294/365)**

**Proportion of home time of survival time in 1 year** **0.87 (=294/337)**

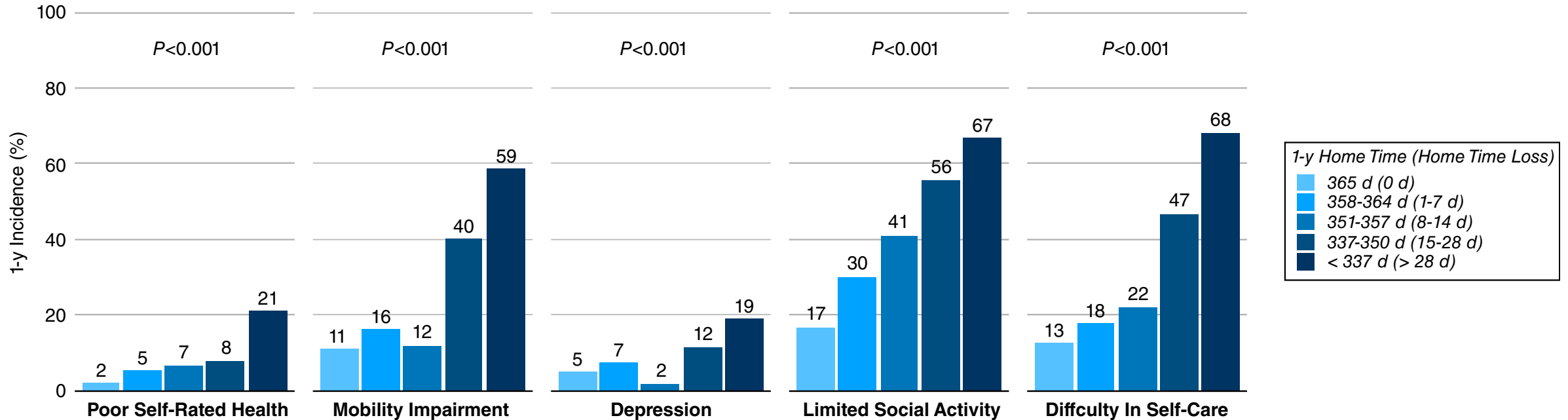
# What does home time represent?

**Complement of  
utilization measures**  
(*“where care occurs”*)

**Surrogate of quality of  
life or function**  
(*“how well life lived”*)

# Home time as a surrogate of quality of life and function

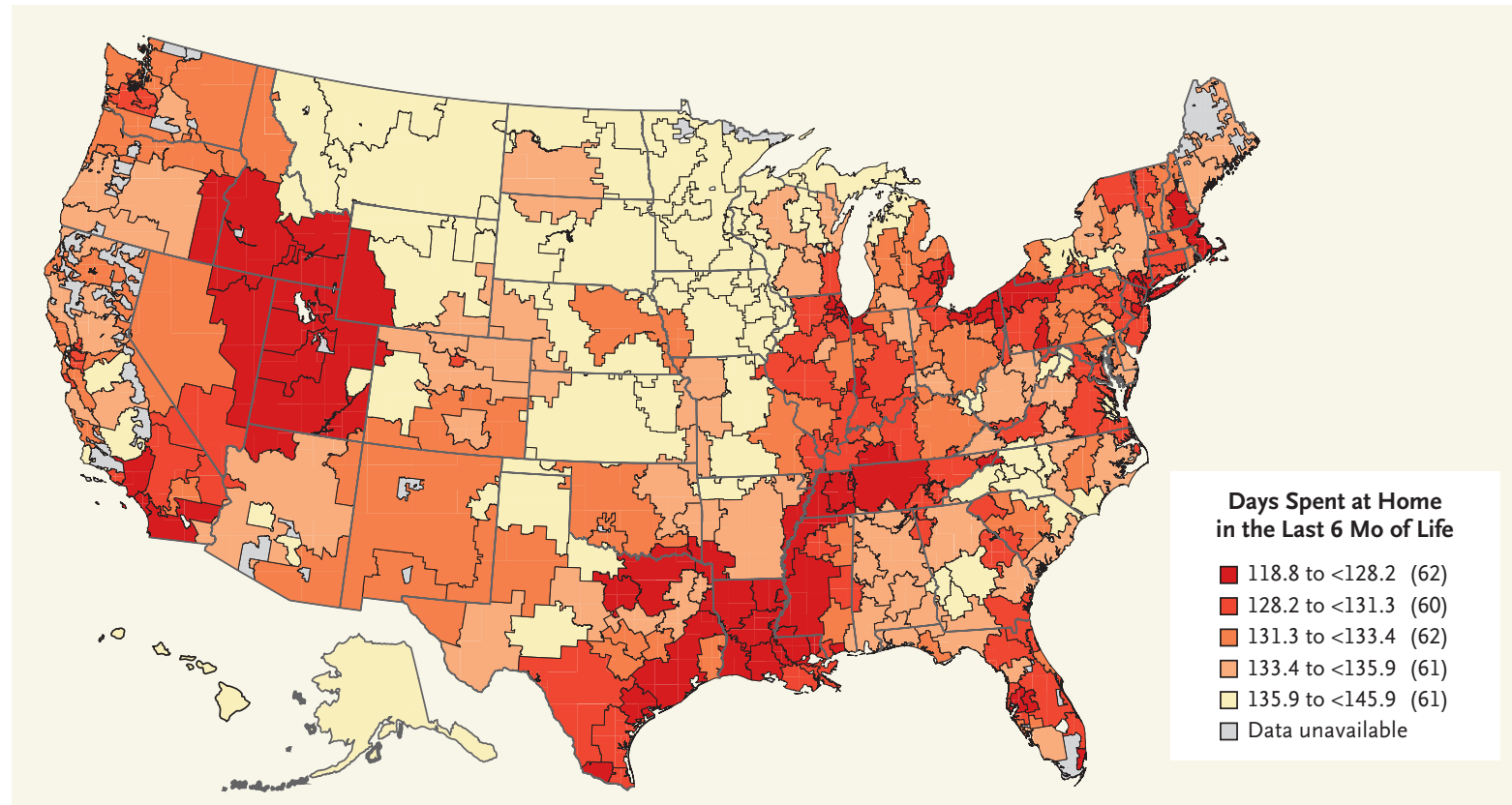
**Steep increase in mobility and self-care difficulty when 1-Year home time loss > 14 days**



# Home time in the literature

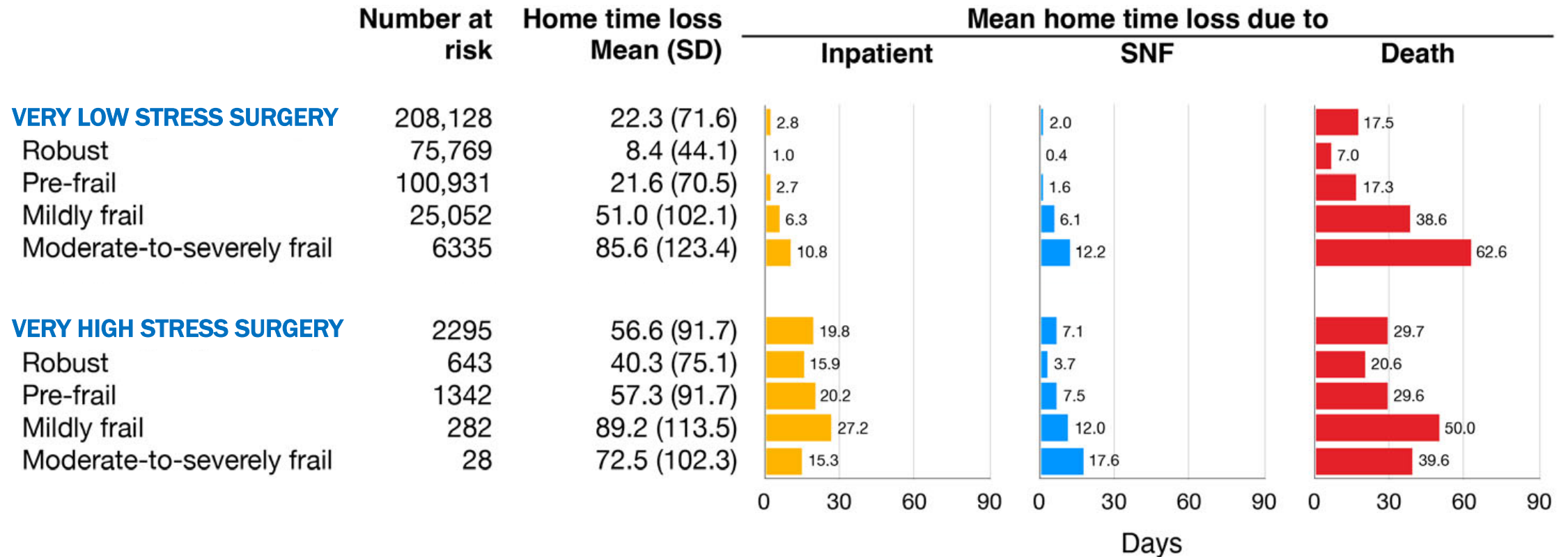
# Home time in the last 6 months of life

*Measure: Number of days alive and spent out of inpatient and SNF*



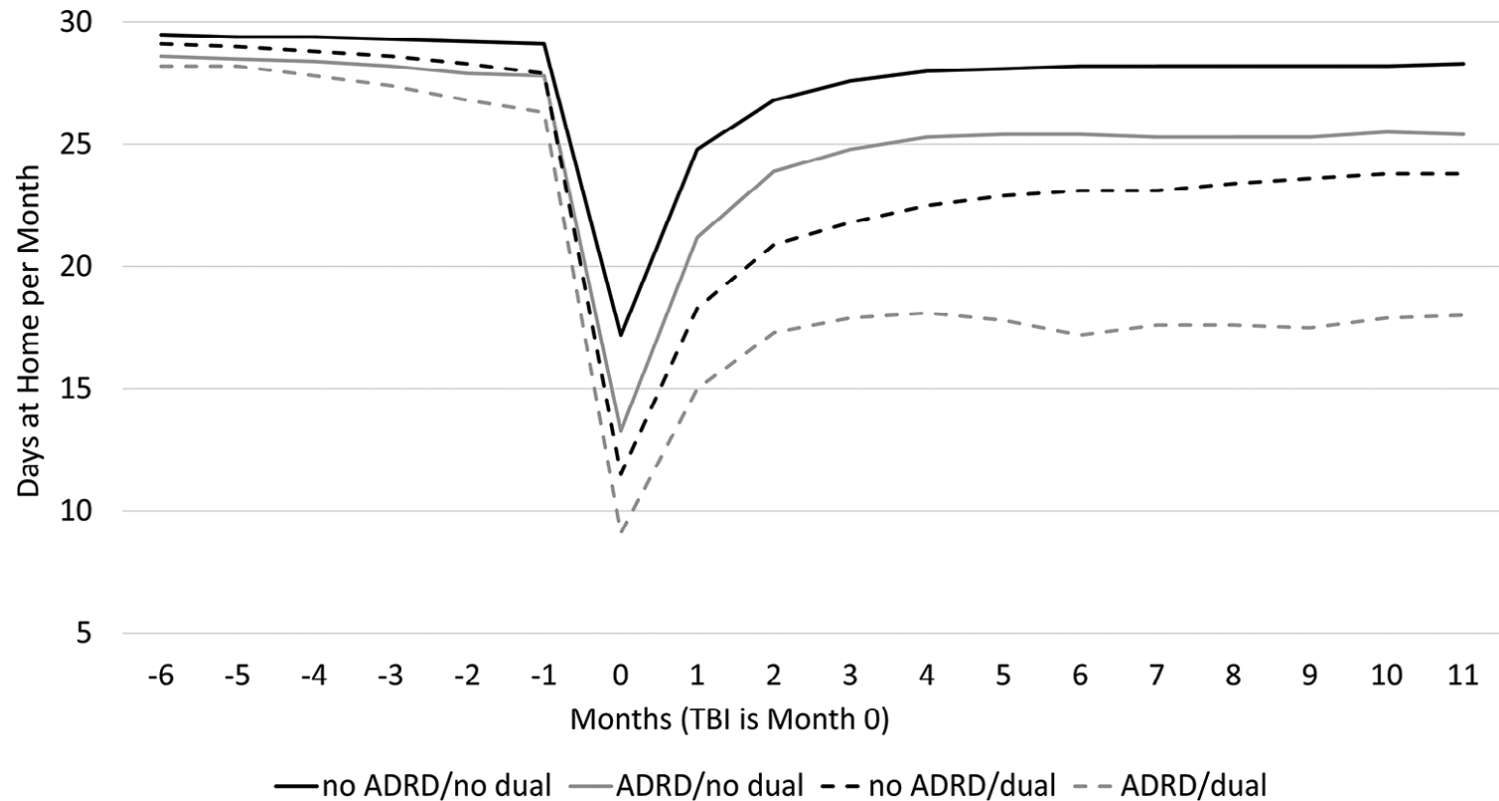
# Home time after surgery

*Measure: Number of days lost due to inpatient, SNF, and death in 1 year*



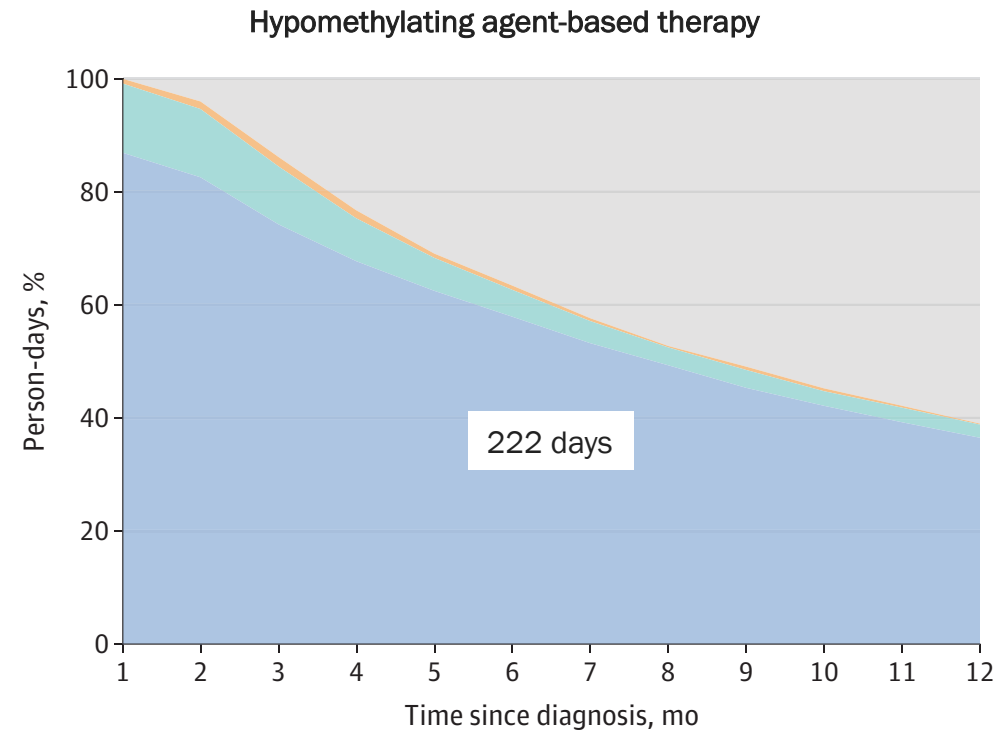
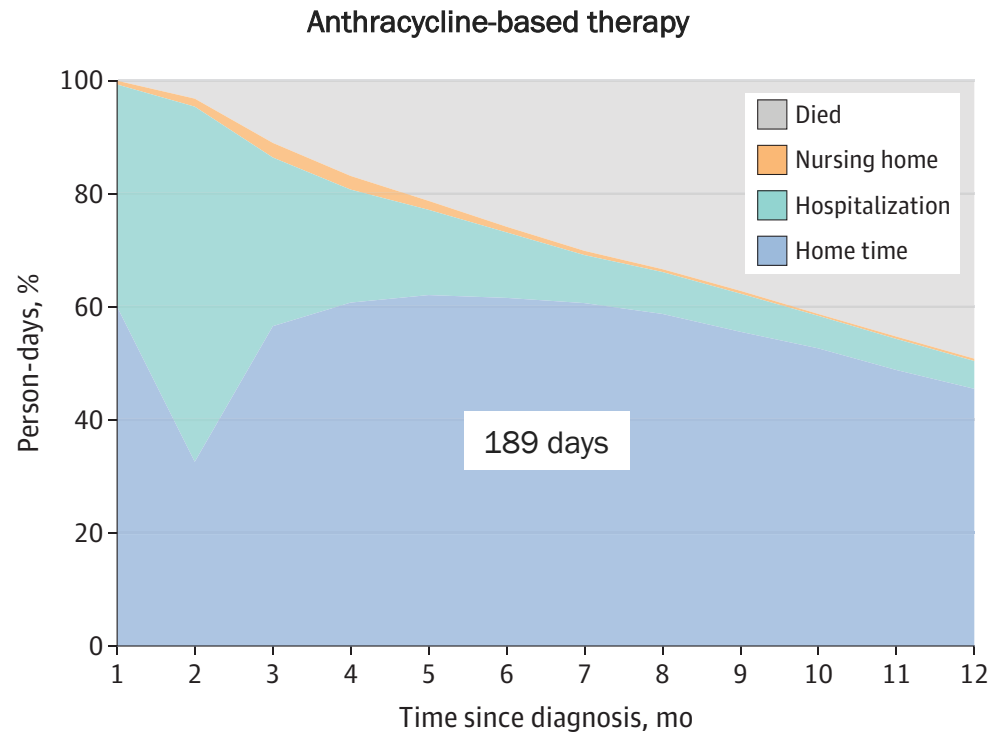
# Home time after traumatic brain injury

**Measure: Number of days alive and spent out of inpatient, SNF, LTC, ED, and observation in each month**



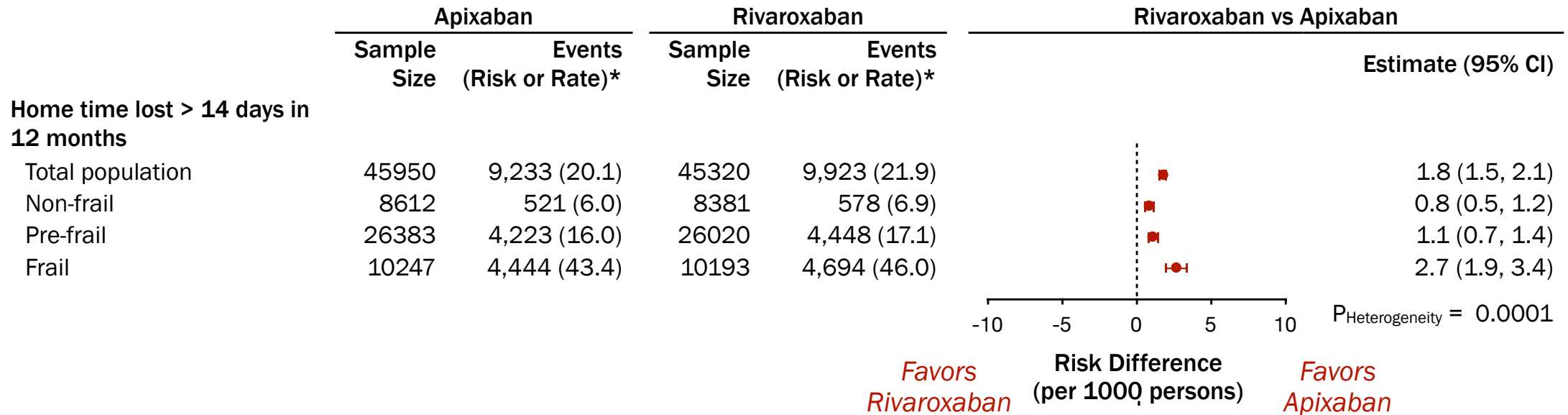
# Home time after chemotherapy for AML

**Measure: Number of days alive and spent out of inpatient, SNF, and LTC in each month**



# Home time after anticoagulants for AF

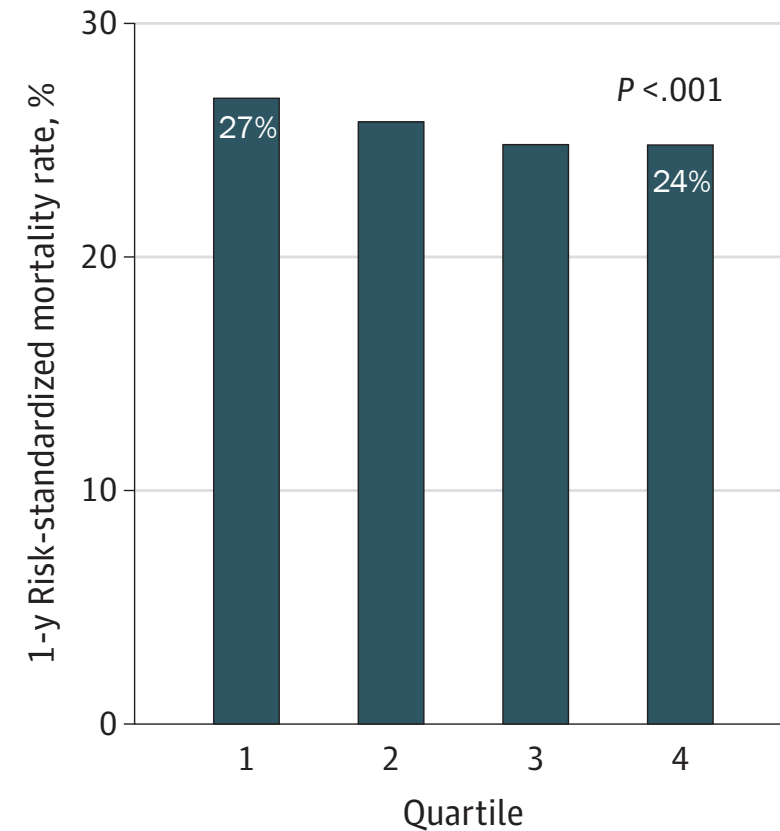
**Measure: >14 days lost due to inpatient, SNF, and death in 1 year**



# Home time as hospital performance metric

**Measure: Number of days alive and spent out of inpatient, SNF, and LTC within 30 days of CHF discharge**

Hospital quartile	Mean 30-day home time after CHF discharge
Quartile 1	18.1
Quartile 2	20.0
Quartile 3	21.1
Quartile 4	22.6



# Key observations from the literature

- Applied across diverse **clinical contexts** (e.g., end-of-life, trauma, surgery, chemotherapy) and for **hospital performance evaluation**
- **Care settings** included in calculation vary across studies
- **Summary measures vary:** mean home time, home time loss, proportion of home time, risk of home time loss

# Home time as outcome for ePCT

- Patient-centered, system-relevant, intuitive, and scalable at health care system scale
- Integrates survival and utilization and reflects—imperfectly—quality of life and function
- Design choices (clinical context, care settings, summary measure) must be explicitly specified.

# Limitations of home time measures

A critique



Claire Ankuda, MD, MPH, MSc

Associate Professor

Icahn School of Medicine at Mount Sinai -> Dartmouth Health

# Is home time a useful outcome measure?

- Differences detected from interventions are often small
  - Variation across ACOs found an IQR of an adjusted 4.2 days/year (342.32 vs. 351.53) (Freed et al)
  - Variation across hospital referral regions found that, adjusting for demographics and chronic conditions, the worst-performing market had an average of 5.8 fewer days at home/year compared to the mean (347.2), and largest contributor was differential mortality rates (Burke et al)
  - HI-FIVES Family Caregiving Training trial resulted in a non-significant 1 day over 12 month difference (Van Houtven et al)
  - Salahab study of remote monitoring found a difference of 3.4 days at home per 100 days.... But that was driven by differential mortality

# Is home time a useful outcome measure?

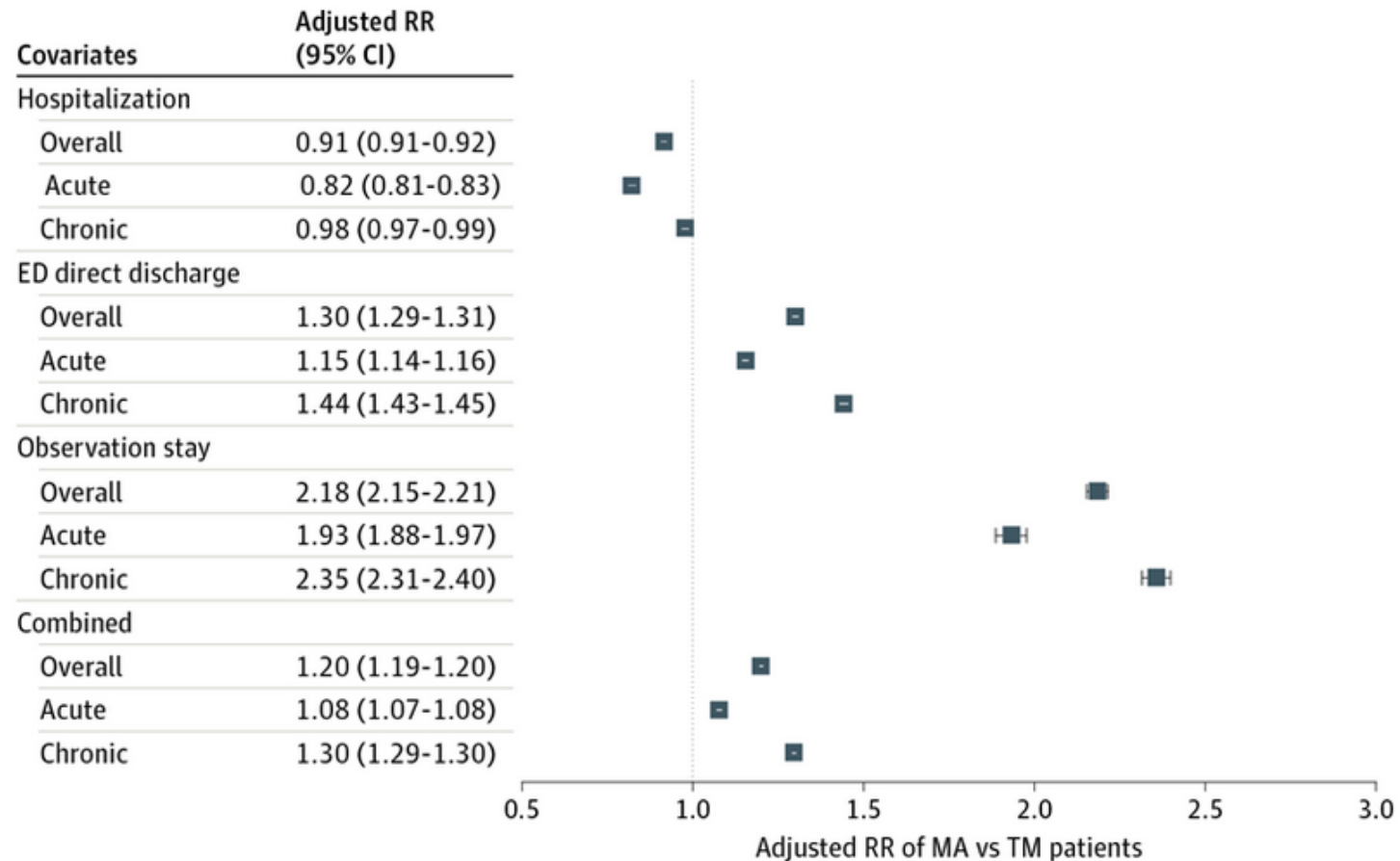
- Sociodemographic and regional factors appear to substantially influence days at home
  - Among Veterans, low medical literacy was associated with 6.14 fewer days at home (Jacobs, et al)
  - Male gender, particularly among people with dementia, is associated with fewer days at home after hip fracture (Orwig, et al)
  - ACOs performing worst at days at home are more likely to care for Black and Hispanic older adults and those residing in urban regions (Freed, et al)

# Measurement challenges must be addressed

- How does quality of life vary based on type of days away from home?
  - Dr. Van Houtven's work exemplifies the challenge of measuring this
- The growth of Medicare Advantage, where difficult-to-capture observation stays replace hospitalizations, further challenges measurement
  - Many studies do not consider ED visits and observation stays as days away from home

# ED visits and observation stays replace inpatient stays in Medicare Advantage

Figure 1. Differences in Avoidable Acute Care Episodes for Ambulatory Care–Sensitive Conditions Among Patients With Medicare Advantage vs Traditional Medicare Coverage



# Balancing measures needed for pragmatic trials

- Days at home may not be “good”: for patients or caregivers
- Balancing measures (patient and caregiver reported) are needed to capture quality of days at home
  - For patients:
    - Level of support and services (direct care, medical assistance if needed)
    - Preference for home
    - Symptoms (pain, nausea, anxiety, depression, loneliness and isolation)
  - For caregivers:
    - Burden, benefit of caregiving, economic costs and days missed from work and school

# Particular concerns with days at home as a performance measure

- **Unintended consequences:** Home time may also be seen as “cheaper” days from the payer perspective, thus already incentivized
  - Over-emphasis may further encourage under-delivery of potentially helpful inpatient, skilled nursing, or rehabilitative services
- **Selection concerns:** If home time is largely driven by patient characteristics rather than modifiable care, programs may avoid higher-need older adults
- **Need for balancing measures:** Patient- and caregiver-reported outcomes are essential to ensure time at home reflects quality, not just utilization

# The way forward

- **Define clinical meaning:** Establish what constitutes a clinically meaningful change in home time and the degree to which interventions can realistically influence it
- **Identify key balancing measures:** Use qualitative and survey data to determine which tradeoffs matter most, to guide pragmatic trials and performance measurement
- **Differentiate time away from home:** Continue to test measures that distinguish types of days away from home (e.g., hospital, SNF, ED), consider the nuance of applying this in the growing MA program, and that assess distance and travel time from home

# Days far from home: a promising future direction

- Intuitively, time spent closer to home appears meaningful to measure
  - Shorter driving time to nursing facilities drive preferences for post-acute care settings for patients and caregivers (Geng et al)
  - Travel time to facilities is a strong predictor of family visitation frequency (Weimer et al)
- Distance from home is a highly policy-relevant measure when hospital and nursing home closures threaten access
- Our team is in the process of defining a claims-based measure of dying far from home, and would love collaboration!

# In Pursuit of Person-centered Home Time Measurement




Courtney Van Houtven, PhD

Professor, Population Health Sciences, Duke University School of Medicine and Duke-Margolis Institute for Health Policy

# Home Time Potential

- Home time measures are increasingly used to evaluate healthcare interventions and as a performance metric (CMS initiatives)
- Intuitive appeal:
  - Patients most often prefer to remain at home
  - Potential to be less costly for healthcare systems
  - “Pragmatic” because can be derived from existing administrative claims data



Despite its potential, empirical applications vary widely in included settings, time intervals, and patient populations



Little is known about how Home Time measures are truly “person-centered” and reflect patient and family caregiver quality of life

# Home Time Uses – Evidence Map

- Identified 217 studies from 2010-2025 used home time as an outcome or predictor measure ( $\geq 2$  types of health care facility settings)
  - Greatest increase in past 5 years (from 32 studies to 185)
  - 77% studies focused on older populations, with stroke, cancer, or EoL
  - 3% focus on dementia/CI and 3% compare outcomes between patients with and without dementia
  - Measured in 90 or 180-day intervals
  - Data sources included claims, EHR, and surveys

# Home Time As QoL for older Veterans and Caregivers



Department of Population Health Sciences

Duke University School of Medicine

# ASPIRE Project (VA) 2019 - 2024

*Is home time a person-centered quality of life (QoL) measure?*

- Used existing eHR data from completed studies with survey reported outcomes to examine relationship of time in different settings with Patient QoL (~30% cognitive impairment, 100% functional impairment)

## Focus groups

One Veteran focus group  
(n=6)

Two caregiver focus groups  
(n=14)

IP had greater negative  
effects on patient QoL

## Predictive approach

Patient PROs from geriatric  
medical home study (n=570)

Caregiver PROs from 2 VA  
caregiver studies (n=522)

6 mo → associations w/QoL  
PAC → worse QoL  
IP and ED → higher QoL  
outcomes

## Delphi Panel

3 Rounds of feedback with  
VA leaders, clinicians, and  
researchers (n=28)

Include ED, IP, PAC  
6 mo timeframe  
No consensus on weighting

# Home Time as QoL for PLWD and Caregivers



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# R01 Home Time (NIA) 2021-2027

*Is home time a person-centered QoL measure for persons living with dementia (PLWD)?*

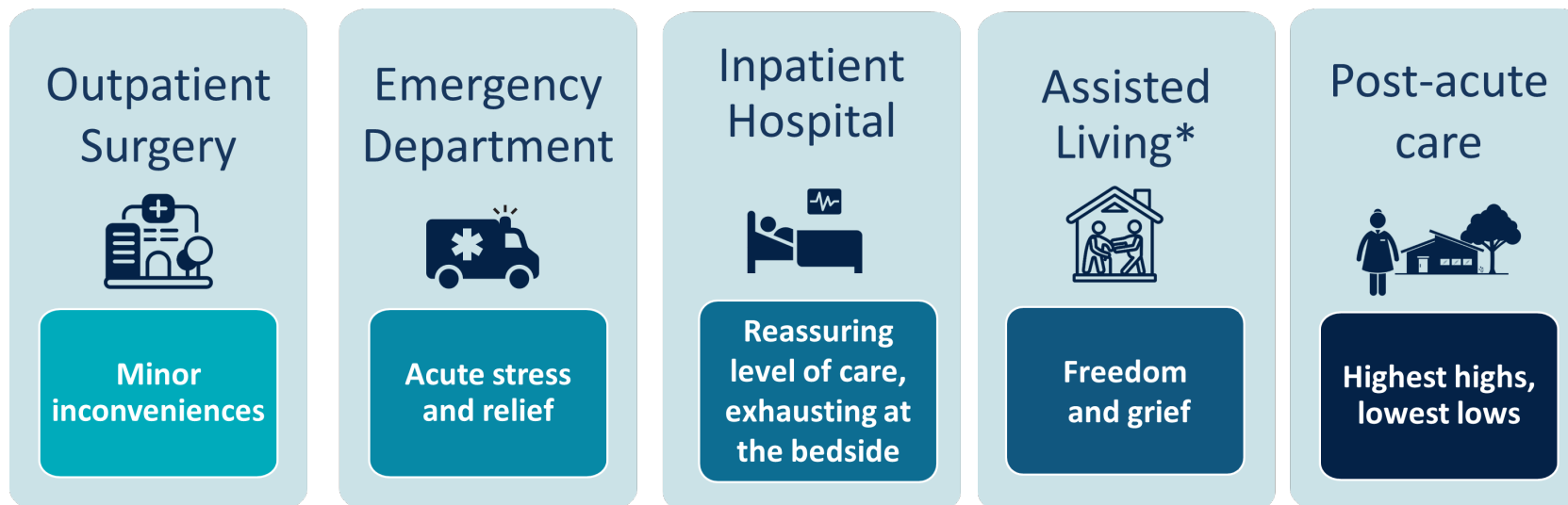
- Qualitative interviews
  - Interviews with 35 PLWD and 46 care partners (not dyadic)
  - Listening sessions with clinical/healthcare system experts (n=6) and dementia advocacy leaders (n=3) to help interpret results
- Predictive approach: Community-dwelling Medicare beneficiaries aged 65+ with possible or probable dementia linked with CMS administrative data
- Policy convening (planned 2027) to gather ~40 experts and advocates

# Aim 1: Qualitative Results

PLWD (N=35)\*:

- Home: generally enhanced quality of life, unless needs > available support
- Settings: mixed effects – more support, but less autonomy and social engagement
- Hard to directly compare settings

Caregivers (N=46) settings by comparison (*under development*):



# Aim 1: Salient Quotes

## PLWD

### Home

*“There’s a lot of people around at home, and I’m a people person...I just like the company and doing things together.” (93 yr. old PLWD, IP)*

### Healthcare settings

*“There is just very little reassuring about being there. Absolutely nothing gained.” (65 yr. old PLWD, SNF)*

*“...my daughter and son-in-law came to visit me, but that's even limited, and it's – I've got big shoulders, and I can bear the burden, but it's certainly lonely.”  
(62 yr. old PLWD, IP)*

## Caregiver

### Healthcare settings

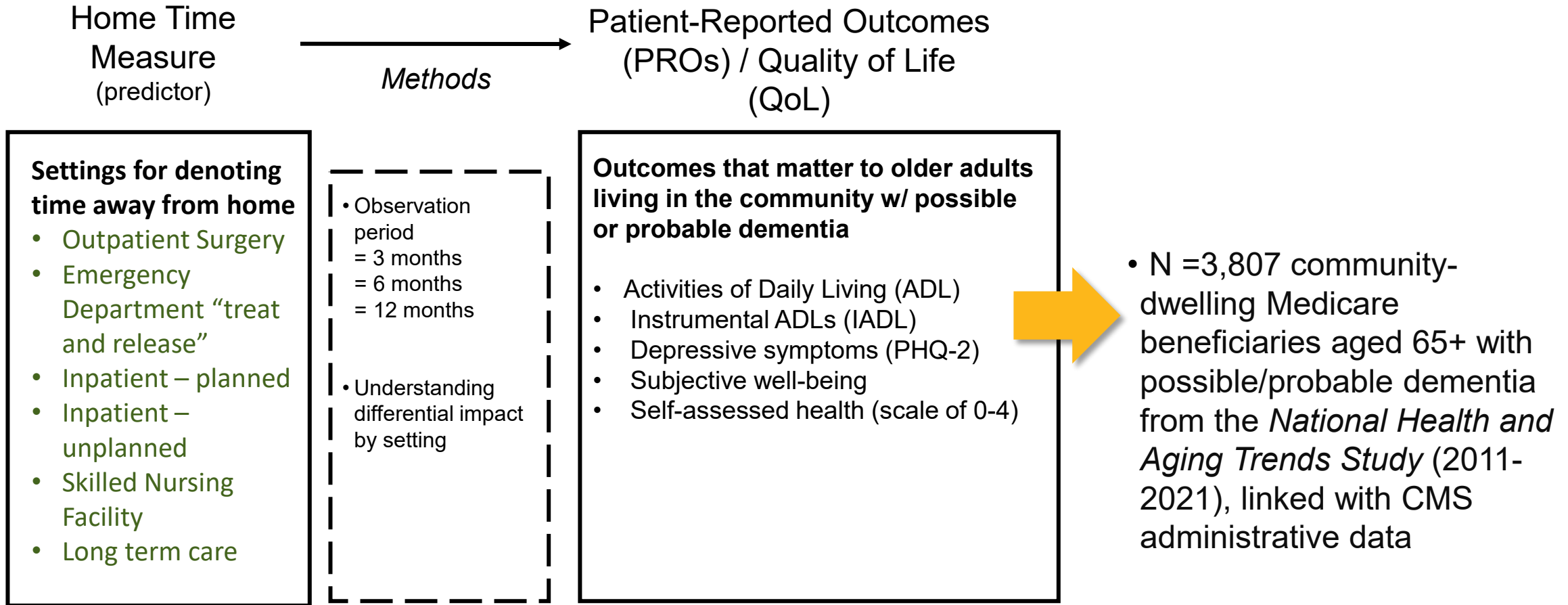
**IP:** *“She tried to rip out the IVs, which actually caused me to stay through the last two days in the hospital, even overnight.” (CG23)*

**PAC:** *“I had to be on guard all the time. At least, at the facility, you have to leave at night. At home, it’s a 24/7 thing, so... [My anxiety] was maybe an 8 when she was in the facility and a 10 at home.”  
(CG52)*

### Caregiver experiences influenced by:

- Individual factors
- PLWD symptoms and care needs
- Setting factors (e.g., QofC, LOS, physical environment)

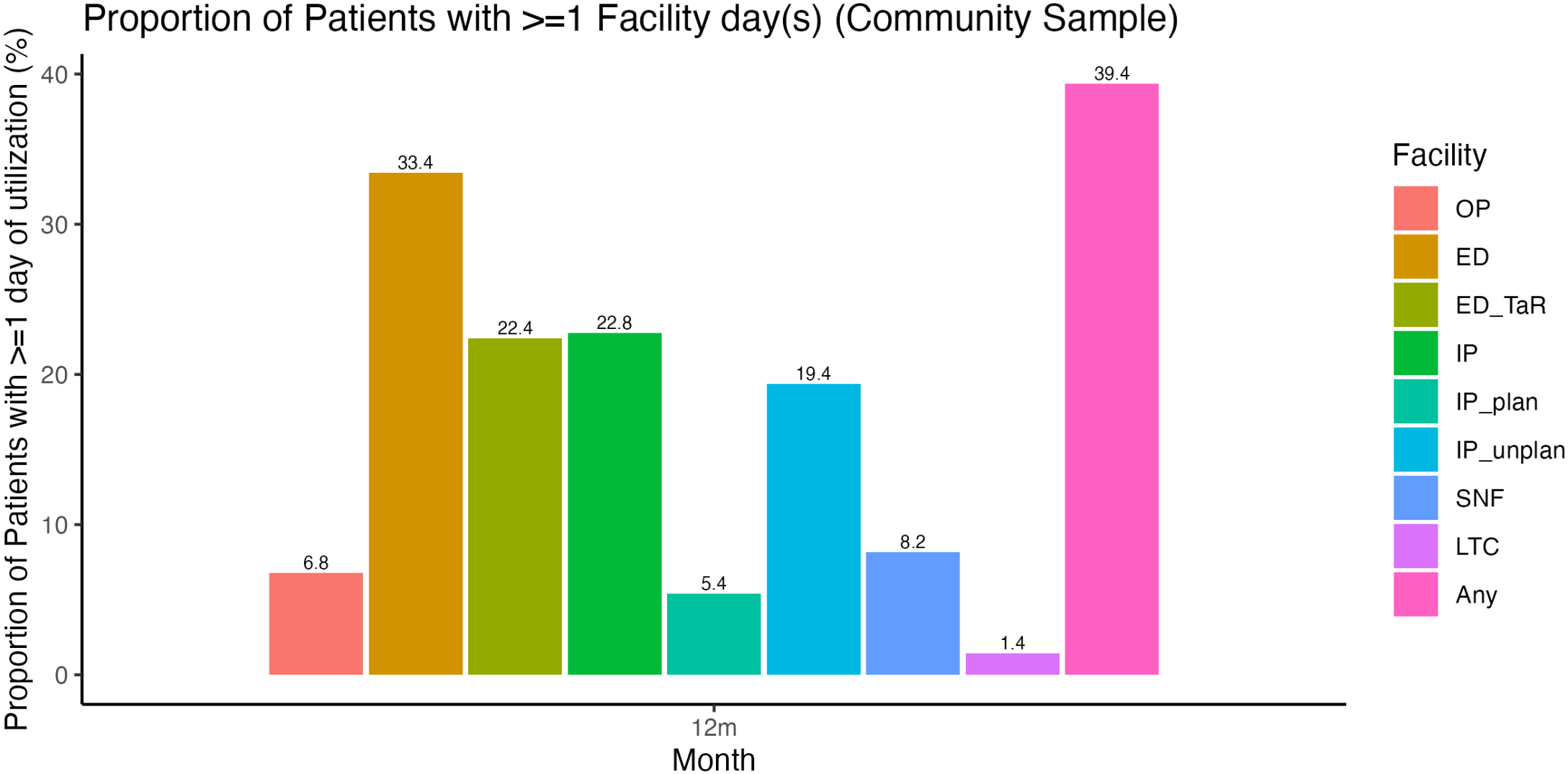
# R01 Aim 2: Predictive Approach



Excluded

- Inpatient hospice
- Respite care

# Aim 2 Preliminary Results



# Aim 2 Preliminary Results, cont.

- Settings to include → a binary indicator of unique settings may be more important than cumulative days in settings
  - Differentiation between planned and unplanned IP and ED visits → important predictors
  - Outpatient surgery does not matter

	Outcome	Planned IP	Unplanned IP	SNF	LTC	TaR ED	OP
<b>Functional domain</b>	ADL		X	X	X	X	
	IADL		X	X	X	X	
<b>Mental health domain</b>	Depressive symptoms (PHQ-2)		X	X	X	X	
	Subjective well-being		X	X	X		
<b>Global domain</b>	Self-assessed health	X	X			X	

*Note: X represents the corresponding facility day variable was identified as the one of the most informative contributors for constructing the “days not at home” metric (inverse of home time) for the corresponding QoL outcome.*

# Next Steps

- Aim 2 analysis:
  - Explore different time-frames (e.g., 3 months)
  - Establish best home time measure for
    - Non-community PLWD (living in nursing homes)
    - Caregiver QoL
- Convening expert panel in 2027 – let us know if you are interested in joining!

# Path Forward



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# Future Directions

- Future research – multidimensional approach

Discrete choice experiments to capture variation in patient preferences and rank settings

Understanding nuances of Home Time measures for Quality of Care versus Quality of Life assessment

Portfolio of measures to capture impact of intervention/care model (CMS using PROs and utilization)\*



**Questions?**