

# FEDERAL PLANNING DIVISION WEBINAR SERIES

- Suicide in the Barracks: The Mental Health Impacts of Design
- September 30, 2020, 1pm – 2pm Eastern Time

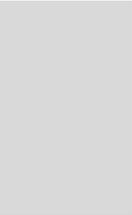
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1. **Please do not forward this email to anyone.** We only have slots for the number of people that have registered for this event. There is no way we can block people from coming into this call if they have the link below. For every unregistered person that logs in, a registered participant will not be able to join this call.
2. **Please keep yourself muted.** All guests with the exception of the panelists and hosts will be "muted-upon-entry" and muted for the duration of this call. In order to ensure we can deliver a high-quality, easy-to-hear conversation, we kindly ask that all attendees keep their lines muted for the duration of this event. If you prefer to dial in by phone rather than using your computer audio, please make sure you associate your phone audio with your computer log-in in order to fill only one slot for the event.
3. **We encourage your questions through Chat!** We encourage the use of the Chat function for your questions for our speaker.



American Planning Association  
**Federal Planning Division**

*Creating Great Communities for All*



# **SUICIDE IN THE BARRACKS: THE MENTAL HEALTH IMPACTS OF DESIGN**

A joint presentation by:

**Maj. Mike Kelly**

US Air Force

**Abbey Ness, AICP**

The Schreifer Group

# OVERVIEW

- **The Sad Statistics**
- **Mental Health and the Built Environment**
- **Case Study: Suicide in the Barracks**
  - The Problem
  - A Strategy
- **Q & A Forum**

**National Suicide  
Prevention Lifeline**

1-800-273-8255

**National Alliance on  
Mental Illness (NAMI)  
HelpLine**

1-800-950-NAMI (6264)

**Military Crisis Line**

1-800-273-8255 (press 1)  
or text 838255

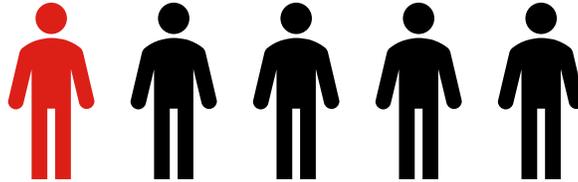
# WHAT IS MENTAL HEALTH?

...a state of successful performance of mental function, resulting in productive activities, fulfilling relationships with other people, and the ability to adapt to change and to cope with challenges. Mental health is essential to personal well-being, family and interpersonal relationships, and the ability to contribute to community or society.

Mental disorders are health conditions that are characterized by alterations in thinking, mood, and/or behavior that are associated with distress and/or impaired functioning.

- US Department of Health and Human Services

# THE SAD STATISTICS



1 in 5 US adults experience mental illness

# THE SAD STATISTICS

An estimated 50% of Americans will be diagnosed with a mental illness or disorder at some point in their lifetime (CDC)

PAIN DISORDER  
SUBSTANCE DEPENDENCY

Conduct Disorder  
Postpartum Depression

Posttraumatic Stress Disorder  
Mood Disorder  
Traumatic Brain Injury

Separation Anxiety



Alzheimer's  
Schizophrenia  
CONVERSION  
DISORDER

*Obsessive  
Compulsive  
Disorder*

**BIPOLAR DISORDER**  
*Anxiety Disorder*  
DEPRESSION

Bulimia  
Substance Abuse  
Anorexia

**Munchausen's**

# THE SAD STATISTICS

## Comorbidities

- Physical ailments
- Destructive behaviors  
(substance abuse, violence, suicide)
- Other mental disorders

## Human toll

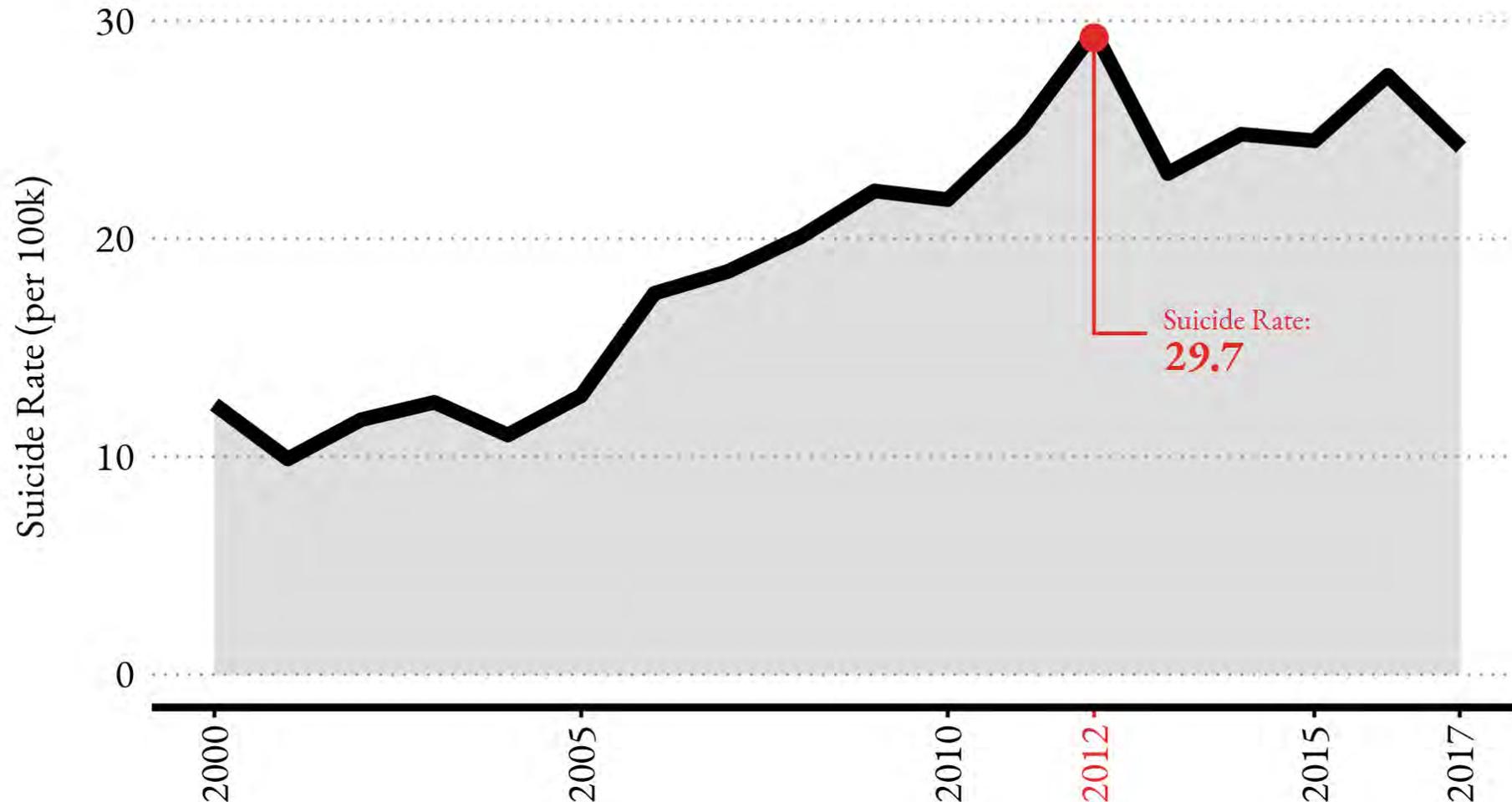
- Substance abuse
- Difficulty with relationships
- Domestic violence/other violent behavior
- Trouble maintaining a job
- Homelessness
- Premature death

## Economic toll

- Individual and societal costs related to destructive behaviors
- Lost earning potential
- Disability
- Healthcare costs

# THE SAD STATISTICS

US Army Suicide Rate (2000–2017)



“Military suicides have increased by as much as 20% this year compared to...2019.”<sup>1</sup>

“The suicide rate among members of the U.S. Army has increased markedly over the past several years and now exceeds that of the general population.”<sup>2</sup>

“War was the leading cause of death in the military nearly every year between 2004 and 2011 until suicides became the top means of dying for troops in 2012.”<sup>3</sup>

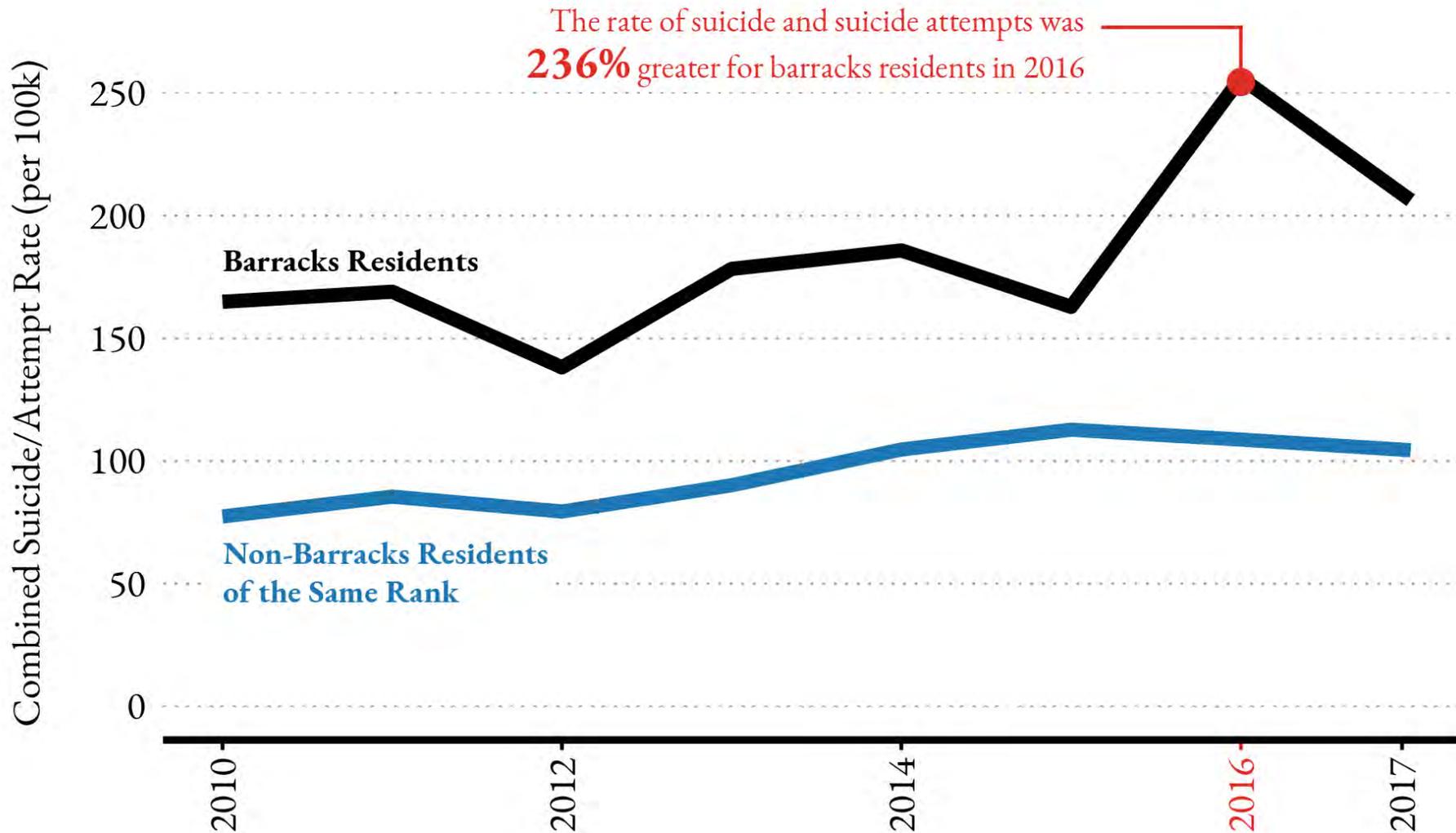
<sup>1</sup> Baldor and Burns, “Military Suicides up as Much as 20% in COVID Era” (2020).

<sup>2</sup> Knock et al., “Suicide Among Soldiers” (2013).

<sup>3</sup> Zoroya, “Suicide surpassed war as military’s leading cause of death” (2014).

# THE SAD STATISTICS

## Disproportionate Rates of Suicides and Suicide Attempts by Barracks Residents



“Numerous empirical studies have demonstrated associations between lethal suicide behavior and various facets of social isolation, including loneliness, social withdrawal...and having few social supports.”<sup>1</sup>

Thus, I ask:

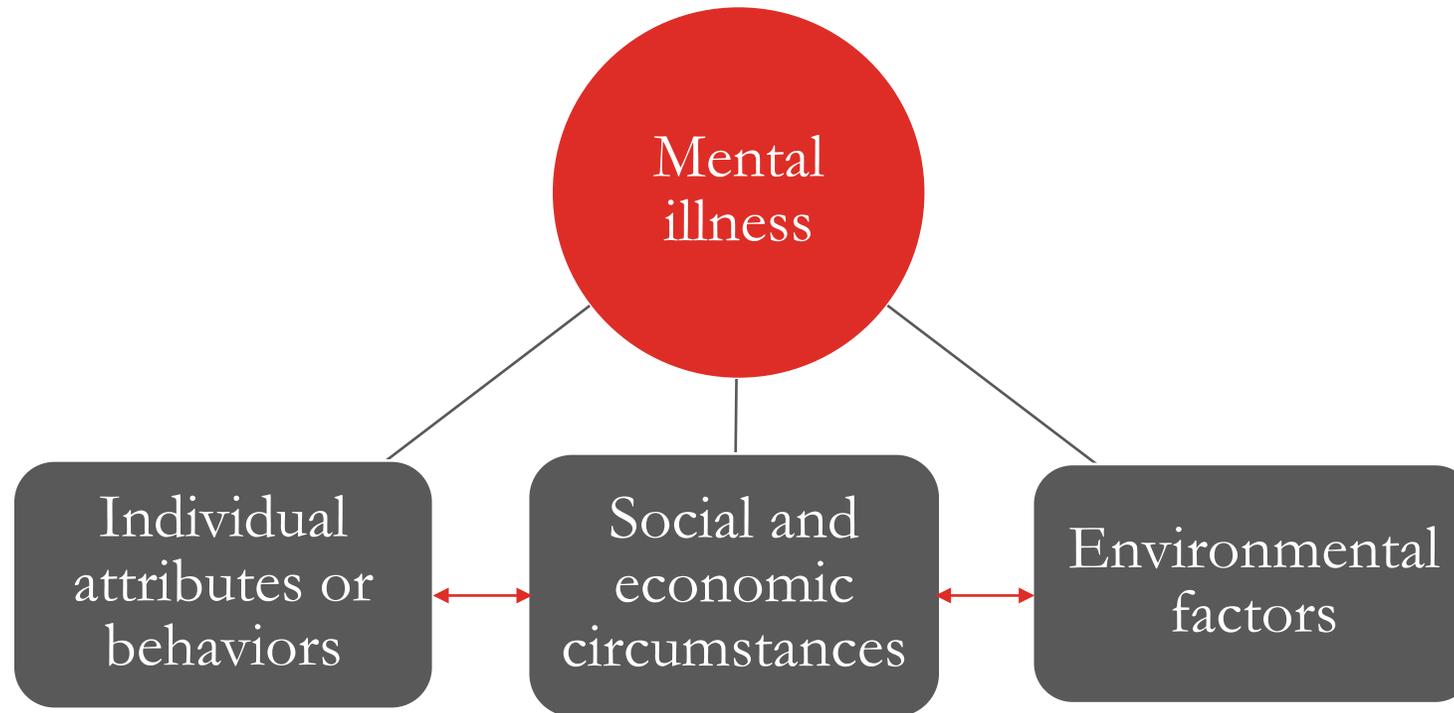
Can design play a role in encouraging soldier social connection?

And do different levels of cohesion correlate to different health outcomes?

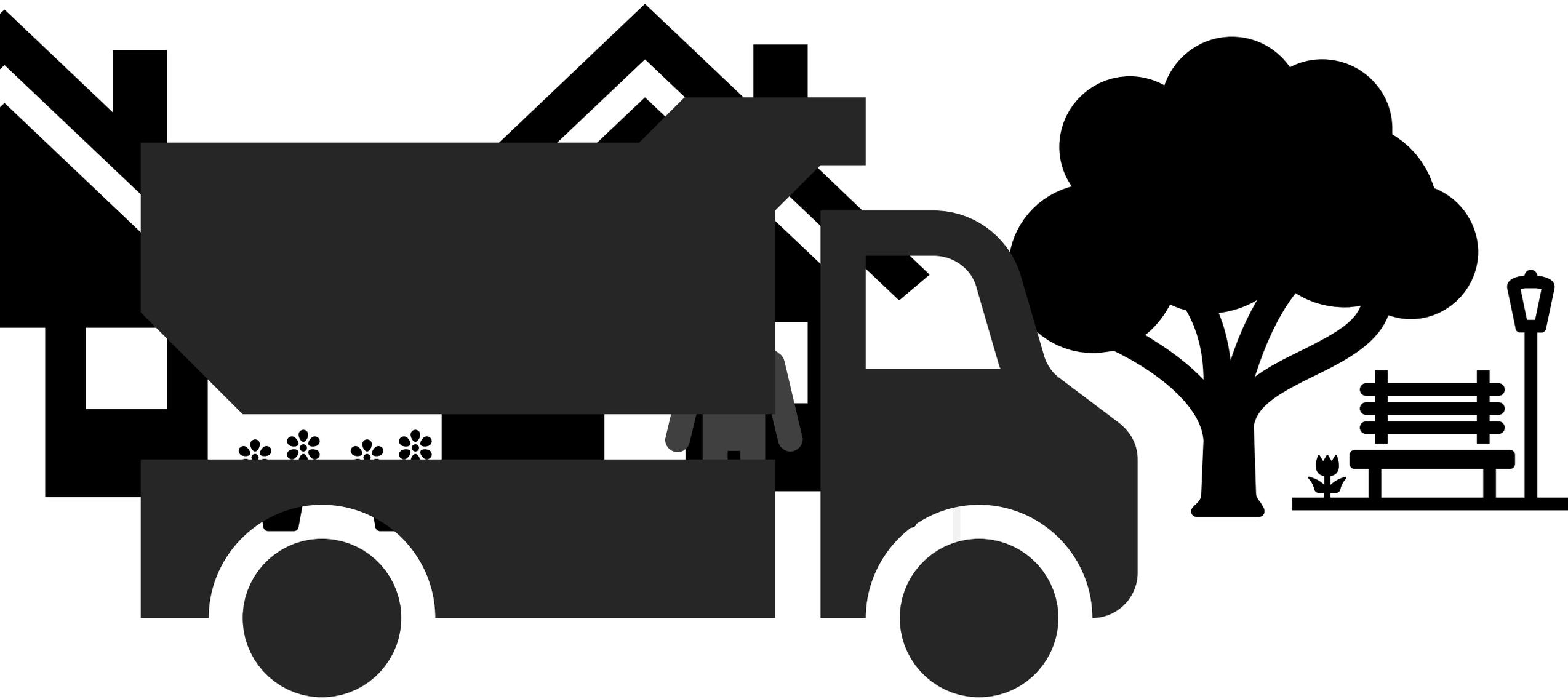
<sup>1</sup> Van Orden, Kimberly A et al. “The interpersonal theory of suicide.” (2010).

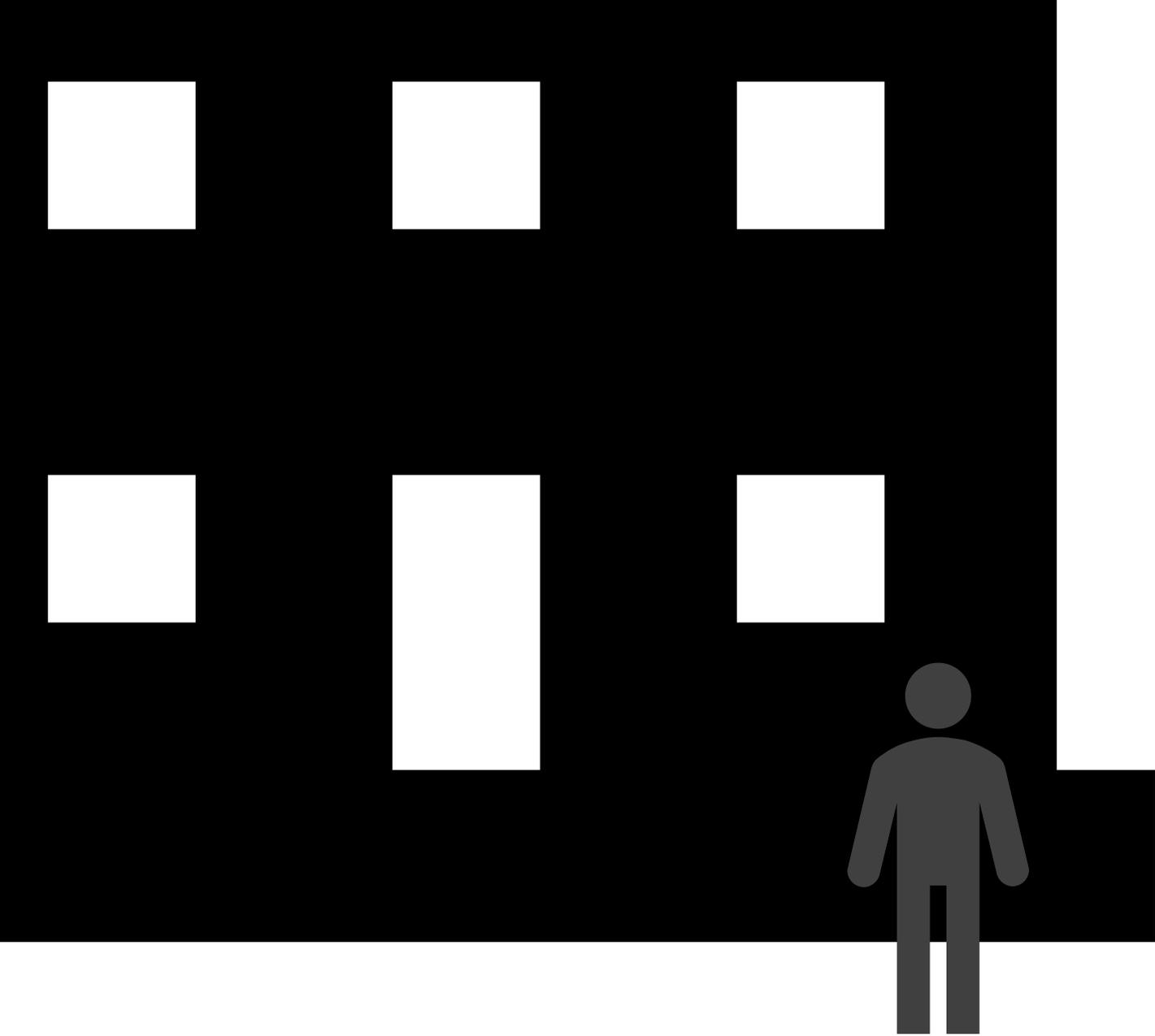
# MENTAL HEALTH AND THE BUILT ENVIRONMENT

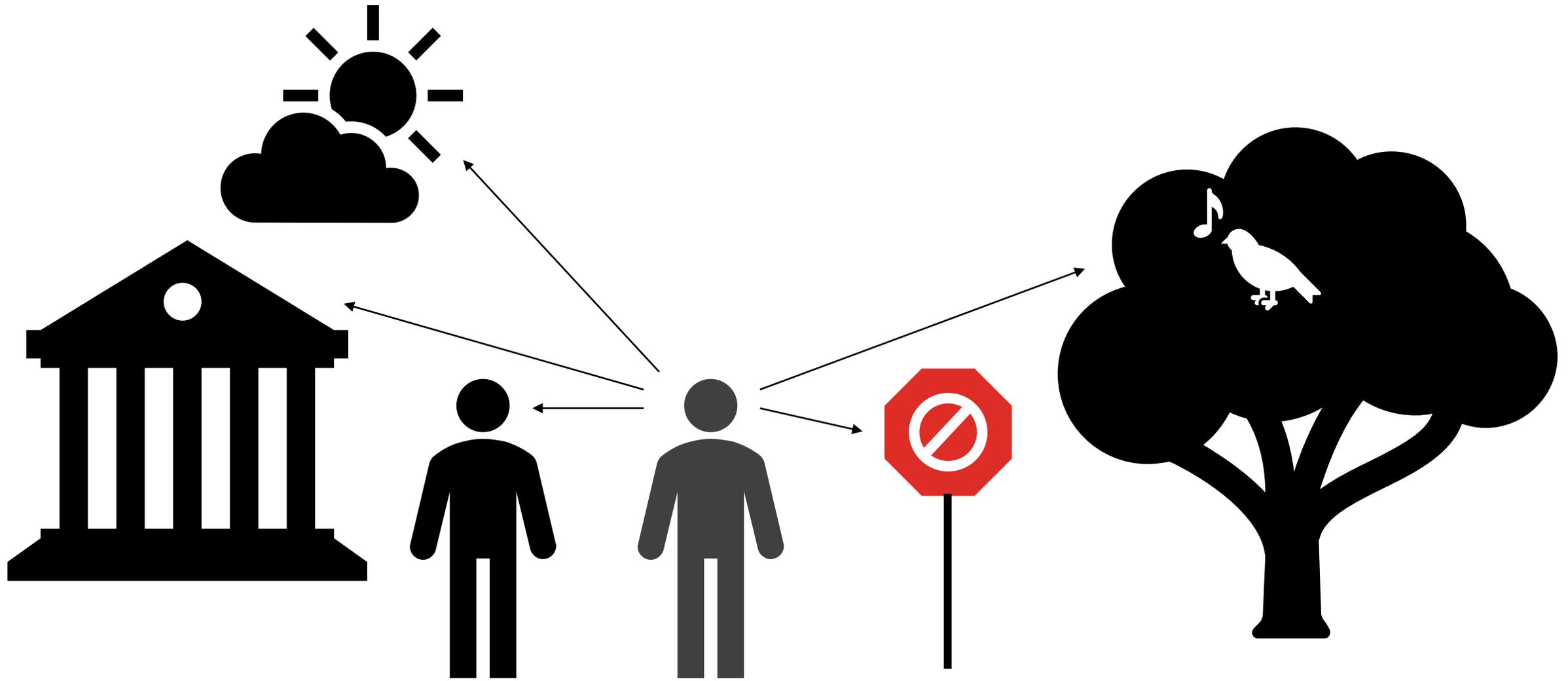
Three types of factors contribute to mental health disorders.

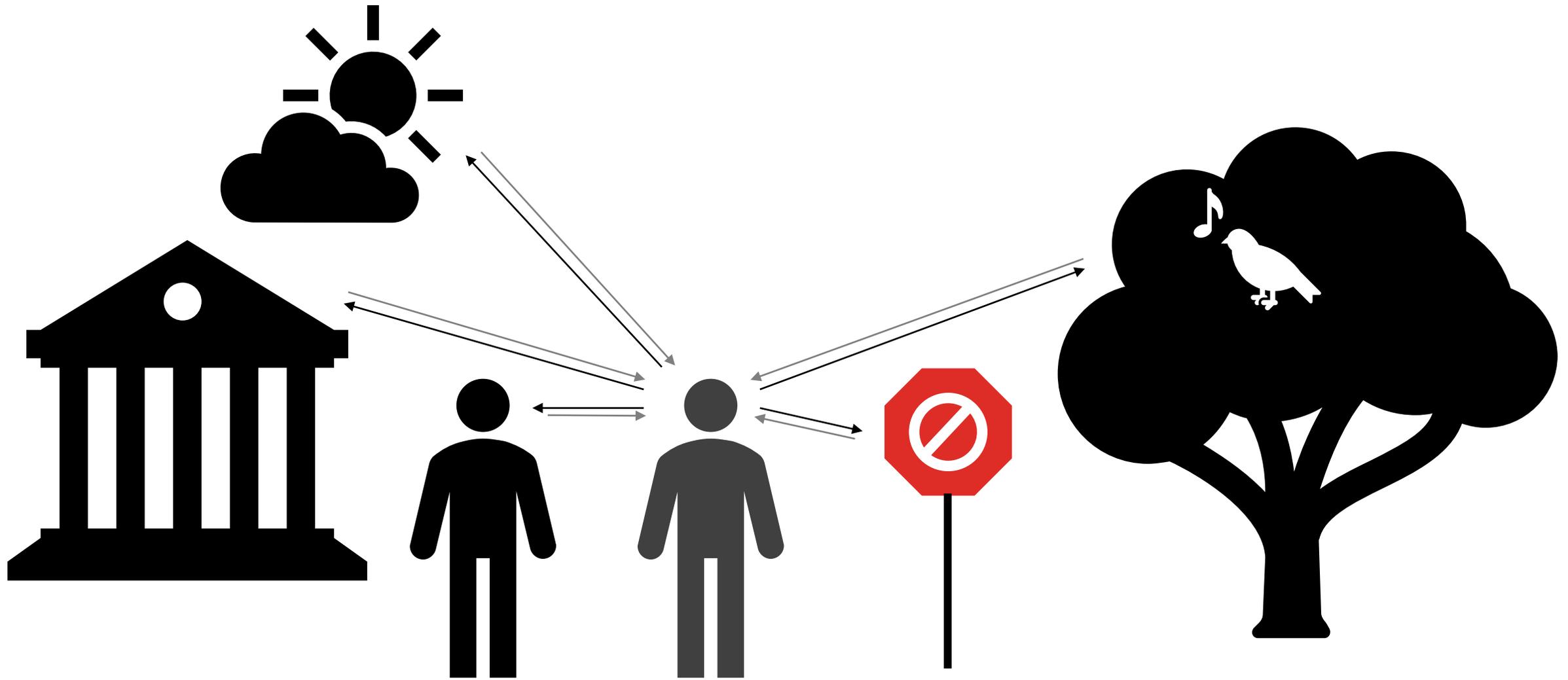


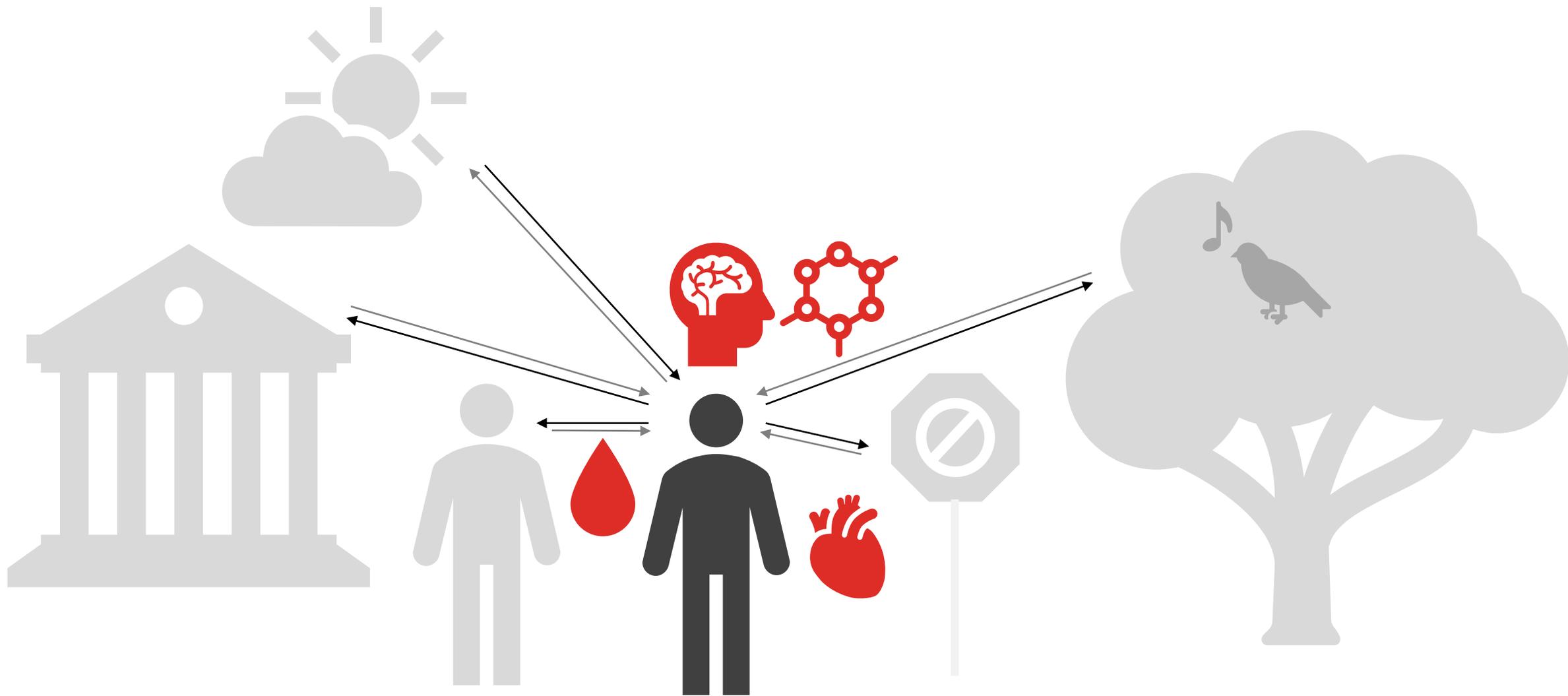












# THE BUILT ENVIRONMENT AS TREATMENT

- **Psychotherapy**
- **Pharmacotherapy**
- **Individual/group support**
- **Therapeutic lifestyle changes**
  - Time in nature
  - Exercise
  - Recreation
  - Nutrition and diet
  - Relaxation and stress management
  - Religious or spiritual involvement
  - Relationships
  - Service to others

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Mitigates symptoms

Preventative effects

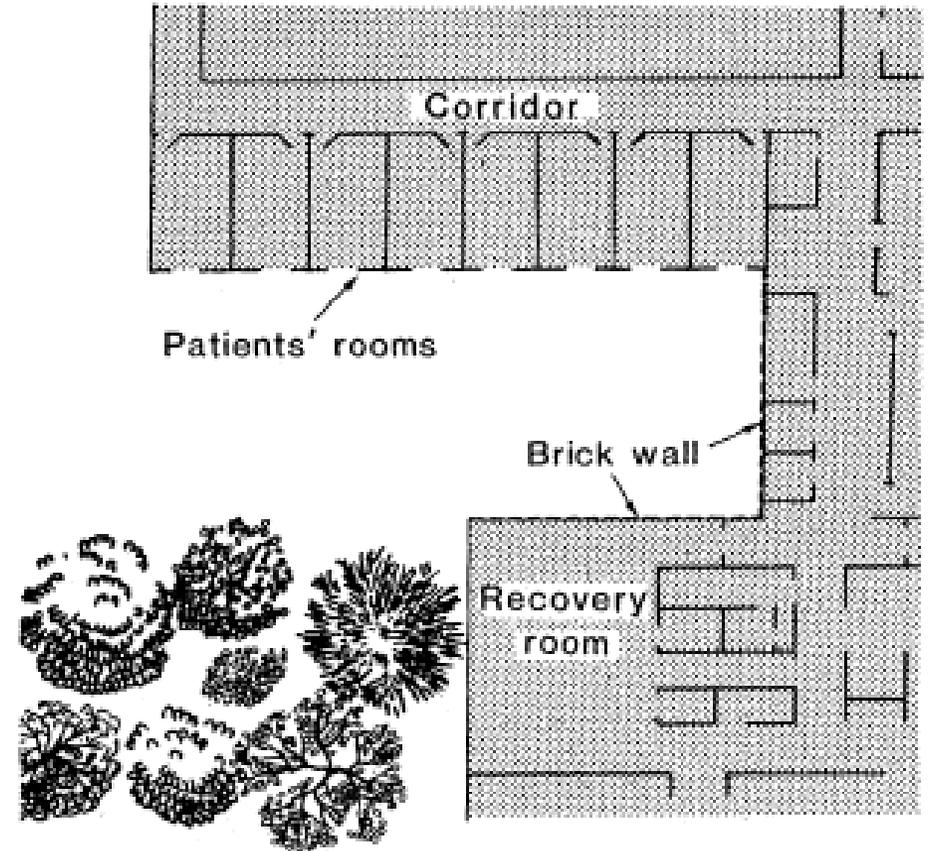
Fills healthcare access gaps

Avoids stigma associated with seeking formal treatment

# WHY NATURE?

## View through a Window May Influence Recovery from Surgery<sup>1</sup>

- 46 cholecystectomy patients in suburban Pennsylvania hospital from 1972-1981
- Rooms with a window view of a natural setting versus rooms with view of a brick wall
- Findings
  - Shorter postoperative hospital stays
  - Fewer negative evaluative comments in nurses' notes
  - Fewer potent analgesics



<sup>1</sup>Ulrich RS. View through a window may influence recovery from surgery. Science. 1984 Apr 27;224(4647):420-1. doi: 10.1126/science.6143402. PMID: 6143402.

# NATURE AND MENTAL HEALTH

- **How does it help?**
  - Decreases stress
  - Improves mood
  - Supports healthy sleep cycles
  - Less susceptible to stressful events
  - Indirect attention/restorative



# NATURE AND THE BUILT ENVIRONMENT

- **Building orientation** – maximizing natural light, views of nature
- **Green space** – parks, community gardens, trails, wilderness preserves, etc.
  - Proximity, access, type, quality
- **Natural design features (exterior and interior)**
  - Wide and open spaces
  - Variations in the architectural topography
  - Clusters of real or symbolic trees (e.g., columns)
  - Water feature (e.g., a fountain) or small fire
  - Patterns (particularly fractals)
  - Curvilinear lines
  - Natural material palettes



# NATURE AND THE BUILT ENVIRONMENT



**TINKER AIR FORCE BASE**

# NATURE AND THE BUILT ENVIRONMENT



**TINKER AIR FORCE BASE**

# NATURE AND THE BUILT ENVIRONMENT



FORT BELVOIR

# WHY EXERCISE?

## Age and fitness effects on EEG, ERPs, visual sensitivity, and cognition<sup>1</sup>

Older men - poorer performance on neurocognitive tests and weakened central inhibition. Measures were also sensitive to differences in aerobic fitness in older men.

## The relation of physical activity and exercise to mental health<sup>2</sup>

Physical activity might provide a beneficial adjunct for alcoholism and substance abuse programs; improve self-image, social skills, and cognitive functioning; reduce the symptoms of anxiety; and alter aspects of coronary-prone behavior and physiological response to stressors.

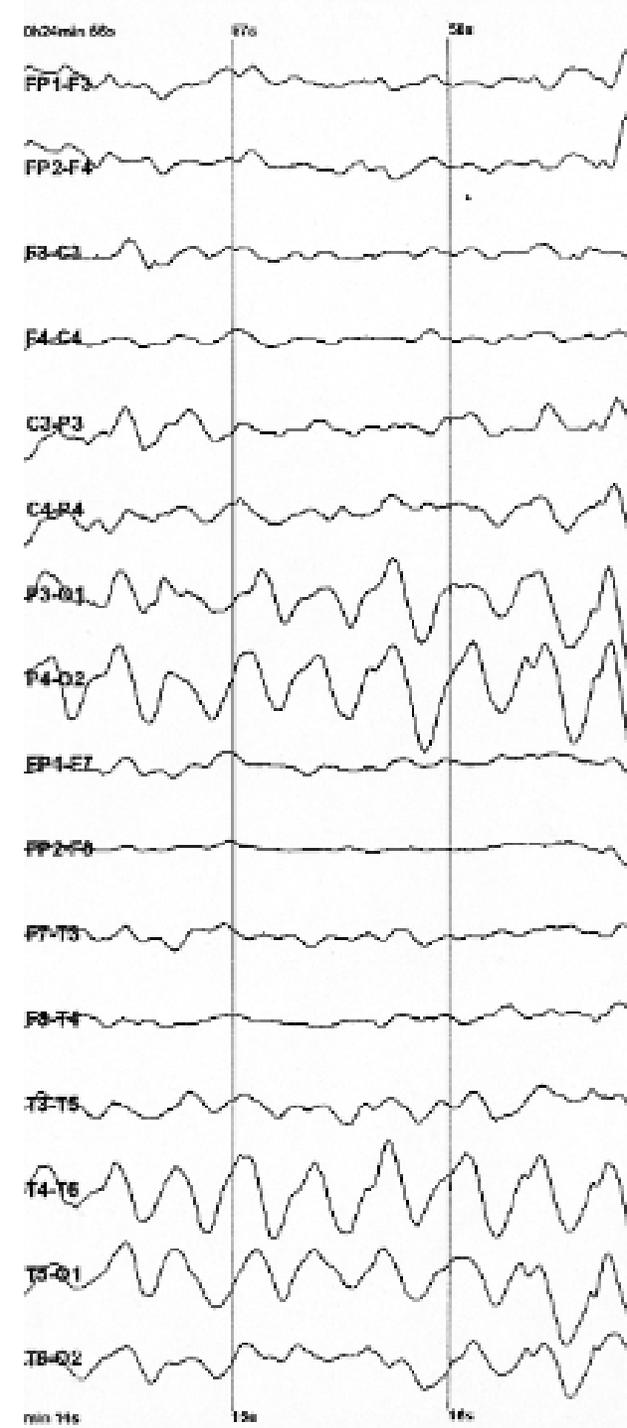
## Military findings:

- Physical activity buffers against future PTSD-inducing events<sup>3</sup>

<sup>1</sup> R.E. Dustman et al. Age and fitness effects on EEG, ERPs, visual sensitivity, and cognition, *Neurobiology of Aging*, (1990): Volume 11, Issue 3, 193-200,

<sup>2</sup> Taylor, C B et al. "The relation of physical activity and exercise to mental health." *Public health reports (Washington, D.C. : 1974)* (1985): vol. 100,2, 195-202.

<sup>3</sup> Marcus K. Taylor, et al, Physical Fitness Influences Stress Reactions to Extreme Military Training, *Military Medicine*, (2008): Vol. 173, Issue 8, 738-742



# WHY EXERCISE?

- **How does it help?**
  - Improves cognitive performance
  - Decreases chronic stress
  - Boosts mood and self-esteem
  - Alleviates social withdrawal
  - Treats symptoms of depression, anxiety, eating, addictive, body dysmorphic disorders
  - Reduces chronic pain and severity of neurogenerative disorders, some symptoms of schizophrenia
  - Reduces risk of depression and neurogenerative disorders (age-related cognitive decline, Alzheimer's disease, Parkinson's disease)



# EXERCISE AND THE BUILT ENVIRONMENT

- **Recreation facilities** (fields, gyms, mobile gyms, golf courses, pools)
- **Parks and trails** (walking, biking, running, fitness)
- **Pedestrian and bicycle facilities** (access, connectivity, design, safety, and quality)
- **Walkability** (density/granularity, accessibility, comfort, aesthetics, connected streets, mixed land uses, access to transit)
- **Building design** (stairways, parking placement)



# EXERCISE AND THE BUILT ENVIRONMENT



JOINT BASE ANDREWS

# EXERCISE AND THE BUILT ENVIRONMENT



MARINE BARRACKS WASHINGTON

# EXERCISE AND THE BUILT ENVIRONMENT



MARINE BARRACKS WASHINGTON

# EXERCISE AND THE BUILT ENVIRONMENT



NAVAL BASE SAN DIEGO

# WHY RECREATION?

## Exploring the Benefits of Outdoor Experiences on Veterans<sup>1</sup>

Veterans who completed outdoor recreation excursions self-reported improvements in psychological well-being, social functioning, and life outlook one week after the outdoor experience, with persistence of improvements over next month.

### Other Military Findings:

- Veterans who participated in equine therapy self-reported increased sociability, reduced feelings of isolation, increased sense of trust and hope, and increased need to serve others.<sup>2</sup>
- Participation in recreational sailing program was associated with a greater likelihood of successfully completing a residential substance abuse program.<sup>3</sup>

## Flourishing Through Leisure and the Upward Spiral Theory of Lifestyle Change<sup>4</sup>

This theory posits that positive emotions create non-conscious and increasing motives for wellness behaviors. To the extent that a wellness behavior (e.g., hiking, meditating, cycling) yields positive emotions, nonconscious motives are created, a sort of perceptual magnetism. People and objects associated with that past activity command our attention and draw us to them.

<sup>1</sup> Duvall J, Kaplan R. “Enhancing the well-being of veterans using extended group-based nature recreation experiences.” J Rehabil Res Dev. 2014;51(5):685–96.

<sup>2</sup> Lanning BA, Krennek N. “Examining effects of equine-assisted activities to help combat veterans improve quality of life.” J Rehabil Res Dev. (2013): 50(8):xv–xxii.

<sup>3</sup> Marchand et al. “Safety and psychological impact of sailing adventure therapy among Veterans with substance use disorders.” Complement. Ther. Med. 2018;40:42–47.

<sup>4</sup> Anderson and Heyne. Flourishing through Leisure and the Upward Spiral Theory of Lifestyle Change. Therapeutic Recreational Journal: L, no. 2 (2016): 118-137.

# RECREATION AND MENTAL HEALTH

- **How does it help?**
  - Mitigates stress and boosts mood
  - Increases reinforcement
  - Helps people derive purpose and meaning in their lives (spirituality)
  - Fosters play and playfulness → well-being, social skills, lowers defensiveness
  - Positive emotions → motivation to engage in wellness behaviors (“upward spiral theory”)
  - May have preventative effect against depression
- **Often occurs in conjunction with other therapeutic lifestyle changes** → nature, social relationships, exercise



Defense Supply Center Columbus

# RECREATION AND THE BUILT ENVIRONMENT

- **Recreation facilities** (fields, gyms, mobile gyms, golf courses, pools, frisbee golf, skate parks)
- **Parks and trails** (walking, biking, running, fitness)
- **“Third spaces”**
  - Common areas with recreational activities (pool tables, non-digital activities)
  - Unprogrammed outdoor gathering spaces
  - Restaurants/coffee shops
- **\*Asset-based community development**



# RECREATION AND THE BUILT ENVIRONMENT



**RAMSTEIN AIR BASE**

# RECREATION AND THE BUILT ENVIRONMENT



**FORT IRWIN**

# RECREATION AND THE BUILT ENVIRONMENT



**JOINT BASE ANACOSTIA-BOLLING**

# WHY DIET AND NUTRITION?

## **Nutrition as a Component of the Performance Triad: How Healthy Eating Behaviors Contribute to Soldier Performance and Military Readiness<sup>1</sup>**

Healthy dietary intake behaviors are associated with all dimensions of health, physical fitness, and psychosocial status.

### **Other Military Findings:**

- Soldiers cited military dining facility hours, cost, location, and limited healthy options as barriers to making the healthy choice. Others indicated the prevalence of unhealthy on-base fast food options detracted from their ability and motivation to make optimal food selections (Healthy Army Communities website).
- Study of Iranian military found that participants with the highest adherence to healthy eating guidelines had an 80% lower odds of depression than those with the lowest adherence.<sup>2</sup>

<sup>1</sup> Purvis DL et al. Nutrition as a component of the performance triad: how healthy eating behaviors contribute to soldier performance and military readiness. US Army Med Dep J. 2013 Oct-Dec:66-78.

<sup>2</sup>Rahmani J, Milajerdi A, Dorosty-Motlagh. A Association of the Alternative Healthy Eating Index (AHEI-2010) with depression, stress and anxiety among Iranian military personnel. BMJ Military Health 2018; 164: 87-91.

# DIET AND NUTRITION AND MENTAL HEALTH

- **How does it help?**
  - Prevents neurocognitive decline
  - Supports healthy gut microbiome
  - Prevents obesity, which is associated with reduced cognitive function
  - Nutrition can play a role in severity of symptoms of schizophrenia, depression, etc.
  - Lots of other possible relationships



# DIET AND NUTRITION AND THE BUILT ENVIRONMENT

- Proximity to and accessibility of healthy dining options
  - Consider access for non-traditional work schedules
- Food trucks, community gardens, other alternatives to brick and mortar options
- \*Food systems planning



Tinker AFB

# DIET AND NUTRITION AND THE BUILT ENVIRONMENT



REDSTONE ARSENAL

# NATURE AND THE BUILT ENVIRONMENT



FORT KNOX

# WHY RELAXATION AND STRESS REDUCTION?

## **Exposure to Aircraft Noise and Risk of Psychiatric Disorders: the Elmas survey<sup>1</sup>**

People exposed to chronic airport noise were at increased risk of anxiety disorders.

## **Effects of Interior Design on Wellness: Theory and Recent Scientific Research<sup>2</sup>**

Lack of control [over space] is associated with such negative consequences as depression, passivity, elevated blood pressure, and reduced immune system functioning.

## **Impact of Windows and Daylight Exposure on Overall Health and Sleep Quality of Office Workers<sup>3</sup>**

Workers in windowless rooms reported poorer scores than daylight group on two outcomes—role limitation due to physical problems and vitality. Also reported poorer sleep quality and more sleep disturbances.

### **Military findings:**

- Combat veterans showed higher stress responses to white noise and trauma sounds<sup>4</sup>
- Veterans with TBI sensitive to light; veterans with PTSD and TBI sensitive to flashing lights<sup>5</sup>

<sup>1</sup> Hardoy MC et al. Exposure to aircraft noise and risk of psychiatric disorders: the Elmas survey--aircraft noise and psychiatric disorders. *Soc Psychiatry Psychiatr Epidemiol.* 2005 Jan;40(1):24-6.

<sup>2</sup> Ulrich RS. Effects of interior design on wellness: theory and recent scientific research. *J Health Care Inter Des.* 1991;3:97-109. PMID: 10123973.

<sup>3</sup> Boubekri, Mohamed et al. "Impact of windows and daylight exposure on overall health and sleep quality of office workers: a case-control pilot study." *Journal of clinical sleep medicine.* vol. 10,6 603-11. 15 Jun. 2014.

<sup>4</sup> Liberzon, I., Abelson, J., Flagel, S. *et al.* Neuroendocrine and Psychophysiological Responses in PTSD: A Symptom Provocation Study. *Neuropsychopharmacol* **21**, 40–50 (1999).

<sup>5</sup> Seaton, Kourtney. "Veterans Affairs offers PTSD treatment to anyone, not just Vets." *Puma Press.* Phoenix Arizona, AZ: Paradise Valley Community College, May 2012.

# RELAXATION AND STRESS REDUCTION AND MENTAL HEALTH

- **How does it help?**
  - Supports natural circadian rhythms, higher quality sleep
  - Prevents and mitigates symptoms of depression, anxiety, combat-related stress
  - Mitigates effects of stress across spectrum of mental health disorders



# RELAXATION AND THE BUILT ENVIRONMENT

- “Legible” places – quick understanding of relationships between features
- Easy wayfinding
- Attractive, well-maintained
- Privacy or spaces where people can be alone
- Low noise
- Safe
- Green space and natural features
- Not crowded
- Control over social interactions
- **Design**
  - Architectural features that support fascination, curiosity, or involuntary attention
  - Views of nature, fireplaces, fountains, aquariums, animals
  - Indoor plants
  - Paintings of landscapes and other coherent, tranquil scenes
- **\*Evidence-based design**

# RELAXATION AND THE BUILT ENVIRONMENT



WALTER REED NATIONAL MILITARY MEDICAL CENTER

# RELAXATION AND THE BUILT ENVIRONMENT



FORT HOOD

# RELAXATION AND THE BUILT ENVIRONMENT



BEALE AIR FORCE BASE

# WHY RELIGIOUS OR SPIRITUAL INVOLVEMENT?

## Religiosity and remission of depression in medically ill older patients<sup>1</sup>

Intrinsic religiosity was significantly and independently related to time to remission, but church attendance and private religious activities were not. Depressed patients with higher intrinsic religiosity scores had more rapid remissions than patients with lower scores.

## Military Findings

- Spirituality factors at the start of treatment were uniquely predictive of PTSD symptom severity at discharge. Veterans who scored higher on adaptive dimensions of spirituality (daily spiritual experiences, forgiveness, spiritual practices, positive religious coping, and organizational religiousness) at intake fared significantly better in the treatment program.<sup>2</sup>
- In some groups of AD military personnel, spirituality has been linked with lower rates of depression and PTSD symptoms.<sup>3</sup>

<sup>1</sup> Koenig HG, George LK, Peterson BL. Religiosity and remission of depression in medically ill older patients. *Am J Psychiatry*. 1998 Apr;155(4):536-42. doi: 10.1176/ajp.155.4.536. PMID: 9546001.

<sup>2</sup> Currier, J.M., Holland, J.M. and Drescher, K.D. (2015), Spirituality Factors in the Prediction of Outcomes of PTSD Treatment for U.S. Military Veterans. *JOURNAL OF TRAUMATIC STRESS*, 28: 57-64.

<sup>3</sup> Hourani, Laurel L et al. "Influence of spirituality on depression, posttraumatic stress disorder, and suicidality in active duty military personnel." *Depression research and treatment* vol. 2012 (2012): 425463.

# WHY RELIGIOUS OR SPIRITUAL INVOLVEMENT?

How does it help?

- **Subjective religiosity – beliefs as source of strength or comfort**
  - Enhanced psychological, relational, and marital well-being
  - Reduces rates of depression, anxiety substance abuse, and suicide
  - Protective against depression and other mental illnesses, both in general and after traumatic event (coping strategies)
- **Organizational religiosity – service attendance**
  - Associated with longer lifespans
- **Occurs in social contexts, offers sense of belonging and purpose; can involve service to others**



# RELIGIOUS/SPIRITUAL INVOLVEMENT AND THE BUILT ENVIRONMENT

- Religious facilities
  - Distinct buildings or features, spaces for religious practices (prayer rooms)
- Spaces that facilitate mindfulness
  - Quiet, private places
  - Natural settings
- Aesthetics and “sense of place”



Marine Corps Base Quantico

# RELIGIOUS/SPIRITUAL INVOLVEMENT AND THE BUILT ENVIRONMENT



FORT HOOD

# RELIGIOUS/SPIRITUAL INVOLVEMENT AND THE BUILT ENVIRONMENT



US AIR FORCE ACADEMY

# RELIGIOUS/SPIRITUAL INVOLVEMENT AND THE BUILT ENVIRONMENT

We do not just ‘exist’ within a physical environment - we interact with it and derive **important meaning** from it...the physical environment is more than an influencing factor in people’s behavior – “it is also a medium, milieu or context in which personal relationships are embedded, and without which they cannot be viable.”

Spaces, places and buildings are more than just props in people’s lives; they are imbued with **meaning and resonance**, as they **symbolize** people’s personal histories, interpersonal relationships, and shared events in people’s extended relationships, families, communities and wider culture.

- **Dr. Iain Butterworth**

*The Relationship between the Built Environment and Wellbeing: A Literature Review*

# RELIGIOUS/SPIRITUAL INVOLVEMENT AND THE BUILT ENVIRONMENT



US AIR FORCE ACADEMY

# WHY SOCIAL CONNECTION?

## 1938 Longitudinal Harvard Study:

The Harvard data showed that inner-circle relationships were better predictors of health and happiness throughout life than IQ, wealth, or social class... These close relationships also are our primary defense against intimate loneliness.<sup>1</sup>

## 2010 Global Meta-Analysis:

Individuals with adequate social relationships have a 50% greater likelihood of survival compared to those with poor or insufficient social relationships. The magnitude of this effect is comparable with quitting smoking and it exceeds many well-known risk factors for mortality (e.g., obesity, physical inactivity).<sup>2</sup>

## Military Findings:

- Social cohesion is positively related to job satisfaction, retention, and well-being in the US military.<sup>3</sup>
- Low peer social support is associated with depression in US Army personnel.<sup>4</sup> Belongingness negatively correlates with suicidal ideation among US military personnel<sup>5</sup> and is a common factor associated with military suicide attempts.<sup>6</sup>

<sup>1</sup> Murthy, Vivek H., M.D. Together. HarperCollins, 2020.

<sup>2</sup> Holt-Lundstad, Julianne et al. "Social relationships and mortality risk: a meta-analytic review." PLoS med 7 (2010):

<sup>3</sup> Oliver, Laurel W et al. "A quantitative integration of the military cohesion literature." Military Psychology 11, no. 1 (1999): 57–83.

<sup>4</sup> Carter-Visscher, Robin et al. "Predeployment gender differences in stressors and mental health among US National Guard troops." Journal of Traumatic Stress: 23, no. 1 (2010): 78–85.

<sup>5</sup> Bryan, Craig J and Kent A Corso. "Depression, PTSD, and suicidal ideation among active duty veterans in an integrated primary care clinic." Psychological Services 8, no. 2 (2011): 94.

<sup>6</sup> Bryan, Craig J et al. "Life stressors, emotional distress, and trauma-related thoughts occurring in the 24 h preceding active duty US Soldiers' suicide attempts." Journal of Psychiatric Research 46 (2012): 843–48.

# RELATIONSHIPS AND MENTAL HEALTH

- **How does it help?**
  - Boosts mood, long-term happiness
  - Improves cognitive capacity
  - Decreases likelihood of developing mental illness
    - Level of social support largest predictor of whether combat veterans would develop PTSD (Wilcox 2010)
  - Increases social cohesion – sense of belonging in community in addition to strong relationships with others



# RELATIONSHIPS AND THE BUILT ENVIRONMENT

- **Gathering spaces (indoors and outdoors) – optimize choice/control over interactions**
  - Neutral territory
  - Visual prospects (so that one can see what is happening in a space before deciding to enter)
  - Movable seating
  - Food or other features that generate activity
  - “Third spaces”
- **Walkability**
  - Accessibility
  - Comfort (shade, human-scale design)
  - Visual interest/varying architectural topography
  - Destinations/granularity (size of blocks and number of lots on a block)



Kunsan Air Base

# RELATIONSHIPS AND THE BUILT ENVIRONMENT



**SCHOFIELD BARRACKS**

# RELATIONSHIPS AND THE BUILT ENVIRONMENT



TOWN OF QUANTICO

# RELATIONSHIPS AND THE BUILT ENVIRONMENT



ALTUS AIR FORCE BASE

# CASE STUDY | SUICIDE IN THE BARRACKS

- **The Problem**
  - Newer is not better (it's worse)
- **A Strategy (Interaction Not Satisfaction)**
  - Surrounded
  - Seamless
  - Shared



1997



2009



There is a 'fratmosphere' to the older barracks. They're more like apartments. People are always hanging out on the balconies and in the common space. Here, people mostly stick to their rooms—no one hangs out. There's no common space. It feels like a prison.

- **Specialist Mullen**  
Joint Base Lewis-McChord

# THE PROBLEM | NEWER IS NOT BETTER (retention)

## Correlation Between Retention and Barracks Year

		Actual Retention Rate
Actual Retention Rate	Pearson Correlation	1
	Significance	-
	N	13,490
Barracks Year of Construction	Pearson Correlation	<b>-0.055**</b>
	Significance	<b>0.000</b>
	N	13,490
Barracks Year of Construction (Infantry Barracks Only)	Pearson Correlation	<b>-0.042**</b>
	Significance	<b>0.000</b>
	N	8,348

Retention rates **decrease** in newer barracks.

(i.e., new barracks are statistically **worse** than older barracks at retaining soldiers)

This correlation holds across all barracks, and when controlling for a single occupational specialty (infantry).

\* Correlation is significant at the 0.05 level

\*\* Correlation is significant at the 0.01 level

# THE PROBLEM | NEWER IS NOT BETTER (social health)

## Correlation Between Social Health and Barracks Year

Year of  
Construction

Year of Construction	Pearson Correlation	1
	Significance	-
	N	9,076
GAT Social Score	Pearson Correlation	<b>-0.033**</b>
	Significance	<b>0.001</b>
	N	9,076

Social health **decreases** in newer barracks.

“GAT Social Score” is an aggregated value across all of our social variables.

\* Correlation is significant at the 0.05 level

\*\* Correlation is significant at the 0.01 level



Do you know what I think our biggest problem is? Soldiers don't talk anymore. Some soldiers never leave their rooms. I call them "barracks rats"—those that just seem to scurry back into their rooms and avoid being seen. I think the barracks make a difference. Some of those old barracks worked. The quads worked. And still work. They have a way of pulling someone out of their room. Soldiers need to come out and talk to each other. We're losing far too many soldiers to suicide. When soldiers talk, you notice when someone's feeling down. But when they never leave their rooms, sometimes you miss the signs when someone's struggling.

- **First Sergeant Oberlin**

Fort Bragg

# METHODS

Division

■ Brigades Included in Analysis  
□ Brigades Excluded from Analysis

Division  
HQ

**1 BCT**

**2 BCT**

**3 BCT**

Division Artillery

Aviation Brigade

Sustainment Brigade

Brigade  
HQ

Brigade  
HQ

Brigade  
HQ

HQ  
Battery

Brigade  
HQ

Brigade  
HQ

Cavalry  
Regiment

Cavalry  
Regiment

Cavalry  
Regiment

General Support  
Regiment

Special Troops  
Battalion

1st Infantry  
Regiment

1st Infantry  
Regiment

1st Infantry  
Regiment

1st Aviation  
Regiment

Combat  
Sustainment  
Support Battalion

2nd Infantry  
Regiment

2nd Infantry  
Regiment

2nd Infantry  
Regiment

2nd Aviation  
Regiment

3rd Infantry  
Regiment

3rd Infantry  
Regiment

3rd Infantry  
Regiment

3rd Aviation  
Regiment

Field Artillery  
Regiment

Field Artillery  
Regiment

Field Artillery  
Regiment

Support  
Battalion

Engineer  
Battalion

Engineer  
Battalion

Engineer  
Battalion

Support  
Battalion

Support  
Battalion

Support  
Battalion

# **METHODS | GAT SOCIAL SURVEY**

- **Developed by a collaborative panel of experts using pre-existing psychological surveys with good reliability and verified validity.**
- **Mandatory for every soldier to take the GAT survey every year (anonymous).**
- **Primary social health questions:**
  1. I trust my fellow soldiers in my unit to look out for my welfare and safety.
  2. I have someone to talk to when I feel down.
  3. How often do you feel part of the group?
  4. How often do you feel left out?
  5. How often do you feel close to people?
  6. How many people are there that you can always count on if you have serious problems?

# THEORETICAL FOUNDATIONS

## 1. Social contact opportunities and the formation of social bonds are positively correlated.

Frequent, casual contact is a prerequisite for relationship development.<sup>1</sup>

Researchers on tie formation largely agree that the probability that two strangers form a tie depends on two separate processes: coming into contact and deciding to associate.<sup>2</sup>

## 2. Proximity increases opportunities for social interaction.

Spatial proximity, because it increases the chances of fortuitous contacts, enhances the probability of friendship.<sup>3</sup>

<sup>1</sup> Alexander, Christopher et al. *A Pattern Language*. Oxford University Press, 1977.

<sup>2</sup> Small, Mario L and Laura Adler. "The role of space in the formation of social ties." *Annual Review of Sociology* 45 (2019): 111–32.

<sup>3</sup> Blau, Peter M. and Joseph E. Schwartz. *Crosscutting social circles: Testing a macrostructural theory of intergroup relations*. Transaction Publishers, 1997.

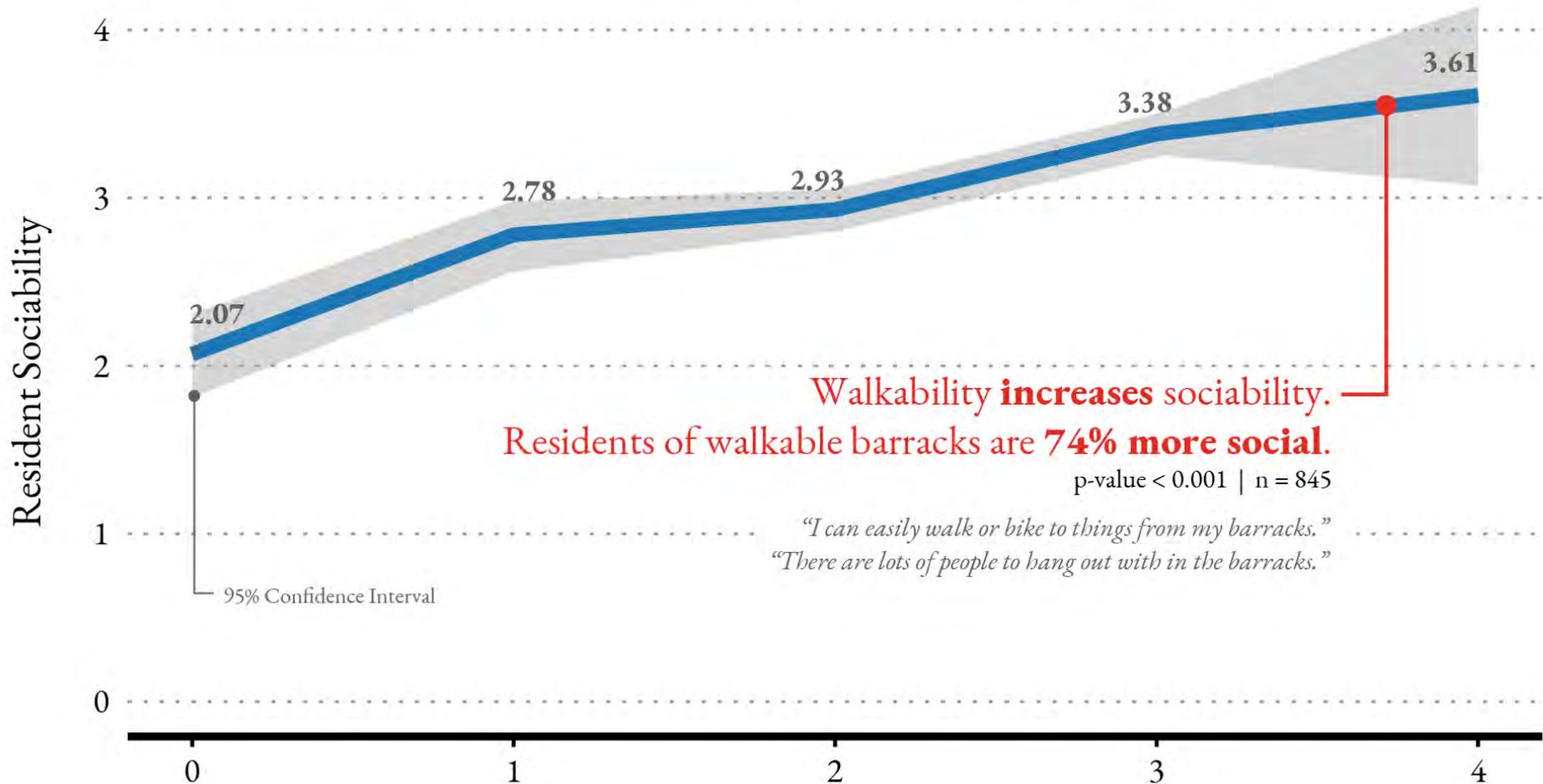
# A STRATEGY | THE THREE S's

*How does design affect resident social health?*

- **Surrounded** | Encourages routine foot traffic
- **Seamless** | Easy transitions from private to public space
- **Shared** | Balconies and de-centralized social space

# SURROUNDED | WALKABLE PLACES

## Resident Sociability by Walkability



**Walkability is a catalyst to generating social connections.**

Research indicates that the more time people spend walking, the higher the chances for social interaction. “Spontaneous ‘bumping into’ neighbors, brief (seemingly trivial) conversations, or just waving hello can help encourage a sense of trust and...connection.”<sup>1</sup>

<sup>1</sup> Leyden, Kevin M. “Social capital and the built environment: the importance of walkable neighborhoods.” (2003).



[Referring to the layout of the barracks] I think it helps with morale. It makes it easier to bring the unit together. It builds relationships because everything is here, you're always walking back and forth across the quad. You are constantly seeing the same people. That face-to-face contact builds relationships.

- **Sergeant Carroll**  
Schofield Barracks

# SURROUNDED | EXTERIOR SOCIAL SPACE

Figure B-9.1 Example of Clear Zone Planting Design



Barracks **Before** Unobstructed Space  
JBLM, WA



Barracks **After** Unobstructed Space  
JBLM, WA

# SURROUNDED | EXTERIOR SOCIAL SPACE



Residents of barracks with a more extensive array of outdoor social opportunities—where terrorist-driven clear zone requirements did not restrict designers—report higher values for every social question.

They are **more likely to feel part of the group** (social belonging) and **feel like they have more people that they can count on when they need support** (social trust and support).\*

\*Statistically significant at a 95% confidence interval.

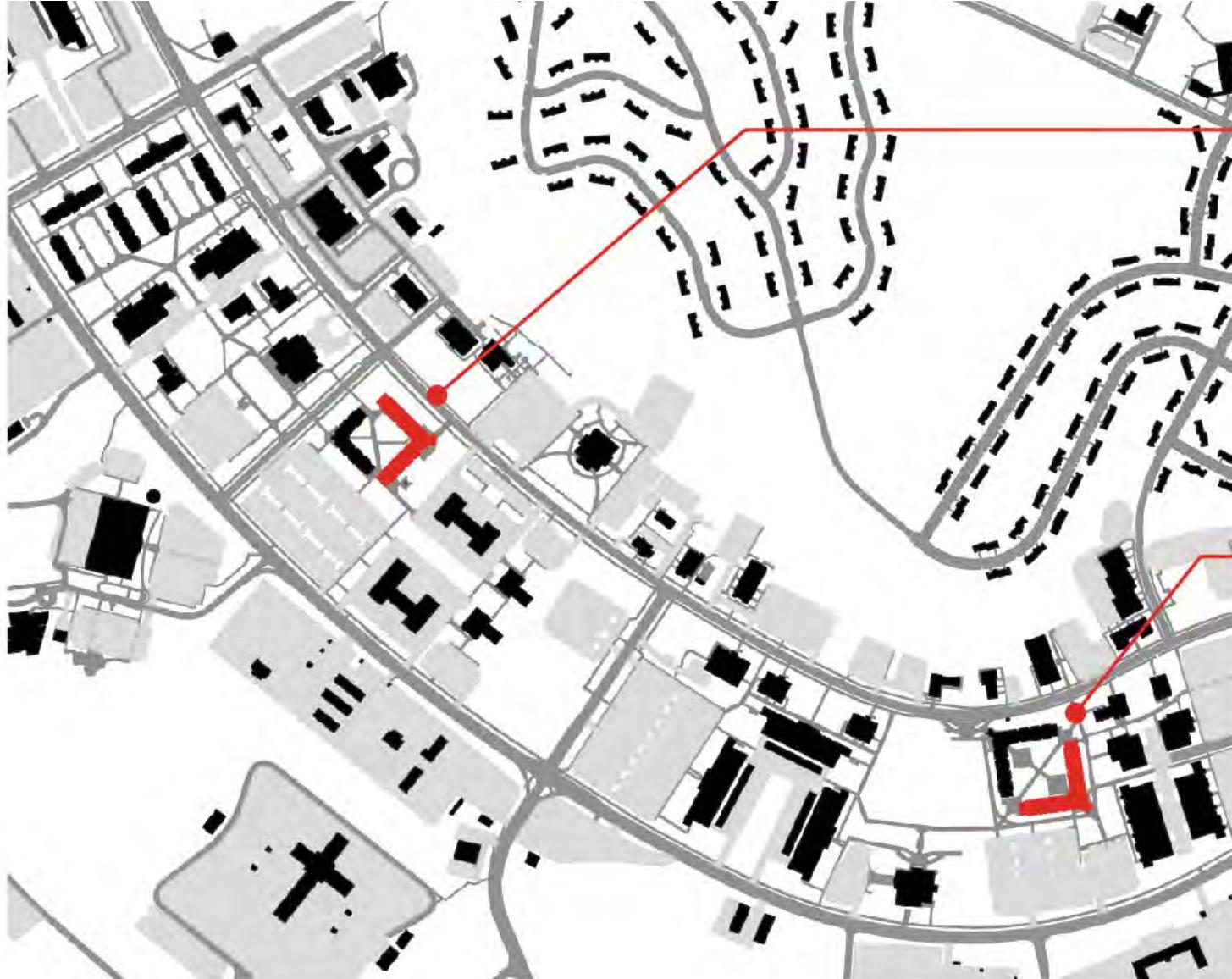
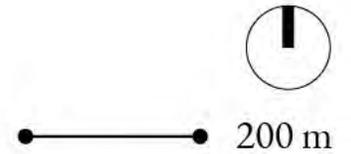


The basketball and volleyball courts right outside are really nice for encouraging connection. That's where people collide. I don't know how many times I would be coming or going from the barracks and stop because I saw guys I knew. If not to join the game, then to see when people were going to dinner or what they were doing that night. I can't tell you how many of my nights were planned just by walking by those courts.

- **Specialist Lester**

Fort Bragg

# SEAMLESS | FUNCTIONAL DISTANCE



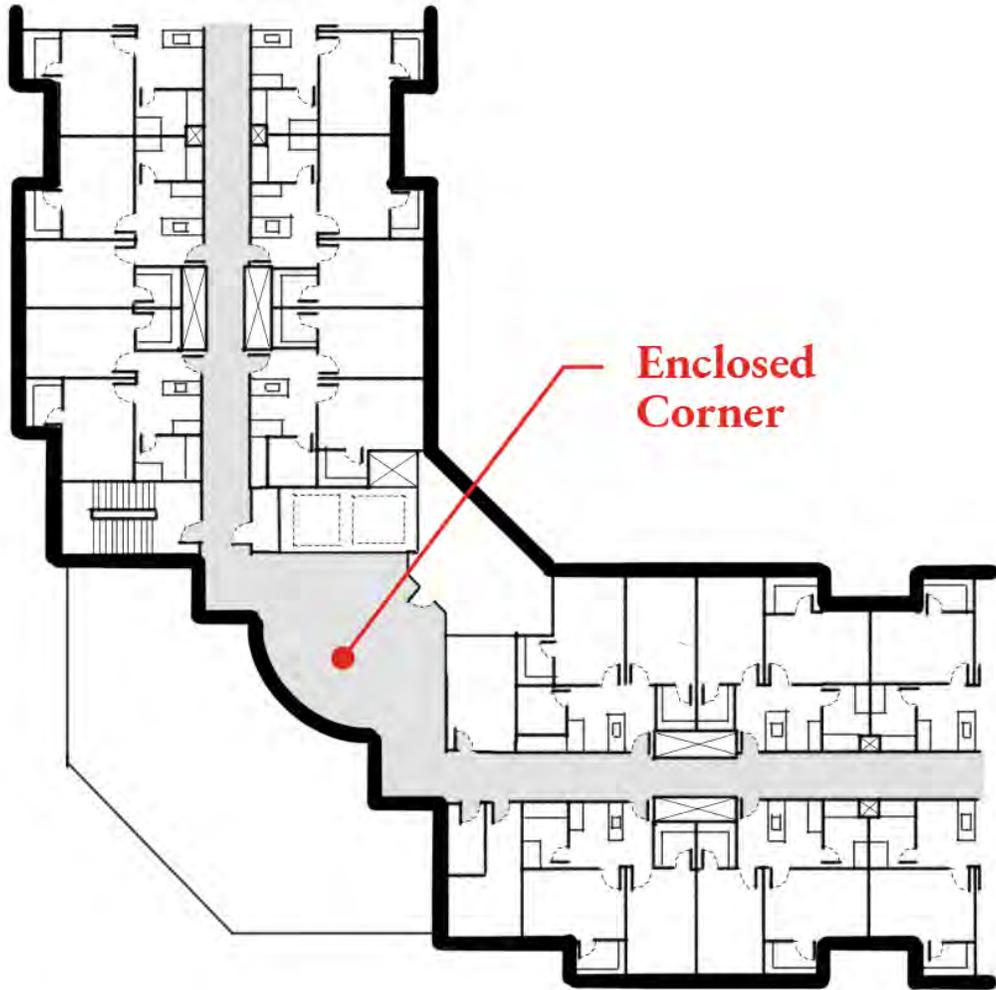
## 2-325 Infantry Barracks High Functional Distance

Year: 2011  
Design Standard: 1+1-Enhanced  
Number of Stories: 6  
Soldiers per Barracks: 288

## 1-325 Infantry Barracks Low Functional Distance

Year: 2010  
Design Standard: 1+1-Enhanced  
Number of Stories: 6  
Soldiers per Barracks: 384

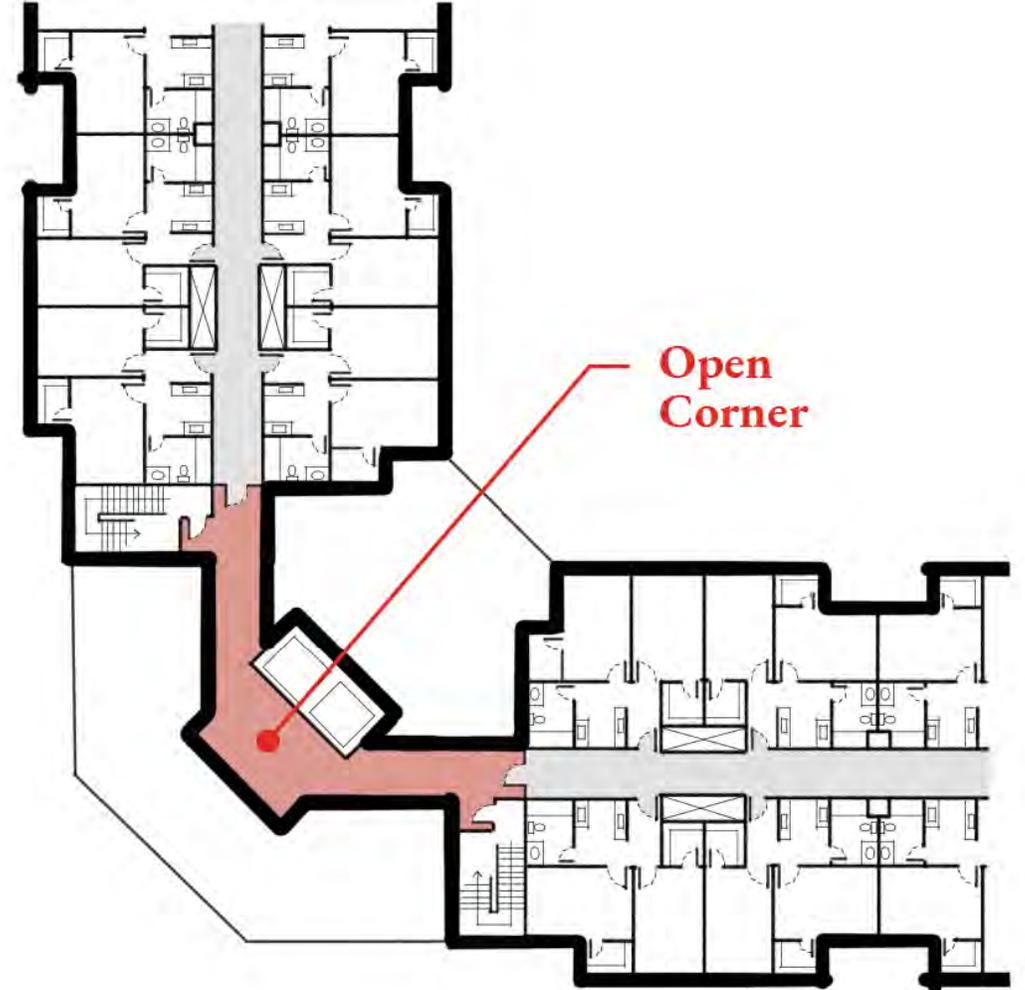
# SEAMLESS | FUNCTIONAL DISTANCE



**Enclosed  
Corner**

**Third Floor**

—•— 25 feet



**Open  
Corner**

**Third Floor**

—•— 25 feet

# SEAMLESS | FUNCTIONAL DISTANCE



If the passage between public and private space is difficult, the number of public visits drop significantly and many other social activities—particularly spontaneous activities—cease to exist.<sup>1</sup>

Residents with distributed social spaces with easy transitions between public and private space are **more likely to have someone to talk to when they're feeling down, less likely to feel left out, and more likely to feel part of the group.\***

<sup>1</sup> Gehl, Jan. Life between buildings: using public space. Island press, 2011.

\*Statistically significant at a 95% confidence interval.



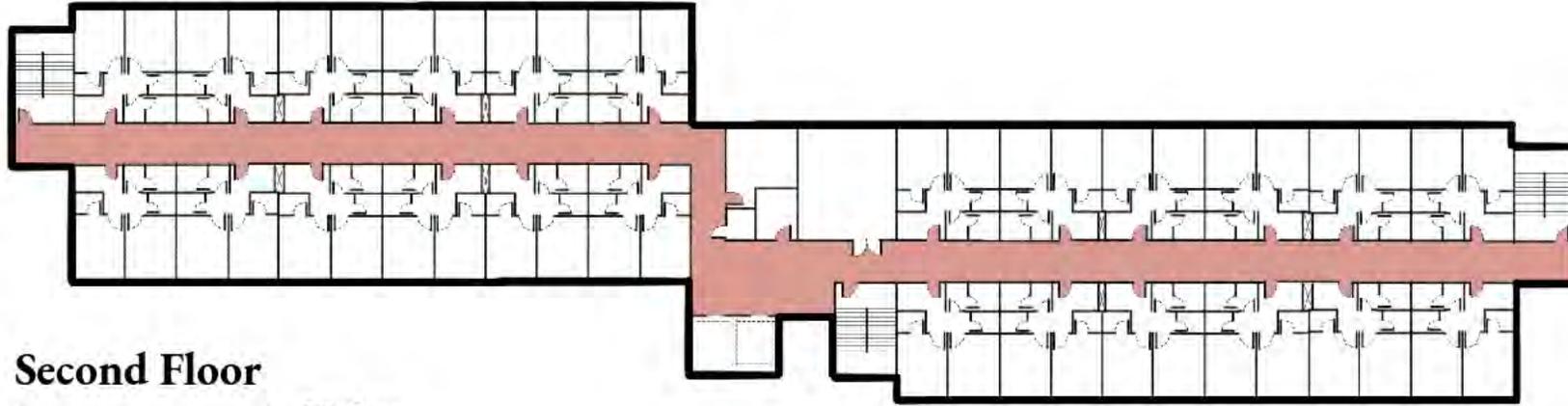
If we didn't have those [spaces], I probably wouldn't hangout with anyone.

People want to hang out where other people are...there's a good view, and it's close to the rooms. That's big. Each floor has their space. It feels like ours. Our company is a lot closer together because we're out there off-duty. Just the other night we brought camp chairs out there and watched the sun go down drinking beers. It's nice to get out of the room for a bit.

- **Specialist Franke**

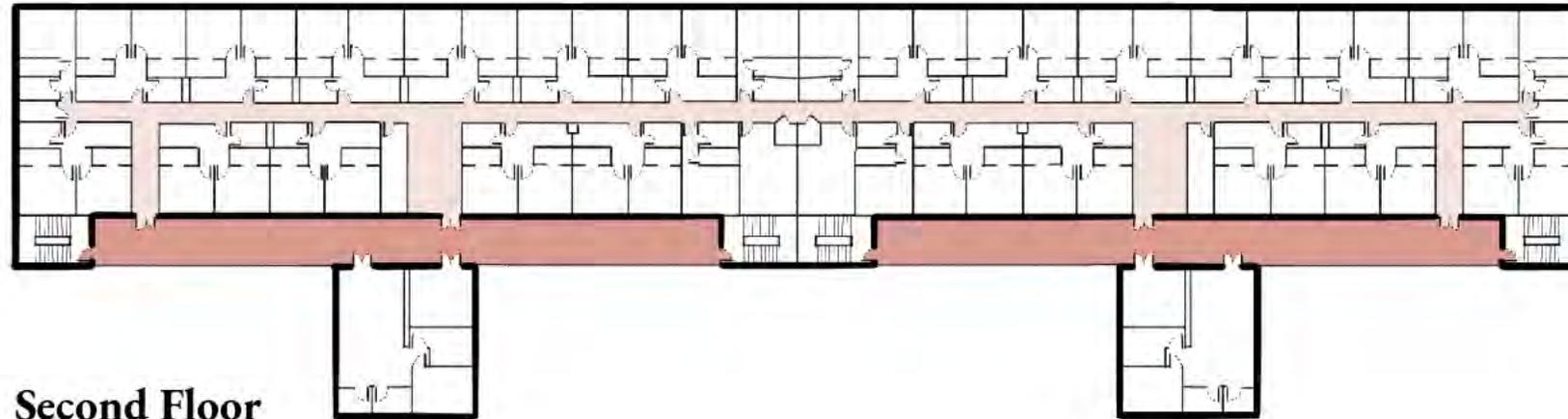
Fort Bragg

# SHARED | BALCONIES and SOCIAL SPACE



Second Floor

50 feet



Second Floor

50 feet

Schofield Barracks, Hawaii

## 1-21 Infantry Barracks Double-Loaded Corridor

Year: 2002

Design Standard: 1+1

Number of Stories: 6

Soldiers per Barracks: 288

## 2-35 Infantry Barracks Balcony Access

Year: 1915 (2006 Renovation)

Design Standard: 1+1

Number of Stories: 3

Soldiers per Barracks: 150

# SHARED | BALCONIES and SOCIAL SPACE



Exterior outdoor spaces close to soldier rooms, such as balconies or landings, have a robust and statistically significant effect on soldier health.

Residents with the social balcony spaces are **more socially connected, less depressed, less angry, less bothered by poor sleep, have higher self-esteem, better ways to deal with stress, and less likely to commit suicide.\***

\*Statistically significant at a 95% confidence interval.



Before coming to Schofield, my previous Brigade had both the “tower-style” and the “quad-style.” And we experienced something that nobody could figure out. The tower barracks had all the personnel problems—soldiers were getting into trouble, showing up late, those sorts of things. When we moved people to the quads, the problems went away... the quads are just better for socializing—and I think that builds a better unit. These guys hang out together. I see them hanging out on the hallway balconies all the time. They’re always together. In the tower-style design, you don’t see that.

- **First Sergeant Akers**  
Schofield Barracks

# A STRATEGY | THE THREE S'S

- Statistically significant ( $p < 0.05$ ) \*
- Not statistically significant

## Suicide Probability per Year per Battalion<sup>1</sup>

**Pre-2004 Barracks**

Significance

\* **2.7%**

0.017

**Post-2004 Barracks**

Significance

\* **7.4%**

0.017

The probability of soldier suicide is nearly **3 times (274%) higher** in newer barracks.

Newer barracks are less likely to incorporate the “three S’s” and residents suffer more from decreased social health.

<sup>1</sup>Probability of a completed suicide per year per battalion using 12 years of data (2008-2019) from 10,018 soldiers in 15 infantry barracks at 3 installations.

Significance determined using an independent T-test.

# CONCLUDING THOUGHTS

- Separated from their hometown and family social networks, barracks residents are particularly at risk for suicide (in some years, by 236% more).
- Military barracks design trends (and policies) increasingly eliminated, shrank, or discounted the places where casual interaction often blossoms into full-grown social bonds. Prioritizing individualism at the expense of community is the fatal flaw. However, returning to cramped quarters or spartan barracks is an equally bad (or probably worse) idea. The answer is not to take things away, but rather, to reinstate elements that we (as designers) let slip.
- Design can encourage or discourage interaction and increase or decrease the likelihood of social bonds. These bonds are a powerful force for well-being—correlating to social, emotional, and physical health, as well as decreased soldier suicide rates.

# CONCLUDING THOUGHTS

- There are many unknowns about the relationship between planning and mental health, but planners can use existing research findings to inform future planning efforts.
- Planning to support therapeutic lifestyle changes aligns with many other planning best practices and can be incorporated at all scales.
  - Walkability, green infrastructure, transportation connectivity, food systems planning, sustainable design...
- Planning to support therapeutic lifestyle changes aligns with mission priorities.
  - Readiness, retention, resiliency, quality of life, reduced healthcare and societal support costs...
- Design and planning strategies should focus on the needs of the most vulnerable populations (i.e., barracks residents, windowless office workers, certain careers).
- More research is needed to close knowledge gaps and plan effectively, particularly as it relates to the active duty military and veteran population.



Everything around you—from the shape of the room in which you currently sit, to the amount of sunshine filling your home, to the character of the house or apartment where you live, to the width and patterns on the sidewalks or roads that brought you there—is as it is because somebody made a choice. By commission or by default, the built environment is composed, which means that it could have been composed differently. We have before us an unprecedented opportunity to reshape the world into a better place.

- **Sarah Williams Goldhagen**

*Welcome to Your World*

Thank you!

- Questions for the Presenters via Chat

This Webinar qualifies for 1 AICP Certification Maintenance (CM) credit.

**Please find the following on APA's website to register for 1 CM credit.**

**Suicide in the Barracks: The Mental Impacts of Design**

**APA Federal Planning Division**

**#9205746**

**Wednesday, September 30, 2020**

**1 p.m. – 2 p.m. EDT**

# DISCUSSION AND CONTACT INFO

How have you considered mental health impacts in your design and planning work?

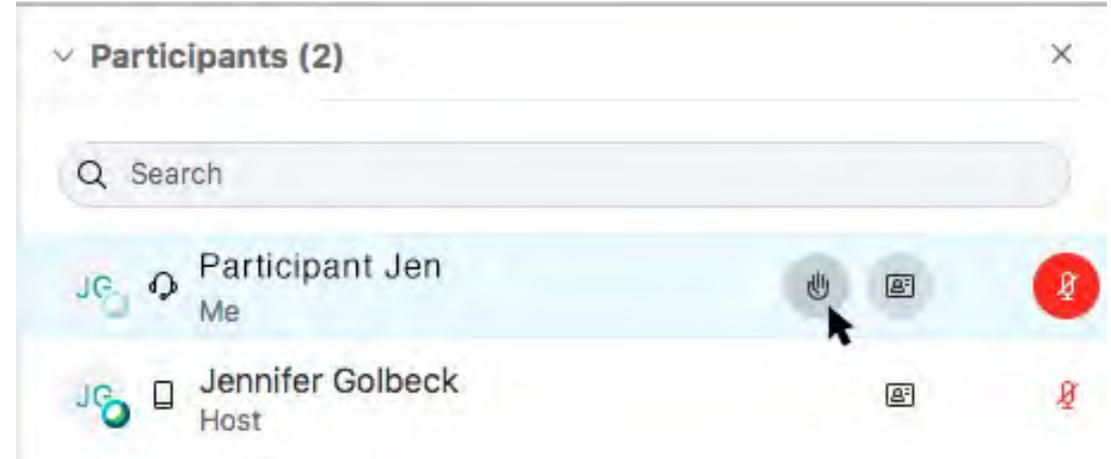
Feel free to reach out with questions or for more resources:

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To raise your hand:

- 1) Hover your mouse over your participant name. The raise hand icon will appear.
- 2) Click on the raise hand icon. Make sure to unmute yourself when you are called on.