

National Advisory Council on the National Health Service Corps (NACNHSC)

Readiness to Practice Protocol for Health Care Providers in Underserved Communities: Facilitators, Barriers, and Potential Measures

White Paper
2021



The views expressed in this report are solely those of the National Advisory Council on the National Health Service Corps, and do not represent the perspectives of the Health Resources and Services Administration nor the United States Government.

Table of Contents

Readiness to Practice Protocol for Health Care Providers in Underserved Communities:	
Facilitators, Barriers, and Potential Measures.....	1
Authority.....	4
Committee Members.....	5
Federal Staff and Technical Writer.....	6
Acknowledgements.....	7
Executive Summary.....	8
Recommendations.....	9
Background and Purpose.....	10
NHSC Site Settings.....	11
Readiness for Placement.....	14
Factors Associated with Recruitment and Retention.....	15
Skills and competencies needed to serve underserved communities.....	18
Potential Measures of Competencies Associated with Readiness for Practice in Rural and Underserved Communities.....	20
Adaptive, Flexible Learning Skills.....	20
Motivation and Commitment to Service.....	20
Understanding Local Epidemiology.....	21
Community Assessment.....	21
Cultural Competence and Humility.....	21
Patient Navigation Skills.....	21
Patient Advocacy Skills.....	22
Team-based Care Competencies.....	22
Self-care.....	22
Scope of Practice.....	23
Current NHSC Efforts to Prepare Health Care Providers to Practice in Rural and Underserved Communities.....	23
NHSC data collection and measurement.....	23
Call to Action.....	25
References.....	26

Authority

The National Advisory Council on National Health Service Corps (NACNHSC) is authorized by Section 337 of the Public Health Service Act as amended by Public Law 111-148: “The Council shall consult with, advise, and make recommendations to, the Secretary with respect to his responsibilities in carrying out this subpart (other than section 254r of this title), and shall review and comment upon regulations promulgated by the Secretary under this subpart.”

NACNHSC serves as a forum to identify the priorities for the NHSC and bring forward and anticipate future program issues and concerns. The Council functions as a sounding board for proposed policy changes by using the varying levels of expertise represented on the Council to advise on specific program areas. In addition, NACNHSC develops and distributes white papers and briefs that discuss issues and concerns related to the NHSC with specific recommendations for necessary policy revisions.

Committee Members

Keisha R. Callins, MD, MPH (*Chair*)

Obstetrician/Gynecologist
Community Health Care Systems
Jeffersonville, GA

Denise Bockwoldt, PhD, FNP-BC, CDE

Family Nurse Practitioner
Primary Care Clinic
Family Christian Health Center
Harvey, IL

Claude Jones, DO, MPH, MSc.Law

President and Chief Executive Officer
Care Alliance Health Center
Cleveland, OH

Ellen Piernot, MD, MBA

Vice President, Chief Medical Officer, Chief
Operating Officer
Golden Valley Health Centers
Merced, CA

Patricia Pinto-Garcia, MD, MPH

Assistant Professor of Pediatrics
University of Connecticut School of
Medicine
Pediatric Hospitalist
Connecticut Children's Medical Center
Hartford, CT

David Schmitz, MD, FAAFP

Professor and Chair
Department of Family and Community
Medicine
University of North Dakota School of
Medicine and Health Sciences
Grand Forks, ND

Michael Sein, DO, FAAFP

Family Practice Physician / Clinical Director
Dawson Medical Center
Dawson, GA

Monica Taylor-Desir, MD, MPH, DFAPA

Senior Associate Consultant
Department of Psychiatry and Psychology
Mayo Clinic
Rochester, MN

Federal Staff

Diane Fabiyi-King

Office of the Director

Division of National Health Service Corps

Senior Advisor, Public Health

Designated Federal Official

National Advisory Council on the National Health Service Corps

Bureau of Health Workforce

Health Resources and Services Administration

Keisha Robinson, MA

Office of the Director

Division of National Health Service Corps

Management Analyst

National Advisory Council on the National Health Service Corps

Bureau of Health Workforce

Health Resources and Services Administration

Technical Writer

Robin H. Pugh Yi, PhD

Senior Research Associate

AFYA, Inc.

Acknowledgements

The Council extends their gratitude and appreciation to colleagues and fellow members who contributed to the writing of this report: Ellen Piernot, MD, MBA, David Schmitz, MD, FAAFP, Michael Sein, DO, FAAFP, and Monica Taylor-Desir, MD, MPH, DFAPA. This report has benefited from the capable assistance of staff from HRSA, Bureau of Health Workforce (BHW): Diane Fabiyi-King, Designated Federal Official; Keisha Robinson, MA and Robin H. Pugh Yi, PhD, Federal Contractor/Technical Writer. The Committee deeply appreciates the hard work and dedication of these individuals in producing this report.

Sincerely,

Keisha Callins

Keisha Callins, MD, MPH
Chair, NACNHSC

Executive Summary

BHW has requested input from NACNHSC regarding future data collection efforts to support its priorities, including recruiting and retaining health care providers in HPSAs (Padilla, 2021). The National Advisory Council on the National Health Service Corps (NACNHSC, or the Council) has identified “readiness to serve” (RTS) in Health Resources and Services Administration (HRSA) designated Health Professional Shortage Areas (HPSA) as a priority consideration for policy and planning. The U.S. faces a primary health care provider shortage that disproportionately affects rural and underserved communities. The NHSC mission to address this shortage requires recruiting and retaining health care providers with the knowledge and skills to practice in HPSAs. Due to variability in educational curricula, completion of training may not result in the level of preparedness required to address the needs of rural and underserved communities, which experience disproportionate burden of disease and comorbidities, which are further confounded by limited access to clinics and clinicians as well as social determinants of health. Currently, there are no standardized procedures for assessing the degree to which providers are ready to serve in HPSAs. However, there is research evidence for factors related to RTS. Some training and education programs that target these factors; and there are some measures of competency related to RTS. The current report reviews research evidence and resources that may inform strategies to assess the degree to which providers are ready to serve in underserved communities. The report describes:

- Types of HRSA-designated HPSAs
- Barriers and facilitators to health care provider recruitment and retention to HPSAs
- Measures related to factors linked to readiness
- Description of current NHSC efforts to support and assess recruitment and retention
- Recommendations on how to support measuring RTS in HPSAs

NACNHSC supports current NHSC efforts to optimally prepare health care providers to practice in underserved communities in an effort to improve recruitment and retention in the healthcare workforce. The Council recommends additional efforts to collaborate with other partners to address education and training, and to utilize measures to assess RTS as a critical step toward reducing national healthcare provider shortages. This paper is a call to action with recommendations for implementing strategies to increase readiness of NHSC participant to fulfill their mission of providing and maintaining health care to communities with the most need.

Recommendations

NACNHSC acknowledges the importance of achieving equitable distribution of an equitably distributed health workforce that alleviates shortages of primary health care providers in underserved communities. Ensuring providers are prepared to competently meet the unique needs of these communities is one strategy for increasing recruitment and retention. Achieving this objective will require defining and measuring readiness to serve, and developing, implementing, and supporting training and education programs that support and increase RTS in underserved communities.

NHSC is a critical resource for incentives to provide primary care services in HPSAs, as well as a resource for information about evidence-based best practices in assessing readiness and preparing participants to serve communities with complex needs. NACNHSC recommends continued support for NHSC efforts to workforce distribution equitability through programs, research, and initiatives to:

- 1. Define and operationalize readiness to serve**
- 2. Identify education and training approaches that are most effective for preparing learners to serve.**
- 3. Support efforts to develop, validate, and utilize tools that measure readiness to serve**
- 4. Support efforts to measure the degree to which education and training programs apply best practices in preparing students and trainees to serve**
- 5. Share analysis of provider readiness to serve data, to inform NHSC and partners**

Background and Purpose

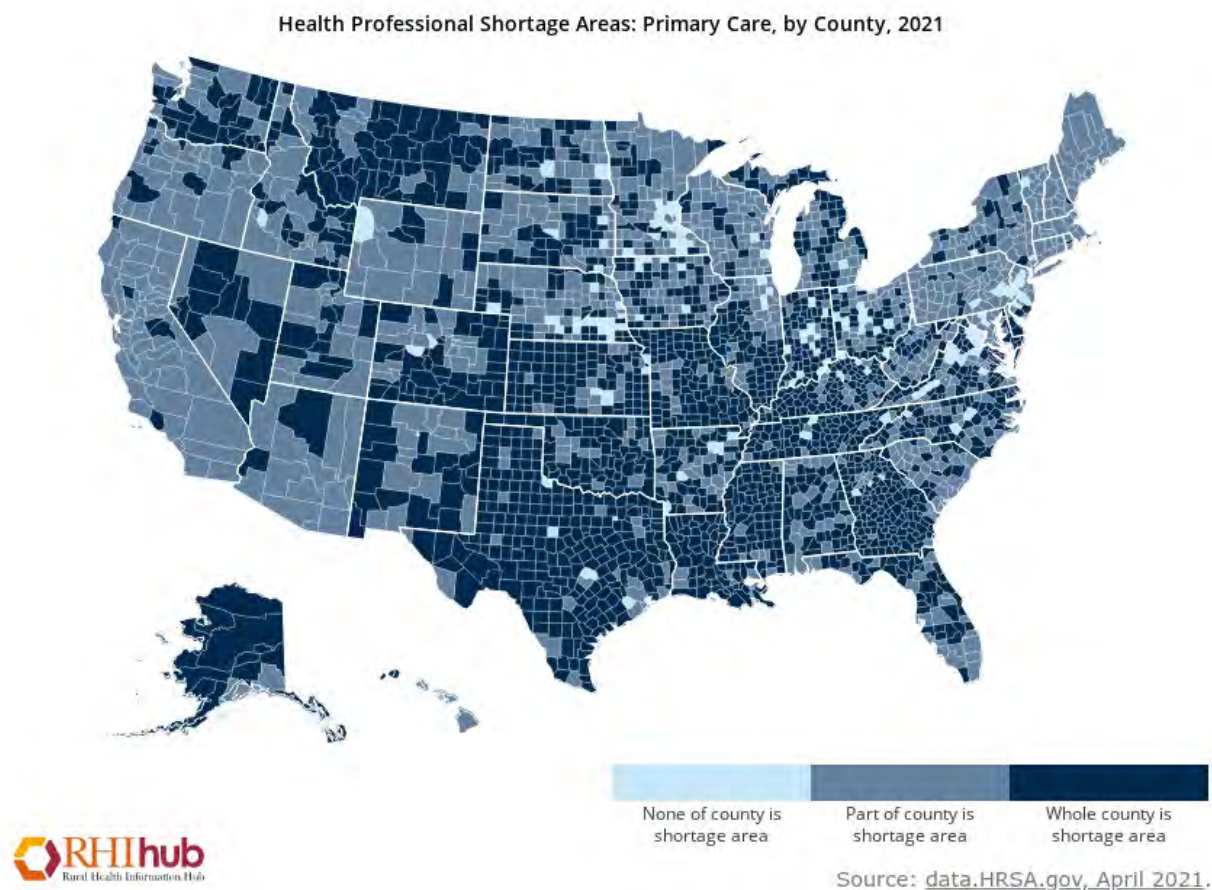
The National Health Service Corps (NHSC) was established in law by the Emergency Health Personnel Act Amendments of 1972 to address a shortage of primary health care providers in the U.S. NHSC offers scholarship and loan repayment programs to medical, dental, and nursing students, and primary, behavioral health and substance use disorder care providers in exchange for providing services in Health Professional Shortage Areas (HPSA). HPSA currently identifies 7,301 primary care, 6,566 dental health, and 5,826 mental health HPSAs nationally. Figure 1 shows primary care HPSAs by county.

NHSC is an essential pipeline to Community Health Centers, which serve patients who are predominantly low-income, uninsured or enrolled in Medicaid, members of racial/ethnic minorities, and have high rates of complex and chronic conditions. Nearly all (95%) Community Health Centers have at least one clinical vacancy, with the most commonly reported vacancy being for family physician. Community Health Center representatives report that isolation and community disadvantages present barriers to recruiting and retaining the health workforce (National Association of Community Health Centers, 2016). Demand for Community Health Center services has increased steadily since 2005 (Simmons, 2019; Nath, Costigan & Hsia, 2016).

The NHSC strives to retain program participants after they have fulfilled their service obligations to serve communities in need for the long-term. These efforts have been successful; nearly 80 percent of participants continue to serve in HPSAs 1 year following service obligation completion, and more than 70 percent continue service 10 years after service obligation completion. A substantial proportion of participants serve HPSAs specifically because of NHSC recruitment and opportunities (Negrusa et al., 2016). Yet recruitment and retention to HPSAs remain a challenge for meeting health care needs in the U.S. Research shows that one barrier to recruitment and retention is that providers do not feel adequately prepared to meet the needs of rural and underserved communities. Targeted evidence-based education and training are essential to ensure health care providers have the clinical and non-clinical skills necessary to thrive in high-need communities.

The NACNHSC aligns with other stakeholders such as the National Rural Recruitment and Retention Network (2016) and the Public Health Foundation (2016) to view recruitment and retention as an integrated endeavor, attracting candidates to high-need communities and sustaining efforts to maintain their commitment. To this end, this Council identifies readiness to serve (RTS) within HPSAs and assessing readiness as key priorities for ensuring program quality and effectiveness. This paper aims to present a call to action for NHSC stakeholders and propose next steps for research and policy.

Figure 1



NHSC Site Settings

NHSC sites serve urban, rural, and frontier communities, Tribal communities, State and Federal prison facilities, and Immigration and Customs Enforcement (ICE) detention centers and special medical operations units. Each type of site offers both benefits and challenges to health care providers considering practice there. Because this paper focuses on readiness and retention issues this section describes site types and distinguishing needs that can present challenges for which health care providers may require support for RTS.

Urban. The World Health Organization (WHO) identified rapid urbanization as a major health challenge of the 21st century. Urban communities are disproportionately affected by violence, traffic accidents, pollution, shortages of green space, and nutritious food (Martinez & O’Lawrence, 2020; Thomson, 2011). Urban built environment hazards such as air, water, and light pollution, and heavy traffic are risks for several health problems including asthma, lead poisoning, chronic diseases, and mental health issues (Flies et al., 2019; Corburn, 2017, Vardoulaki, Dear & Wilkinson, 2016; Rodriguez et al., 2010). The higher population density of urban communities is associated with higher rates of infectious diseases including HIV/AIDS, tuberculosis, pneumonia, and diarrheal diseases. Youth violence is significantly higher in urban than rural or suburban communities. Approximately two-thirds (67%) of firearm homicides occur in large urban areas. More than one-third (35%) of urban youth exposed to community

violence experience post-traumatic stress disorder, a higher rate than among combat soldiers. Living in unsafe urban neighborhoods is associated with anxiety, depression, and stress, which are linked to pre-term births and low birth weight (Martinez & O'Lawrence, 2020).

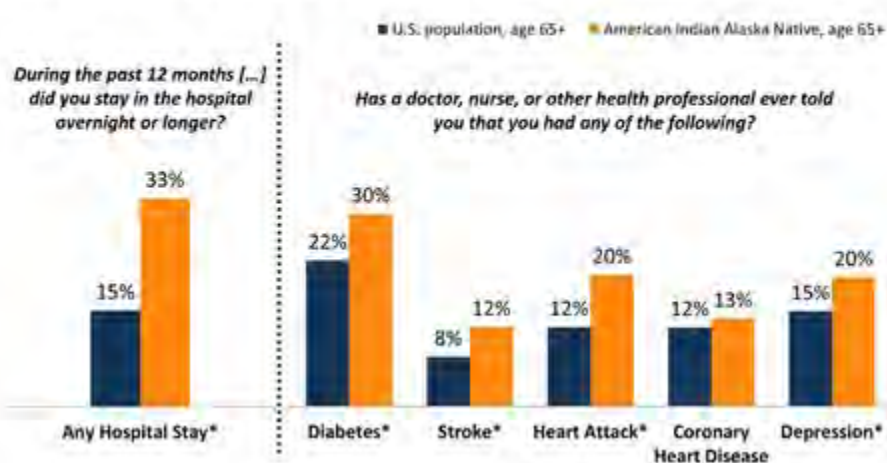
Rural. Rural communities are disproportionately affected by the shortage of primary care providers and hospital closures in the U.S. As of 2020, 60 percent of primary care and 63 percent of dental HPSAs are in rural regions (HRSA, 2021). Since 2010 more than 100 U.S. rural hospitals have closed (Centers for Medicare and Medicaid Services, 2019). As access to healthcare services declines, rural residents are less likely to use primary preventive clinical services, more likely to require hospitalization, and experience poor health outcomes (Skinner et al., 2019). Rural communities are disproportionately affected by several social determinants of health such as housing, unemployment, telecommunications access, transportation infrastructure, and health care access (Leath et al., 2018). Rural residents are older and less wealthy, less likely to be insured, and have shorter life expectancy than non-metropolitan residents. Mortality from cardiovascular disease, and higher rates of unintentional injury and chronic lung disease is disproportionately high in rural communities (Jaret, 2020).

Frontier. Frontier communities are sparsely populated and geographically isolated. Specific definitions with quantitative parameters vary between State and Federal programs (Rural Health Information Hub (RHI), 2020). Many frontier counties lack a hospital. Lower patient volume tends to lead to higher costs per patient. Frontier communities often have no public transportation and/or seasonal travel barriers. Travel infrastructure is often poor or lacking. As a result, traffic fatalities are disproportionately high in frontier communities than others. Frontier industries include farming, ranching, logging, and mining, resulting in disproportionate rates of unintentional injuries (Wilger, 2016). Frontier communities disproportionately experience substance abuse and domestic violence compared to urban and non-frontier rural areas (McDonald et al., 2014).

Tribal. NHSC sites include Indian Health Service (IHS) facilities, Tribal health centers operated under the Indian Self-Determination Act, and Urban Indian Health Centers, which are Federally Qualified Health Centers. Tribal settings are often remote and rural and experience the risk factors and disparities that affect those communities. Approximately 70 percent of American Indians/Alaska Native (AI/AN) people reside in urban settings and experience the associated risk factors and disparities (Urban Indian Health Institute, 2021). Across geographic settings, AI/AN are affected by disparities in alcohol-related mortality, suicide, chronic liver disease and cirrhosis, diabetes and other chronic diseases, and homicide (Indian Health Service, IHS, 2019). Figure 2 illustrates disparities in chronic diseases and rates of hospitalization affecting AI/AN people. Tribal communities are disproportionately affected by social determinants of health, including poverty, employment and education opportunities, access to healthy food, and exposure to environmental hazards (RHI Hub, 2018; IHS, 2019), as well as discrimination and exclusion and adverse early life experiences (Compton & Shim, 2015).

Figure 2

Among people age 65 and older, American Indians and Alaska Natives are more likely to have a hospital stay and certain health conditions



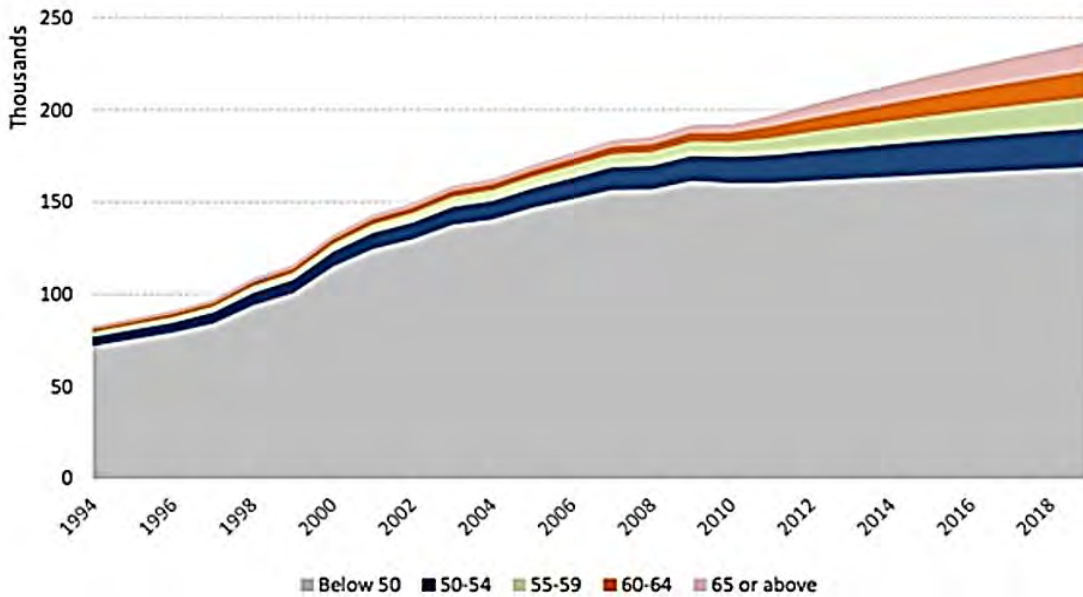
Source: <https://www.aamc.org/news-insights/more-native-american-doctors-needed-reduce-health-disparities-their-communities>

Prisons. Prison populations are less healthy than the general public, with 40 percent having at least one serious chronic condition, such as diabetes mellitus, myocardial infarction, HIV/AIDS (Amerihealth Administrators, 2015), Hepatitis C, asthma, and hypertension (Macmadu & Rich, 2015). Compared with the general population, prison populations experience higher rates of infectious diseases, such as COVID-19 (Carlisle & Bates, 2020), tuberculosis, and sexually transmitted infections (Macmadu & Rich, 2015). Prisoners are older than the general population and experience more effects of aging (Amerihealth, 2015). As shown in Figure 2, the proportion of older prisoners has steadily increased.

Nearly 25 percent of people in prison have a diagnosed mental health condition (Amerihealth Administrators, 2015), and more than half of State prisoners have been diagnosed with drug dependence (Macmadu & Rich, 2015). Most female offenders have a history of trauma and/or abuse (Meade & Mellgren, 2011). In some jurisdictions, jails and prisons are the largest providers of mental health services (Treatment Advocacy Center, 2016).

An additional requirement for healthcare providers in prison settings is the necessity for training in safety and security procedures and coordinating care delivery with correctional officers (Mason, Burke & Owen, 2013). Nearly all prisoners (95%) return to the community. The process of transitioning from prison to the community is associated with health risks. Mortality during the first 2 weeks of transition is 13 times higher than for the general population. Major causes of death during this time are drug overdose, cardiovascular disease, homicide, and suicide (Macmadu & Rich, 2015).

Figure 3. U.S. prison population age groups 1994-2018.



Source: US Bureau of Justice Statistics (BJS) Federal Justice Statistics Program (FJSP) data, as analyzed by the Urban Institute.

Immigration and Customs Enforcement (ICE) Detention Centers. ICE Health Service Corps (IHSC) provides care at designated facilities that meet NHSC site requirements. Refugees and immigrants are disproportionately affected by trauma, stress, and some diseases and conditions that are not common in the U.S., such as Dengue or malaria (Centers for Disease Control and Prevention, CDC, 2021). Health issues affecting detention centers are influenced by policies that determine who is detained, for what reasons, and under what conditions. Advocates, health professional organizations, and policy makers have recently criticized ICE for unsafe conditions, lack of regard for detainees' well-being, and enforcing policies such as family separation that are detrimental to health (American Public Health Association, 2020; Hooks & Libal, 2020; U.S. House of Representatives Committee on Homeland Security, 2020; Allen & McPherson, 2018; Linton, Griffin & Shapiro, 2017; American Psychiatric Association, 2020; American Medical Association, 2017). IHSC patients may present with health issues related to conditions in their country of origin, the process of leaving their country of origin, or detention.

Readiness for Placement

While RTS is a priority in the field, research has not focused on operationalizing or measuring the construct. Extensive research has documented factors that affect recruiting and retaining health care providers in high-need rural, frontier, and urban communities. Limited literature was retrieved regarding recruiting and retaining providers to practice in Tribal communities or correctional or detention facilities. Similarly, research has been conducted on skills and competencies related to successful service in urban and rural communities, with less information available about skills and competencies that predict successful service in Tribal or correctional or detention sites. Some factors influence recruitment and retention for all types of underserved communities, while other factors apply to only some types of underserved communities. The following sections discuss factors associated with recruitment and retention, and skills associated

with successful service in underserved communities, noting which community types for which each factor is relevant.

Factors Associated with Recruitment and Retention

Research has identified barriers and facilitators to recruiting and retaining health care providers to practice in underserved communities.

Barriers

Rural and Frontier Communities

Studies of recruiting and retaining health care providers in rural and remote communities have identified the following key barriers:

- The perception that these communities are less desirable places to live and work (Hines et al, 2020, Stajduhar, 2020)
- A lack of amenities and experience of social isolation (Chipp et al, 2011)
- Negative input from a spouse (Stajduhar, 2020; Schmitz et al, 2010)
- Concern about a lack of health infrastructure and resources to support practice (Hines et al., 2020; Stajduhar, 2020)
- Professional isolation in rural or remote communities with few or no colleagues (Hines et al., 2020; Stajduhar, 2020; Chipp et al., 2011)
- Provider feeling unprepared to meet rural and remote communities' health care needs
- Fear of a burdensome work schedule, or being constantly on-call (Stajduhar, 2020; Chipp et al., 2011; American Academy of Family Physicians, n.d.)
- Difficulty establishing personal or professional boundaries in communities where patients are likely to have others relationships with them, such as police officer, child's teacher, or hospital board member.



Urban Communities

While extensive research has been conducted on recruiting and retaining rural health care providers, little is available on the same issues in underserved urban settings. This is at least in part due to recruitment and retention being more challenging for rural and frontier communities. In a survey of allied health professional administrators in Tennessee, Slagle (2010) found that a majority (57%) of those serving urban communities reported that their staff perceived the community to be geographically desirable, while only approximately one-third (34%) of rural administrators reported their community to be perceived as geographically desirable. Gilman (2013) surveyed health professionals participating in obligatory health care recruitment programs in Delaware and found that 44 percent of respondents with a preference for underserved community type preferred urban, 39 percent preferred suburban, and only 17 percent preferred rural communities. In the only recent study retrieved that specifically focused on recruitment and retention to underserved urban communities, Walker et al. (2010) conducted key informant

interviews with primary care providers practicing in underserved and non-underserved urban settings. The authors found that barriers to choosing to practice in underserved urban communities included **lower salaries and fewer benefits**; this was especially a concern among professionals with large education debt. Other concerns included **long work hours, burnout, and not wanting to work far from home**.

Tribal Communities

Research on recruitment and retention for corresponding Tribal communities indicates that **lack of long-term commitment to service and cultural connection are barriers** (Association of American Indian Physicians, United Health Care & AAMC, 2019). Literature retrieved focused on a need for more AI/NA providers (RHI, 2018; Gray, 2016; Khazan, 2014). It did not mention other specific barriers to practicing in urban or rural Tribal communities. The National Indian Health Board (2015) cited **remote and rural locations, low pay, lengthy hiring processes, and ill-equipped facilities** as barriers to recruiting and retaining providers at IHS facilities. IHS facilities experience a 46 percent annual turnover rate, a barrier to developing trusting relationships between clinicians and patients. A survey of health care providers in Navajo Area IHS facilities found that most (58%) planned to leave eventually, with lack of administrative support being the most cited reason (Kim, 2000).

Prisons

Barriers to practicing correctional health care include concerns about physical safety (Brooker et al., 2018; Jernigan, 2018; Cashmore et al., 2012). There has been extensive research on **burnout among correctional workers** generally (Edge staff, 2018; Reeves, 2014) but little regarding health care providers specifically. Senter et al. (2010) found that correctional psychologists experienced higher rates of burnout than other psychologists. Hart (2019) wrote a personal narrative about the stresses of practicing professional medicine. A survey of nurses serving in a large Federal prison found that **lack of orientation and appreciation** were major barriers to retention (Jernigan, 2018). Informal media reports refer to lack of awareness, perception of low prestige, and concerns about physical safety as barriers to choosing a career as a health care provider in a correctional setting (Keller, 2017; Schierhorn, 2014).

ICE Detention Centers

A literature search retrieved only two reports that discussed IHSC recruitment and retention. The program's Fiscal Year 2020 report states that 3-year retention for all job categories was 80 percent or more. However, job vacancies increased from an average of eight per facility in 2018 to 159 in 2020. A Department of Homeland Security Office of the Inspector General report (2016) stated that IHSC has been challenged to recruit and retain mental health care providers. Reasons include **inability to provide competitive salaries, especially for psychiatrists, and a lengthy security clearance process, during which candidates often accept other offers**.

Facilitators

This section summarizes research on factors that facilitate practice in all types of priority communities as well as facilitators for practice in each specific type of priority community.

All Types of Priority Communities

Some studies have focused on factors that increase likelihood of practice in underserved communities, regardless of community type. Research indicates that **training in priority**

communities increases interest in and confidence about serving these communities (Fifolt et al., 2020, Hines et al., 2020, Roy et al., 2015; Hatcher et al, 2014, Barnighausen & Bloom, 2009; Ko et al., 2005); Weissman et al., 2001). Research also shows that **members of high-need communities are more likely to commit to practicing in them** (Hines et al., 2020, Roy et al., 2015; Ko et al., 2005). Barnighausen and Bloom (2009) conducted a systematic literature review that showed **financial incentive programs such as NHSC are effective for retaining participants in medically underserved communities.**

Rural and Frontier Communities

Several researchers have studied factors related to rural practice recruitment and retention, and to successful rural practice. In an extensive literature review Hines et al. (2020) found that **programs that train students to serve rural communities have graduates who are more likely to perceive rural communities as attractive, and are more satisfied with work in rural communities.** In addition to research showing value of financial incentives for retaining providers in underserved communities generally, several studies have demonstrated their effectiveness specifically for rural and frontier communities (Hines et al., 2020; Stajdukar, 2020; Schmitz et al., 2010).

Practitioners who opt to serve in rural or frontier communities have noted several advantages to doing so. These include a **slower paced lifestyle** (Hines et al., 2020); interest in the community culture or feeling of connection with the community (Hines et al., 2020, Stajdukar, 2020, Chipp et al., 2011), and **appreciation of natural beauty and outdoor activities** (Chipp et al., 2011, Schmitz et al., 2010). Health care providers who prefer rural or remote practice have reported **preferring to work independently** (Stajdukar, 2020; Hines et al., 2020; AAFP, n.d.). Some rural health care providers prefer the **range of professional experience available in communities with few providers, especially specialists** (Hines et al. 2020). Factors that increase interest in serving rural communities include a **sense of confidence that one is prepared to meet a community's needs** (Hines et al., 2020) and an **expectation that there will be professional support and opportunities for professional development** (Thackrah & Thompson, 2019, Chipp et al., 2011)

Urban Communities

Roy et al. (2015). Few medical school programs emphasize serving underserved communities, especially urban area. The Jefferson Medical College Urban Underserved Program in Philadelphia, Pennsylvania trains students to serve urban communities in need. The curriculum includes seminars on urban violence, homelessness, HIV/AIDS, caring for refugee patients. **Training includes longitudinal rotations and peer advising.** 75% of graduates practice in urban underserved communities; 61% are primary care providers. In commentary about motivation to practice in underserved communities, Hooker (2013) and Huang (2011) cited work showing that **interdisciplinary teams offer personal support and opportunities for professional growth and development** that motivate care providers to continue practice in underserved urban communities.

Tribal Communities

Tribal membership is the strongest facilitator to recruitment and practice in Tribal communities. The most recent information retrieved about recruitment and retention to Tribal communities was a survey study of recruitment and retention to Navajo Area IHS hospitals

(Kim, 2000). The most frequently cited reasons for practicing in these hospitals were a **desire to work in the Southwest and the quality of medical staff**. Current strategies focus on **building a workforce pipeline and educating and training health workforce members** who are AI/AN (Guzman et al., 2020; AAIP, 2018; Weintraub et al., 2015).

Prisons

Kavilanz (2009) reported that some health care providers choose to work in prisons because they **prefer the hours, benefits, security measures, and assurance that patients have access to follow-up care**. Correctional facility staff are key mechanisms for connecting transitioning patients to insurance coverage and care after re-entry. Medicaid enrollment and having a medical home are associated with reduced recidivism. Insurance and access to care are associated with better health management, which is linked to lower recidivism, especially for patients with mental health or substance abuse disorders. **Playing a key role in reducing recidivism and improved health outcomes are motivating factors for pursuing and committing to a career as a health care provider in a correctional facility** (Gates, Artiga & Rudowitz, 2014).

Bennett, Perry & Lapworth (2010) found that **team work was associated with retention** of nurses in criminal justice settings. In a study of correctional nurses' job satisfaction and intention to continue at their jobs, Chafin and Biddle (2013) found that **adequate orientation and team building** were key factors in retention.

ICE Detention

A literature search did not yield research or informal accounts of factors facilitating recruitment or retention in ICE Health Service Corps (IHSC), motivations or decisions regarding IHSC participation, or experiences with IHSC service. However, some facilitators previously mentioned may be applicable to recruitment of providers for this community as well.

Skills and competencies needed to serve underserved communities

Barriers and facilitators to practice in underserved communities imply the skills and competencies necessary for RTS. Evidence for the value of these skills and competencies can inform development of training and curricula to prepare participants to practice in high-need communities, as well as development of measures to assess RTS. The majority of these skills apply to all types of underserved communities.

In a summary of research on physicians practicing in underserved communities, Huang (2011) cites “a deeply felt motivation for work that goes beyond the satisfaction of the worker’s material and social needs (p.546)” as a key motivational factor in retention. Hooker (2013) cites multiple studies of health care providers with diverse professions in concluding that **a strong personal commitment to service is a core motivation** for practice in underserved communities. Longnecker et al. (2018), Hooker (2013) and Huang (2011) also identify **thriving on the challenge of addressing complex needs with limited resources as distinguishing factors** of care providers who practice in high-need communities for the long-term.

“I need to know what’s happening in her life, where she’s living.

I need to understand that this month, she’s unemployed. I need to pay attention to all that.”

Participant (Loignon et al., 2015)

Research has shown that **understanding and adapting to the local community** is associated with remaining in practice. This includes awareness and understanding of local epidemiology (Huang, 2011). Chipp et al. (2011) conducted focus groups with rural health care providers from diverse disciplines to discuss what they wish they had been told prior to practicing in these communities. Participants described **challenges, how to adapt to them, and rewards of rural practice**. One theme was the **importance of being aware of and understanding community resources**, which was also reported by Longnecker et al. (2018) and Huang (2011). All three articles reported the importance of **understanding community culture, language, and social context**. Schmitz (2021) cites **understanding community context and resources as a core competency for rural primary care practice**. Loignon et al. (2015) interviewed general practice physicians in underserved communities about factors that support effective care. Participants emphasized **empathic and respectful communication, understanding patients' experiences with social determinants of health, helping patients to navigate the health system, and team-based care**. Respondents to a national survey of family medicine educators identified these as core competencies for rural practice (Longnecker et al., 2018). Chipp et al. (2011) emphasize that health care providers must have the skills necessary to form meaningful social connections in order to practice effectively in underserved communities. Huang (2011) states that effective practice in underserved communities requires the **skills necessary to help patients to navigate the health system, and to advocate for the health needs of patients and communities**. Longnecker et al. (2018), Hooker (2013), Chipp et al. (2011), and Huang (2011) all identify **team-based care** as critical for successful practice with underserved communities and populations. Participants in the Chipp et al. (2011) and Longnecker et al. (2018) reported that providers should have **self-care skills, including ability to set personal boundaries, to prevent burnout**. Participants pointed out that living in rural communities can include social isolation, making **self-care essential**.

Skills Needed for Rural Practice

Schmitz (2021) and National Rural Health Association (NRHA), Longnecker et al. (2018), and the American Academy of Family Physicians (AAFP) (NRHA & AAFP, 2013) report that rural residents often do not have access to surgical, obstetric, or emergency care providers. As a result, primary care providers are called on to offer a wider scope of practice than their urban and suburban counterparts. Schmitz et al. (2010) found that rural communities often need primary care providers to provide mental health care, prenatal care, and obstetrical procedures, which can present a challenge for recruitment and retention. Readiness to serve rural communities often includes ability to perform some procedures that specialists would provide in other settings. Schmitz (2021) advocates for training rural primary care providers to be “master adaptive learners” with the skills to address unexpected needs with limited resources, including understanding when and how to transition patients to urban-based tertiary care. Longnecker et al. (2018) also report ability to continuously expand skills in response to community needs as a core competency for rural practice. In addition, Longnecker et al. (2018) identified the ability to negotiate having dual roles, such as physician and customer, and the “glass house” effect of rural communities, which the authors called **integrity**, as a core competency for serving rural communities. Table 1 lists competencies associated with readiness to serve rural and underserved communities, and whether the skill is necessary for communities with complex needs in general, or rural communities specifically.

Table 1. Competencies Associated with Readiness to Serve

Competency	Community Type
Adaptive, flexibly learning	All
Commitment to service	All
Understanding community context	All
Awareness and understanding of community resources	All
Empathic, respectful communication, cultural humility	All
Patient navigation skills	All
Patient advocacy skills	All
Team-based practice skills	All
Self-care, resilience skills	All
Wide scope of practice, ability to adapt scope of practice	Rural

Potential Measures of Competencies Associated with Readiness for Practice in Rural and Underserved Communities

A literature search did not yield examples of validated measures of RTS in rural or underserved communities. However, measures of competencies associated with RTS are available. Descriptions of some of these measures follows.

Adaptive, Flexible Learning Skills

Validated measures of adaptive, flexible learning skills include the Patterns of Adaptive Learning Survey (PALS; Anderman, Urdan & Roeser, 2005), the Flexible Thinking in Learning Scale (Barak & Levenberg, 2016), the Learning Flexibility Index (Sharma & Kolb, 2010), and others. Existing measures could be used to assess the core dimension of flexible thinking and problem-solving, or be adapted to assess skills specific to providing health care in settings with limited resources.

Motivation and Commitment to Service

While the literature search did not find research specifically about measuring commitment to serving rural and underserved communities and populations, measures of motivation for and commitment to a job are available. Nortje (2021) provides an inventory of measures for measuring intrinsic motivation, including some specifically designed to assess work motivation. Stride, Wall, and Catley (2007) published a manual for job satisfaction and organizational commitment measurement. Vance (2006) summarizes approaches to assessing employee engagement and commitment, which are associated with job performance, regardless of occupation. Vance also provides examples of approaches employers can use to inspire commitment, rather than consider it a stagnant employee trait. Efforts to prepare health care providers to serve communities in need can include efforts to inspire commitment, such as offering opportunities for personal development and autonomy, facilitating mutual support

among team members, and emphasizing the work's significance. Measuring RTS can include using available measures of job commitment as a component of measuring commitment to serving communities in need.

Understanding Local Epidemiology

Research has identified understanding how to use epidemiological data to address social determinants of health as a competency for practice in underserved communities. This skill may be best gained and assessed through academic training. Readiness would be indicated by taking relevant coursework and earning grades that indicate a threshold of competence. Competence in learning and utilizing local epidemiological data requires not only learning basic principles of epidemiology, but also understanding how local epidemiological data indicates social determinants of health and community health needs. Clinicians serving vulnerable communities should know how to find, interpret, and apply these data (Tanner & Eckart, 2019).

Community Assessment

Several tools are available to support analysis of community needs and resources. While the literature search did not indicate that there are measures of competence for using these tools, familiarity with them and experience applying them are potential indicators of RTS rural and underserved communities. Examples of community needs assessment tools include University of Kansas Community Toolbox (2021), a web-based resource that includes descriptions of how to conduct community needs assessments, data collection and analysis methods, data interpretation, and applying results to support communities in meeting their needs. The Centers for Disease Control and Prevention (CDC) offer a Community Needs Assessment Participant Workbook (CDC, 2013). Another example is Community Action Partnership's Community Needs Assessment Tool, which offers data on demographics, community resources, and social determinants of health at the State and county level.

Cultural Competence and Humility

Cultural competence refers to knowledge, attitudes, and behaviors that facilitate cross-cultural work (CDC, 2020). Cultural humility refers to an interpersonal focus on others and respect for other cultures (Hook et al., 2013). Hook et al. (2013) developed and validated the Cultural Humility Scale to assess psychotherapists. The National Center for Cultural Competence offers multiple assessments of cultural competence as well as training resources (National Center for Cultural Competence, 2020). Ahmed et al. (2018) identified indicators of cultural competence and humility in patient-centered care and recommended efforts to develop assessments based on these indicators. Ponce (2021) proposed considerations for assessing equity, diversion, and inclusion in team-based primary care. These resources and tools can support efforts to measure cultural competence and humility as core elements of RTS. HRSA's Office of Health Equity offers a publicly available course entitled, "The Roots of Health Inequity," which discusses on how to address root causes of health inequity and could be a valuable resource for preparing clinicians to serve high-need communities.

Patient Navigation Skills

Patient navigator is a health profession in itself, with training and certification programs available. Certification would be one indicator of competence in this aspect of RTS. In addition,

training resources are available for fundamentals of patient navigation, through schools of public health and health professions programs. Training completion could be an indicator of competence in this component of RTS.

Patient Advocacy Skills

The Patient Advocate Certification Board requires specific competencies for certification, which would indicate competence in this key area of RTS underserved communities (Patient Advocate Certification Board, 2020). Other assessments and resources are available to train for and measure competence without requiring the mastery required of board-certified professionals. The National Patient Advocacy Foundation (NPAF) offers training in advocacy (NPAF, 2021). The National League for Nursing offers a Public Policy Toolkit; WHO offers guidance for advocacy to end chronic disease (Bunting, 2006), Health professions and public health schools offer brief training in advocacy for continuing education credits. Completion could support clinicians in becoming ready to practice in underserved communities.

Team-based Care Competencies

The Interprofessional Education Collective (IPEC), a group of national professional organization representatives, has identified core competencies in interprofessional practice. IPEC's framework describes interprofessional collaboration as an overarching competency with four domains:

- 1) Values and ethics for professional practice
- 2) Understanding the roles and responsibilities of all health care team members
- 3) Communication with patients, families, communities, and professionals in health and other fields that supports a team approach to health care,
- 4) Apply teamwork and team principles in care planning, delivery and evaluation (IPEC, 2016).

IPEC's framework is endorsed by the Health Professions Accreditors Collaborative. Zierler et al. (2021) have developed an assessment of team understanding and relationships, grounded in the IPEC framework. The University of Toronto Centre for Interprofessional Education at the University Health Network offers the "Interprofessional Care Competency Framework and Team Assessment Toolkit" (2017).

Self-care

A literature search did not retrieve measures of self-care competency. However, several resources are available to support health care providers in self-care to reduce stress and burnout, and promote wellbeing. These include the National Institute of Environmental Health Sciences "Caring for yourself in the face of difficult work" (2014), the National Center for Post-Traumatic Stress Disorder's "Managing Healthcare Workers' Stress Associated with the COVID-19 Virus Outbreak," and the National Child Traumatic Stress Network's "Taking Care of Yourself" (2021) description of self-care strategies for providers. Self-care skills are necessary, but not sufficient, for ensuring providers receive adequate support for resilience. The causes of stress and burnout are systemic and beyond what individual providers alone can address. System-level solutions are necessary. The NACNHSC report "Recommendations for Priorities to Support

National Health Service Corps Efforts to Address the U.S. Health Care Workforce Shortage 2021-2023” (2021) discusses the importance of organizational- and systems-level approaches to supporting provider well-being and resilience and refers to resources and strategies for organizations and health systems to promote resilience and well-being.

Scope of Practice

Rural care providers’ training must ensure participants are trained in the necessary scope of practice (Schmitz, 2021). This is one focus of rural training tracks (Supplitt, 2019; Patterson, Schmitz & Longnecker, 2019; RHI Hub, 2019).

Current NHSC Efforts to Prepare Health Care Providers to Practice in Rural and Underserved Communities

Recruiting and retaining participants in HPSAs are core NHSC priorities. Efforts to support these priorities include requirements for NHSC sites, scholars, and loan repayers. NHSC site applications must include recruitment and retention plans, which must describe strategies for promoting resiliency and reducing burnout among providers. Designated Regional Office Personnel conduct regular site visits to evaluate retention, and offer site-specific technical assistance for recruitment and retention. NHSC recruitment support tools include a web-based Health Workforce Connector, virtual job fairs, and allowances to pay the cost of travel to interviews at NHSC sites. The Health Workforce Connector include descriptions of sites and communities. Applications to participate in NHSC Loan Repayment and Scholarship Programs must indicate commitment to service in underserved communities through applicant essays and recommendations (NHSC, 2021).

NHSC service obligations provide opportunities for participants to train in priority communities, which is associated with retention. Sites are required to provide culturally competent and linguistically appropriate care (NHSC Site Agreement, 2021), an important step toward preparing participants for long-term practice in underserved communities. NHSC offers a mentoring program to support participants in transitioning from education and training to practice, and during practice (Pender & Nguyen, 2013). Mentoring could include targeted, evidence-based practices for preparing participants to practice in rural and underserved communities.

Current recruitment and retention efforts have demonstrated effectiveness. A large majority (80%) of NHSC alumni who completed service between fiscal years 2012 and 2019 currently work in a HPSA (National Center for Health Workforce Analysis, NCHWA 2021). In addition to rural training tracks mentioned earlier, HRSA’s Teaching Health Center Graduate Medical Education (THCGME) program trains primary care residents in community-based ambulatory care centers in rural and underserved communities. A majority (56%) of THCGME graduates practice in medically underserved communities (NCHWA, 2021).

NHSC data collection and measurement

While HRSA collects data on alumni retention in HPSAs, rural communities, and the community where participant fulfilled a service obligation, it does not collect data on RTS. Yet site applications must include plans for readiness and retention. NHSC Regional Officers conduct regular site visits, which include evaluation of retention efforts and technical assistance to

support recruitment and retention. Applicants to NHSC’s scholar and loan repayer programs must write essays and submit recommendations that demonstrate commitment to practice in underserved communities. These current data collection efforts have the potential to provide a foundation for additional assessments of RTS in high-need communities.

Call to Action

In response to BHW’s request for input regarding future data collection efforts that will support its priorities, the Council identifies a need to define and assess NHSC participants’ RTS in HPSAs, which will require development of psychometrically valid and reliable instruments. Evidence regarding RTS is an essential component of evidence-based training and education that supports NHSC’s continued success in its mission to “build healthy communities by supporting qualified health care providers dedicated to working in areas of the United States with limited access to care.” Therefore, the Council calls on NHSC and its stakeholders to support programs, research, and initiatives to:

- 1. Define and operationalize readiness to provide primary care in HPSAs**
- 2. Identify education and training approaches associated with readiness to serve HPSAs (mentoring, community of practice)**
- 3. Support efforts to develop measures of participant readiness**
- 4. Support efforts to measure the degree to which education and training programs apply best practices**
- 5. Support collection and analysis of participant readiness data to inform education and training efforts**

References

- Ahmed, S., Siad, F. M., Manalili, K., Lorenzetti, D. L., Barbosa, T., Lantion, V. & Santana, M. J. (2018). How to measure cultural competence when evaluating patient-centred care: A scoping review. *BMJ Open*, 8(7), e021525.
- Allen, S. & McPherson, P. (July 17, 2018). Letter to U.S. Senate Whistleblowing caucus.
- American Medical Association (June 12, 2017). AMA adopts new policies to improve health of immigrants and refugees. Press Release.
- American Psychiatric Association. (2020). Position statement on mental health needs of undocumented immigrants.
- American Public Health Association. (2020). APHA Opposes Separation and Confinement to Detention Centers of Immigrant and Refugee Children and Families at U.S. Borders. Policy Number: 20207
<https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2021/01/13/apha-opposes-separation-and-confinement-to-detention-centers>
- Amerihealth Administrators. (2015). The challenge of professional health care. White paper.
- Anderman, E. M., Urdan, T., & Roeser, R. (2005). The patterns of Adaptive Learning Survey. In *What Do Children Need to Flourish?* (pp. 223-235). Springer, Boston, MA.
- Barak, M., & Levenberg, A. (2016). Flexible thinking in learning: An individual differences measure for learning in technology-enhanced environments. *Computers & Education*, 99, 39-52.
- Bunting, R. (2006). Stop the global epidemic of chronic disease: A practical guide to successful advocacy. Geneva, Switzerland. World Health Organization.
- Carlisle, M. & Bates, J. (Dec. 28, 2020). With over 275,000 infections and 1,700 deaths, COVID-19 has devastated the U.S. prison and jail population. *Time*.
<https://time.com/5924211/coronavirus-outbreaks-prisons-jails-vaccines/>
- Centers for Disease Control and Prevention. (2021). Immigrant, refugee, and migrant health. <https://www.cdc.gov/immigrantrefugeehealth/index.html> Retrieved April 7, 2021
- Centers for Disease Control and Prevention. (2020). Cultural competence in health and human services. <https://npin.cdc.gov/pages/cultural-competence#what>
- Centers for Disease Control and Prevention. (2013). Community Needs Assessment Participant Workbook. Atlanta, Georgia.
- Centers for Medicare and Medicare Services. (2019). Improving access to maternal health care in rural communities: Issue brief.
- Chipp, C., Dewane, S., Brems, C., Johnson, M. E., Warner, T. D., & Roberts, L. W. (2011). “If only someone had told me...”: lessons from rural providers. *The Journal of Rural Health*, 27(1), 122-130.
- Community Action Partnership. (2021). Community needs assessment tool.
<https://cap.engagementnetwork.org/assessment-tools/>

-
- Compton, M. T., & Shim, R. S. (2015). The social determinants of mental health. *Focus*, 13(4), 419-425.
- Corburn, J. (2017). Urban place and health equity: Critical issues and practices. *International Journal of Environmental Research and Public Health*, 14(2), 117.
- Council on Linkages Between Academia and Public Health Practice. (2016). Recruitment and Retention: What's Influencing the Decisions of Public Health Workers? Washington, DC: Public Health Foundation.
- Flies, E. J., Mavoa, S., Zosky, G. R., Mantzioris, E., Williams, C., Eri, R., Brook, B.W. & Buettel, J. C. (2019). Urban-associated diseases: Candidate diseases, environmental risk factors, and a path forward. *Environment International*, 133, 105187.
- Health Resources and Services Administration. (2021). Data Dashboards. <https://data.hrsa.gov/data/dashboards> Retrieved May 30, 2021
- Hines, S., Wakerman, J., Carey, T. A., Russell, D., & Humphreys, J. (2020). Retention strategies and interventions for health workers in rural and remote areas: A systematic review protocol. *JBIEvidence Synthesis*, 18(1), 87-96.
- Hook, J. N., Davis, D. E., Owen, J., Worthington Jr, E. L., & Utsey, S. O. (2013). Cultural humility: Measuring openness to culturally diverse clients. *Journal of Counseling Psychology*, 60(3), 353.
- Hooks, G. & Libal, B. (2020). Hotbeds of infection. Detention Watch Network.
- Indian Health Services. (2019). Indian health disparities. Fact Sheet.
- Interprofessional Education Collaborative. (2016). Core competencies for interprofessional collaborative practice: 2016 update. Washington, DC: Interprofessional Education Collaborative.
- Jaret, P. (February 3, 2020) Attracting the next generation of physicians to rural medicine. *AAMC News*. <https://www.aamc.org/news-insights/attracting-next-generation-physicians-rural-medicine>
- Kim, C. (2000). Recruitment and retention in the Navajo area Indian Health Service. *Western Journal of Medicine*, 173(4), 240-243.
- Leath, B. A., Dunn, L. W., Alsobrook, A., & Darden, M. L. (2018). Enhancing rural population health care access and outcomes through the Telehealth EcoSystem™ model. *Online Journal of Public Health Informatics*, 10(2).
- Linton, J.M., Griffin, M. & Shapiro, A.J. (2017). Detention of immigrant children. American Academy of Pediatrics Policy Statement.
- Longenecker, R., Wendling, A., Hollander-Rodriguez, J., Bowling, J., & Schmitz, D. (2018). Competence revisited in a rural context. *Family Medicine*, 50(1), 28-36.
- Macmadu, A., & Rich, J. D. (2015). Correctional health is community health. *ISSUES in Science and Technology*, 32(1), 26.
- Martinez, L., & O'Lawrence, H. (2020). The Factors Influencing Urban Health Services among Ethnic Groups in the US. *Education Sciences*, 10(3), 77.

-
- Mason, C.; Burke, T.W. & Owens, S.S. (2013). On the road again: The dangers of transporting inmates. *Corrections Today*, Nov./Dec. 77-82.
- McDonald, T. W., Curtis-Schaeffer, A. K., Theiler, A. A., & Howard, E. K. M. (2014). Providers' perceptions of prevalent mental and behavioral health problems: Differences and similarities across urban, rural, and frontier areas. *Journal of Rural Mental Health*, 38(1), 36-49. <https://doi.org/10.1037/rmh0000009>
- Meade, E., & Mellgren, L. (2010). Overview of inventory of HHS efforts to assist incarcerated and reentering individuals and their families. Washington DC: US Department of Health and Human Services.
- Nath, J.B., Costigan, S, & Hsia, R.Y. (2016). Changes in Demographics of Patients Seen at Federally Qualified Health Centers, 2005-2014. *Journal of the American Medical Association Internal Medicine*, 176 (5), 712-714.
- National Association of Community Health Centers. (2016). Staffing the safety net: Building the primary care workforce at America's health centers. Washington, DC: National Association of Community Health Centers.
- National Center for Cultural Competence. (2020). Self-assessments. <https://nccc.georgetown.edu/assessments/>
- National Center for Health Workforce Analysis. (2021). Bureau of Health Workforce clinician dashboards. <https://data.hrsa.gov/data/dashboards> Retrieved June 3, 2021
- National Center for Post-Traumatic Stress Disorder. (2021). Managing healthcare workers' stress associated with the COVID-19 virus outbreak. https://www.ptsd.va.gov/covid/COVID_healthcare_workers.asp Retrieved June 3, 2021
- National Child Traumatic Stress Network (n.d.). Taking care of yourself. NCTSN.org
- National Health Service Corps. (2021). About Us. <https://nhsc.hrsa.gov/> Retrieved June 3, 2021
- National Health Service Corps. (2021). Site Agreement. <https://nhsc.hrsa.gov/sites/default/files/NHSC/nhsc-sites/nhsc-site-agreement.pdf> Retrieved June 3, 2021
- National Institute of Environmental Health Sciences. (2014). Caring for yourself in the face of difficult work. Fact Sheet.
- National League for Nursing. (2021). Public policy advocacy toolkit. <http://www.nln.org/professional-development-programs/teaching-resources/toolkits/advocacy-teaching/toolkit-home>. Retrieved June 3, 2021.
- National Patient Advocacy Foundation. (2021). Advocacy curriculum. <https://www.npaf.org/patients-and-caregivers/advocacy-curriculum/> Retrieved June 3, 2021.
- National Rural Health Association & American Academy of Family Physicians. (2013). Rural Practice: Graduate medical education for. Position Paper.
- National Rural Recruitment and Retention Network. (2016). Recruitment for Retention: The Manual. Jefferson City, Missouri: National Rural Recruitment and Retention Network.

-
- Negrusa, S., Hogan, P., Ghosh, P. & Walker, L. (2016). National Health Service Corps- an extended analysis: Final report. Prepared by The Lewin Group for the HHS Assistant Secretary for Planning and Evaluation.
- Nortje, A. (2021). Measuring intrinsic motivation: Top 24 questionnaires and inventories. PositivePsychology.com. <https://positivepsychology.com/intrinsic-motivation-inventory/>
- Padilla, L. (2020). Bureau of Health Workforce Updates. Presentation to the National Advisory Council on the National Health Service Corps. November 5, 2020. Virtual meeting.
- Patient Advocate Certification Board. (2020). <https://www.pacboard.org/> Retrieved June 3, 2021.
- Patterson, D., Schmitz, D., & Longenecker, R. (2019). Family Medicine Rural Training Track Residencies: Risks and Resilience. *Family Medicine*, 51(8), 649-656.
- Pender, E. & Nguyen, H. (2013). National Health Service Core Mentoring. HRSATube. <https://www.youtube.com/watch?v=9N-wbxxN2cU> Retrieved July 28, 2021
- Ponce, N.A. (2021). Performance Measurement and Interprofessional competencies. Presentation to the Advisory Committee on Interdisciplinary and Community-Based Linkages.
- Rodriguez, A., Brickley, E., Rodrigues, L., Normansell, R. A., Barreto, M., & Cooper, P. J. (2019). Urbanization and asthma in low-income and middle-income countries: A systematic review of the urban–rural differences in asthma prevalence. *Thorax*, 74(11), 1020-1030.
- Rural Health Information Hub. (2020). Health and healthcare in frontier areas. <https://www.ruralhealthinfo.org/topics/frontier#definition> Retrieved April 20, 2021
- Rural Health Information Hub. (2018). Rural tribal health. <https://www.ruralhealthinfo.org/topics/rural-tribal-health> Retrieved June 1, 2021
- Schmitz, D. (2021). The role of rural graduate medical education in improving rural health and health care. *Family Medicine*, 53.
- Schmitz, D., Baker, E., Nukui, A., & Tverdy, B. (2010). Assessing Community Health Center (CHC) Assets and Capabilities for Recruiting and Retaining Physicians: The CHC Community Apgar Questionnaire. *Idaho Department of Health and Welfare-State Office of Rural Health and Primary Care*.
- Sharma, G., & Kolb, D. A. (2012). The learning flexibility index: Assessing contextual flexibility in learning style. In *Style Differences in Cognition, Learning, and Management* (pp. 78-95). Routledge.
- Simmons, A. (2019). Demand for community health centers reaches all time high. National Association of Community Health Centers Blog. <https://www.nachc.org/demand-for-community-health-centers-reaches-all-time-high/>
- Skinner, L., Staiger, D.O., Auerbach, D.I. & Buerhaus, P.I. (2019). Implications of an aging rural physician workforce. *New England Journal of Medicine*, 381, 299-30.
- Stajduhar, T. (2020). Rural physician recruitment: Results from our rural physician and administration survey. Alpharetta, GA: Jackson Physician Search.

Stride, C., Wall, T. D., & Catley, N. (2008). *Measures of job satisfaction, organisational commitment, mental health and job related well-being: a benchmarking manual*. John Wiley & Sons.

Supplitt, J. (2019). 5 strategies rural hospitals are using to bolster their workforce. *AHA Stat*. <https://www.aha.org/news/insights-and-analysis/2019-03-05-5-strategies-rural-hospitals-are-using-bolster-their>

Tanner, C., & Eckart, P. All in: How and why communities are using data to drive community health improvement. In *The Practical Playbook II* (pp. 163-176). Oxford University Press.,

Thomson, S. C. (2011). Urban health care: Disparities abound. *Health Progress*, 92(6), 4-11.

Toronto Academic Health Science Network Practice Committee & University of Toronto Center for Interprofessional Education at the University Health Network. (2017). Interprofessional care competency framework and team assessment toolkit.

Treatment Advocacy Center. (2016). Serious mental illness prevalence in jails and prisons. A background paper from the Office of Research and Public Affairs.

University of Kansas. (2021). Community Toolbox. <https://ctb.ku.edu/en>

Urban Indian Health Institute. (2021). About urban Indians. <https://www.uihi.org/urban-indian-health/> Retrieved June 1, 2021

U.S. House of Representatives Committee on Homeland Security. (2020). ICE detention facilities failing to meet basic standards of care. Majority staff report.

Vardoulakis, S., Dear, K., & Wilkinson, P. (2016). Challenges and opportunities for urban environmental health and sustainability: The HEALTHY-POLIS initiative. *Environmental Health*, 15(1), 1-4.

Vance, R.J. (2006). Employee engagement and commitment. Alexandria, VA. Society for Human Resource Management.

Wilger, S. (2016). Definition of frontier. Policy Brief. National Rural Health Association.

Zierler, B.K. (2021). Performance Measurements and Interprofessional competencies. Presentation to the Advisory Committee on Interdisciplinary and Community-Based Linkages.