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ASTROBIOLOGY AND INCARCERATION

A pair of words characteristically not often found in the same sentence is the science of astrobiology and incarceration. The following comments about both realms is predicated on the assumption that the health status of individuals confined to the nation's jails and prisons is mostly hidden from general view. Although social debates rage over issues regarding whether punishments that result in incarceration are either too excessive or not harsh enough, a proposition is advanced that insufficient attention tends to be paid to the physical and mental health of the imprisoned subset of the population.

Increases in the older inmate cohort in prisons are attributable in part to a growth in the number of first-time aging offenders, elimination of parole, increased sentence lengths that include life terms, and mandatory minimum sentencing. Moreover, older prisoners require different levels of care due to increased physical and mental comorbidity burden. Compared with their younger counterparts, older incarcerated patients reflect high rates of diabetes mellitus, cardiovascular conditions, and liver disease. Cardiovascular disease is significant because it is a leading cause of death among prisoners. Mental health problems also are common, especially anxiety, fear of death or suicide, and depression. A related concern is that correctional health care, whether provided by the government or the private sector, may not be subject to the same quality standards as the general health care system. Another important consideration is that many prisoners enter the correctional system with pre-existing physical and mental health problems.

According to a paper in the November 2021 issue of the journal *Astrobiology*, introducing educational programs into prisons has been shown to be beneficial not only for the richness of opportunities offered to prisoners, but also in efforts to reduce crime. An approach to prison education is to ask the question: what features of the prison environment give its inhabitants experience and knowledge that are unique to them and not experienced by members of the non-incarcerated population? If such aspects can be identified, then an opportunity may exist to allow prisoners to use that experience to contribute new ideas to society. Of some interest is that prisons bear similarities to planetary sites in remote locations that include relative isolation and confinement of the enclosed population compared to the external population, where limited interactions occur with participants in the larger outside world. Hence, the incarcerated possibly could be in somewhat of an advantageous position to have a deep intuitive understanding of the challenges of existing in a small relatively isolated population.

An endeavor in Scotland called the *Life Beyond* project involves the prison population in designing settlements for the planetary bodies Moon and Mars. Apart from improving educational opportunities in prisons, this initiative demonstrates the potential for prisoners to contribute to space settlement by applying their experience of the prison space analog environment. A conspicuous development is how the project rapidly expanded beyond the objective of science and engineering into creative writing, art, music, political philosophy, and other disciplines.



ALLIED HEALTH WORKFORCE DIVERSITY

Health policy discussions often involve topics, such as the need to provide coverage for individuals who either lack adequate health insurance or who have none at all, along with a steady escalation in health care costs. Generally, the health workforce does not attract as much attention. An implicit assumption seems to be that not only are their sufficient numbers of clinicians, educators, researchers, and students wanting to enter the health care realm, but also that there is no difficulty retaining them afterwards. Unfortunately, that ideal state fails to exist. An aging population with a growing number of patients with multiple co-morbidities acting in concert with portions of the health workforce that is moving just as rapidly into old age brackets and also is at risk of diminishing in size because of deaths and retirements. These conditions provide a rationale for the necessity of having policymakers be on the alert to conditions that influence this component of the health care spectrum.

A positive sign in that direction is some legislation pending on Capitol Hill. *H.R. 3320, the Allied Health Workforce Diversity Act of 2021*, was introduced in the House of Representatives on May 18, 2021. This measure allows the Department of Health and Human Services (HHS) to provide grants to accredited education programs to increase diversity in the physical therapy, occupational therapy, respiratory therapy, audiology, and speech-language pathology professions. Grants may be used to provide scholarships or to support recruitment and retention of students from underrepresented groups. Two days later, this legislation was referred to the Subcommittee on Health of the Committee on Energy and Commerce. Next, on November 4, following subcommittee consideration at a mark-up session, the bill was forwarded to the full committee by voice vote where on November 17, the full committee voted to advance the bill. A related bill, S. 1679, was introduced in the Senate on May 18 and referred to the Health, Education, Labor, and Pensions Committee where it currently sits awaiting further action.

In the event the proposed legislation reaches approval in both the House and the Senate, and is signed into law by President Biden, scholarships or stipends would be provided for: completion of an accelerated degree program; completion of an associate's, bachelor's, master's, or doctoral degree program; and entry by a diploma or associate's degree practitioner into a bridge or degree completion program. Another provision would furnish assistance for completion of prerequisite courses or other preparation necessary for acceptance for enrollment in the eligible entity; and carry out activities to increase the retention of students in one or more programs in the professions of physical therapy, occupational therapy, respiratory therapy, audiology, and speech-language pathology.

Meanwhile, **President Biden** signed into law on November 15 the one trillion dollar *Infrastructure Investment and Jobs Act (H.R. 3684)*. The bill was approved by the House on a vote of 228-206, which included 13 Republicans. The Senate approved this legislation in August, with 19 Republicans voting to approve it. The next major legislation on the agenda involves roughly \$2 trillion for health care, education and climate-change in what is called the "Build Back Better" reconciliation package. Legislators are waiting for an official Congressional Budget Office (CBO) cost estimate of the bill (H.R. 5376). The CBO is releasing estimates for individual titles of bills as they are completed.

2021-2022 ASSOCIATION CALENDAR OF EVENTS

October 19-21, 2022—ASAHP Annual Conference in Long Beach, CA

HEALTH REFORM DEVELOPMENTS

Health care in this nation is affected by a wide range of social forces, including demographic perturbations. An opinion item published on November 10, 2021 in *The Milbank Quarterly* discusses some implications of a recent sharp decline in birth rates in the United States. Based on provisional data provided by the National Vital Statistics System in May 2021, the U.S. birth rate dropped 4% in 2020 and already was at a record low before the COVID-19 pandemic. The 2020 birth rate was 55.8 live births for every 1,000 females ages 15-44, trending downward for the sixth consecutive year.

The total fertility rate (TFR), a population statistic that simulates the average number of children females in a birth cohort will have if they go through life with current age-specific birth rates, also is trending downward. The TFR in the United States plummeted from 2.12 in 2007 to a record low of 1.64 in 2020, which is far below the level of 2.1 needed for population stability. When the TFR drops below 2.1 (the break-even replacement level), a population will age dramatically in the absence of immigration. Will such an occurrence pose societal challenges?

A major concern is that the reduced rate contributes to labor shortages and also will increase the population “total dependency ratio,” i.e., the ratio of the number of individuals in age groups not typically in the labor market (0-14 and 65+ years) to the number in all other age groups, multiplied by 100. U.S. Census Bureau data show that the U.S. dependency ratio was 59 in 2010, 64 in 2019, and is projected to be 73 by 2050 primarily due to population aging from the 1946-1964 Baby Boom. Additional declines in birth rates without offsets from immigration will further increase the dependency ratio, which raises serious concerns about economic stability/growth and the ability of the working population to support the social, financial, and health care needs of the dependent population. Policy-makers are faced with the task of devising workable interventions to prevent any deterioration in the nation’s ability to address the population’s health care needs effectively.

Why Measurement Matters In Advancing Health Equity

A blog published on November 2, 2021 by The Commonwealth Fund refers to how the COVID-19 pandemic exposed long-standing racial and economic injustices embedded in the U.S. health care system. One result is a renewed commitment to improve health equity and address the drivers of health (DoH) that account for 80% of health outcomes and have a disproportionate impact on communities of color, including stable, affordable housing; healthy food; reliable income; and interpersonal safety, among other factors. Advancing health equity and addressing DoH will require changing both how and what is measured in health care. Measurement plays a fundamental role because it equips providers with data to identify and address unmet needs, and allows policymakers and payers to account for DoH in payment models.

Despite the well-documented impact of DoH on health outcomes and costs and their impact on people of color, there still are no approved, standardized measures in any Centers for Medicare and Medicaid Services’ (CMS) programs. Although a growing number of CMS Innovation Center models are incorporating DoH screening and navigation on social needs, they use different tools and approaches, which means that CMS cannot systematically compare or use the data. On the positive side, the recently released *CMS Innovation Center Strategy Report* will require participants in all new models to collect and report beneficiaries’ demographic data and social needs data, when appropriate.

HealthCare.gov Open Enrollment Begins

November 1, 2021 marked the start of the HealthCare.gov Open Enrollment Period. This year, the period has been extended to January 15 to ensure that enough time is available to obtain health insurance coverage. The number of Navigators to assist with the process of obtaining coverage has been quadrupled so that now there are 1,500 of them. As a result of the American Rescue Plan (ARP), coverage also is more affordable. Four out of five individuals can find a plan for \$10 or less per month with this newly expanded financial assistance. Additionally, there are more coverage options this season than last, with the average consumer being able to choose between six and seven insurance companies with plan options.

DEVELOPMENTS IN HIGHER EDUCATION

It is not uncommon today to learn of distressful events that are experienced by students enrolled in higher education programs. One example of a negative impact on some individuals is that they complete their formal learning period with a mountain of student loan debt, which is most difficult to repay because of low employment salaries upon leaving the academy. As a consequence, it may be more difficult for them to achieve what their parents were able to accomplish much more easily, such as being able to purchase a home or retire at a relatively early age.

Nonetheless, some benefits of a higher education continue to persist. An infographic developed on November 10, 2012 by the American Council on Education (ACE) reveals that increased annual earnings are available at each level when moving from the category high school diploma or equivalent (\$31,956) to the category graduate or professional degree (\$75,495). Whereas only 6% of adults holders of a bachelor's degree or higher are less likely to smoke, among the group with a high school diploma or equivalent, that figure is 23%. Adults with a bachelor's degree or higher (65%) are more likely to meet exercise guidelines than possessors of a high school diploma or equivalent (43%). Moreover, adult degree holders and those with some college, but no degree, represent a larger share of workers (69%) than those with a high school diploma or less (32%).

Impact Burden Of And Solutions For FAFSA Verification

The Free Application for Federal Student Aid (FAFSA) unlocks access to federal financial aid programs, including the cornerstone of need-based aid: the Pell Grant. Millions of postsecondary students complete the FAFSA annually, but a significant portion of them cannot receive their aid without completing an additional, lengthy process called verification to confirm that their FAFSA is accurate. Without completion of this audit-like process, students are unable to access federal financial aid, and in many cases state or institutional financial aid. Verification recently has come under scrutiny for its questionable value to the taxpayer and the burden it places on students and institutions. Concerns include the question, is the burden worth the impact on financial aid offices when one in five financial aid administrators spend at least half their time on the verification process?

The National College Attainment Network (NCAN) and the National Association of Student Financial Aid Administrators (NASFAA) joined together to survey both financial aid administrators as well as college access and success advisers on the impact of verification on their students and their work within this landscape of verification relief and scrutiny. In a paper released by the two organizations in November 2021, an exploration looks at those experiences and offers recommendations to decrease the burden verification places on students and financial aid administrators alike.

CBO Cost Estimates For The Build Back Better Act

The Congressional Budget Office (CBO) was requested by Capitol Hill legislators to prepare a cost estimate for the current version of *H.R. 5376, the Build Back Better Act* (Rules Committee Print 117-18). Provision of this information likely will affect the vote eventually taken on this bill. Several provisions of this proposed legislation pertain to higher education. Title II, Subtitle A, Part 2 discusses these components of H.R. 5376. One example is increasing the maximum federal Pell Grant for enrollment of students at institutions of higher education. A related aspect involves an increase in these grants for recipients of means-tested benefits.

Another provision focuses on retention and completion grants to enable various eligible entities to carry out specific activities, such as expanding evidence-based reforms or practices to improve student outcomes at institutions of higher education in the State or system of institutions of higher education, and how an eligible entity will sustain such reforms or practices after the grant period ends. Priority will be given to entities that propose to use a significant share of grant funds for groups, such as students of color and low-income students.

QUICK STAT (SHORT, TIMELY, AND TOPICAL)

Suicide Rates By Month And Demographic Characteristics: United States 2020

The November 2021 issue of a report from the National Vital Statistics System refers to provisional numbers of deaths due to suicide by demographic characteristics (sex and race and Hispanic origin), and by month for 2020, and compares them with final numbers for 2019. The overall age-adjusted suicide rate declined 3%, with the decline for females (8%) greater than males (2%). Rates for persons aged 10–34 were higher in 2020 than in 2019, whereas rates for persons aged 35 and over were lower. The increases for those aged 25–34 and the declines for those aged 35–74 were significant. The changes in suicide rates by age between 2019 and 2020 were generally similar for both males and females, although only males had a significant increase at ages 25–34. All race and ethnicity groups for women had declines in age-adjusted suicide rates from 2019 to 2020, although only the 10% decline for non-Hispanic white women was significant statistically.

Access To Care And Mental Health Services By Household Income During COVID, U.S.

Since the start of the COVID-19 pandemic in March 2020, approximately 40% of U.S. adults have experienced delayed medical care. As described on November 9, 2021 online in the journal *Health Equity*, researchers used the Census Bureau's nationally representative pooled 2020 Household Pulse Survey from April to December, 2020 ($N=778,819$) to analyze trends and inequalities in various access to care measures. During the pandemic, the odds of being uninsured, having a delayed medical care due to pandemic, delayed care of something other than COVID-19, or delayed mental health care were, respectively, 5.54, 1.50, 1.85, and 2.18 times higher for adults with income $< \$25,000$, compared to those with incomes $\geq \$200,000$, controlling for age, sex, race/ethnicity, education, marital status, housing tenure, region of residence, and survey month. Income inequities in mental health care widened over the course of the pandemic, while the probability of delayed mental health care increased for all income groups.

HEALTH TECHNOLOGY CORNER

Mathematical Model For Checkpoint Inhibitor Therapy In Human Solid Tumors

Checkpoint inhibitor therapy of cancer has led to markedly improved survival of a subset of patients in multiple solid malignant tumor types, yet the factors driving these clinical responses or lack thereof are not known. As reported on November 9, 2021 in the journal *eLife*, researchers from The Houston Methodist Research Institute and several other institutions developed a mechanistic mathematical model for better understanding these factors and their relations in order to predict treatment outcome and optimize personal treatment strategies. The results have demonstrated reliable methods to inform model parameters directly from biopsy samples, which are conveniently obtainable as early as the start of treatment. Together, these suggest that the model parameters may serve as early and robust biomarkers of the efficacy of checkpoint inhibitor therapy on an individualized per-patient basis. The model could provide a way of identifying patients who will benefit from immunotherapy at an early stage in their cancer treatment.

Effect Of A Diagnosis Of Alzheimer's Disease And Related Dementias On Social Relationships

Although early diagnosis has been recognized as a key strategy to improve outcomes of Alzheimer's disease and related dementias (ADRD), the effect of receiving a diagnosis on patients' well-being is not well understood. A study conducted by investigators at Rutgers University that was described on October 14, 2021 online in the journal *Dementia and Geriatric Cognitive Disorders* addresses this gap by examining whether receiving a dementia diagnosis influences social relationships. Data from the three waves (2012, 2014, and 2016) of the Health and Retirement Study were used as part of this study. Results suggest that receiving a new diagnosis of ADRD may have unintended impacts on social relationships. Practitioners and policymakers should be aware of these consequences and should identify strategies to alleviate the negative impact of receiving a diagnosis of ADRD and methods to mobilize support networks after receiving a diagnosis.

OBTAINABLE RESOURCES

Annual Report To The Nation On The Status Of Cancer

Part 1 of the latest *Annual Report to the Nation on the Status of Cancer* was focused on national cancer statistics and it became available on July 8, 2021. Part 2, appearing October 26, 2021, in *JNCI: The Journal of the National Cancer Institute*, is the most comprehensive examination of patient economic burden for cancer care to date and includes information on patient out-of-pocket spending by cancer site, stage of disease at diagnosis, and phase of care. While this analysis is about the costs that are directly incurred by patients, which are critical to patient finances, the total overall costs of cancer care and lost productivity in the United States are much larger. Among adults aged 65 years and older who had Medicare coverage, average annualized net out-of-pocket costs for medical services and prescription drugs, across all cancer sites, were highest in the initial phase of care, defined as the first 12 months following diagnosis (\$2,200 and \$243, respectively), and the end-of-life phase, defined as the 12 months before death among survivors who died (\$3,823 and \$448, respectively), and lowest in the continuing phase, the months between the initial and end-of-life phases (\$466 and \$127, respectively). Across all cancer sites, average annualized net patient out-of-pocket costs for medical services in the initial and end-of-life phases of care were lowest for patients originally diagnosed with localized disease compared with more advanced stage disease. Part 1 can be obtained at <https://academic.oup.com/jnci/advance-article/doi/10.1093/jnci/djab131/6312532?login=true>. Part 2 can be obtained at <https://academic.oup.com/jnci/advance-article/doi/10.1093/jnci/djab192/6409890?searchresult=1>.

Prison And Jail Reentry And Health

Another section of this month's edition of the ASAHP newsletter TRENDS discusses incarceration in the context of astrobiology. Mass imprisonment in the United States can be viewed as a public health crisis that has disproportionate negative impacts on communities of color. The reentry population, i.e., individuals released back to the community following incarceration, is sicker than the general population, faces barriers to accessing health care, and often experiences homelessness, unemployment, and a lack of social and family support. A new *Health Affairs Policy Brief* dives deeper into the link between community reentry and health. The authors provide an overview of research regarding the health outcomes and challenges associated with prior incarceration, a review of strategies currently used to support the health and well-being of the reentry population, and recommendations to improve health and justice outcomes. They indicate that criminal justice reform coupled with targeted upstream efforts, such as investment in criminal justice-based reentry programs; support for communities and the community health systems to which inmates return; and enhanced research evaluation of reentry programming are necessary to mitigate the negative health impacts of mass incarceration. The policy brief can be obtained at [health-affairs-brief-prison-community-reentry-russ.pdf](https://www.healthaffairs.org/content/policy-briefs/pb19-0211) (healthaffairs.org).

2020 National Survey Of Drug Use And Health

A first findings report summarizes key findings from the *2020 National Survey on Drug Use and Health (NSDUH)* for national indicators of substance use and mental health among individuals aged 12 years old or older in the civilian, noninstitutionalized population of the United States. The findings indicate that among the group aged 12 or older in 2020, 58.7% (or 162.5 million individuals) used tobacco, alcohol, or an illicit drug in the past month (also defined as "current use"), including 50.0% (or 138.5 million) who drank alcohol, 18.7% (or 51.7 million) who used a tobacco product, and 13.5% (or 37.3 million) who used an illicit drug. Among members of the group aged 12 or older, 20.7% (or 57.3 million) used tobacco products or used an e-cigarette or other vaping device to obtain nicotine in the past month. Among adults aged 18 or older, 21.0% (or 52.9 million) had any mental illness (AMI) and 5.6% (or 14.2 million) had serious mental illness (SMI) in the past year. The report can be obtained at <https://www.samhsa.gov/data/sites/default/files/reports/rpt35325/NSDUHFFRPDFWHTMLFiles2020/2020NSDUHFFR1PDFW102121.pdf>.

TRENDS IN HEALTH STATUS ACROSS A CENTURY OF U.S. BIRTH COHORTS

Following decades of improvement in functioning and a decline in disability among the U.S. population aged 65 or older, newer cohorts approaching middle-age (ages 40–59) and “young old” (ages 60–69) began to experience increasing functional limitations and disability starting in the late 1990s. The worsening disability trend is accompanied by increasing mortality rates in middle age around the early 2000s, which were thought to be driven by rising “deaths of despair” (drug-, alcohol-, and suicide-related mortality) combined with slowdowns in progress in heart disease mortality. Suicide, cirrhosis of the liver, and fatal drug overdoses suggest that victims are likely suffering from psychological distress. The rising mortality rate narrative initially was only applied to the White population. Subsequent research, however, suggests it is not restricted to that population subgroup.

According to an article appearing in the November 2021 issue of the *American Journal of Epidemiology*, important research gaps remain. An example is that studies only look at the end of the morbidity process, which begins for populations with the physiological dysregulation (PD) indicated by a number of biological risk factors and followed by subsequent diagnosis of diseases, functioning loss, disability, frailty, and death. Mental illness (e.g., anxiety and depression) and health behaviors also precede the onset of disability and mortality. Thus, it is essential to investigate whether the unfavorable trend in morbidity and mortality in recent decades should be attributed to health behavior changes driven by psychological distress, deterioration of innate physiological functioning, or both. As a means of addressing various gaps, a comprehensive investigation is described of the trends of physiological status, mental health, and health behaviors by race and sex across a century of birth cohorts that were classified on the basis of nine generations. These researchers found that the worsening physiological and mental health profiles among younger generations imply a challenging morbidity and mortality prospect for the United States, one that might be particularly inauspicious for Whites.

RESIDENTIAL DISORDER AND BIOLOGICAL MARKERS OF AGING

Residential context is important to older adults' health. Numerous studies have linked adverse residential conditions, such as physical disorder, to poorer functional status, chronic health conditions, and cognitive decline. A growing literature investigating possible physiologic pathways between residential contexts and health has focused on biological markers. As indicators of normal biological processes, biomarkers may reflect aging-related health and functional changes and have been linked to morbidity and mortality. For example, inflammatory markers, such as C-reactive protein (CRP) and interleukin-6 (IL-6), are associated with physical function decline, cardiovascular disease, and mortality in older adults, but the underlying biologic mechanisms remain understudied. Thus, examining the relationships between adverse street block conditions and biomarkers of aging would further an understanding of the physiological mechanisms through which residential context influences aging and health. A study described in the November 2021 issue of the *Journals of Gerontology Series A: Biological Sciences and Medical Sciences* was to test associations between adverse street block conditions and biomarkers of aging among a nationally representative cohort of US adults aged 67 years and older.

The investigators posit that smaller area units should be considered because older adults' life space can decrease with the onset of age-related health or functional limitations. Conditions of the residential environment proximate to the home, such as the street block on which the home is situated, may be more influential in older adults' everyday lives than the wider neighborhood context. They hypothesized that the presence of any street block disorder is associated with higher levels of four biomarkers of aging: hemoglobin A1C, high-sensitivity CRP, IL-6, and CMV antibodies. They found that participants living on disordered blocks were more likely to be Black or Hispanic than White, have a high school education or less, and have a lower average income to poverty ratio compared to participants living on blocks with no disorder. These participants also were more likely to experience financial strain, be unmarried, rent their home, have a larger mean household size, live in a non-single-family type home, have had less than average family wealth growing up, and have been born outside the United States.