Climate Leadership Beyond 2030

AIA

FINAL SUMMARY OF WORKGROUP TOPIC
We explored the consequences to the profession and the built environment if AIA meets our 2020 Climate Action Plan goals - and if we do not. Given the events of 2020, we focused on the nexus of climate change with other critical issues, including environmental justice, structural racism, equity, pandemics, human health, and geo-political instability. We developed scenarios that specifically examined the interplay of equity and climate change and in so doing illuminated opportunities to enhance the potential impacts of AIA's Climate Action Plan.

What has your ongoing research discovered that has informed your research topic? What drove your inquiry?

RESTATEMENT OF PROJECT GOALS AND POTENTIAL IMPACTS
Architects can become leaders in solving the over-riding issues of our time. Our goals are to develop tools to design the built environment for a better future, taking into account the inextricable relationships between issues of justice and equity and those of climate change

How did the high-level project goals evolve? – what was developed that addresses the stated challenge? What impact might the workgroups efforts have?

ALIGNMENT WITH THE STRATEGIC PLAN, BIG MOVE AND OTHER INSTITUTE INITIATIVES
Climate change is challenging current social and economic structures; it is increasingly evident that *successful resolution of the climate crisis will require substantial changes throughout human society.* AIA's dual commitments to climate action and equity, diversity and inclusion represent the necessary foundation to success.

Highlight the Strategic Objectives and other current priorities that this workgroup addressed.

SUMMARY OF FINDINGS
The current Climate Action Plan (CAP)
- Does not adequately address social issues, and does not include the broad and longterm focus that is necessary.
- Is static; when new programs are developed (e.g. Blueprint for Better), the CAP is not updated.
- Does not adequately recognize and incorporate work being done by outside groups (e.g. ASHRAE and USGBC)
- Is specific to the near future, and does not address longterm challenges and solutions

In addition, we developed four scenarios for possible futures based on two variables – Equity, Diversity, and Inclusion (EDI) and Climate Action. The results clarified that success in one is impossible without success in the other.

Describe what was learned this year through the efforts of the workgroup. Highlight items that are of greater significance or are newly developed knowledge..

RECOMMENDATIONS MOVING FORWARD
The Institute should:
1. Review and update the current Climate Action Plan (CAP) to take into account social equity and its inextricable relationship with climate change.
2. Develop a platform for robust collaboration with identified outside groups (possibly connected with new Board Committee)
3. Develop strong internal collaborations and communications between Knowledge Communities.
4. Develop robust education programs for all members and the general public.
5. Develop specific outreach to Public/Citizen Architects to reflect their future prevalence.
6. Expand education for emerging professionals to be climate activists.
7. Continuously and proactively update the CAP, such that it becomes living and always relevant.
8. The CAP should include a roadmap with specific instructions to reaching a desired future state
9. Renew the Strategic Council's Climate Leadership Beyond 2030 Workgroup in 2021 to further develop these recommendations and others noted in the Appendix.

What are the opportunities to carry the research forward? What is the proper venue for this inquiry?.

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TEAM (AIA STAFF, INSTITUTE, MEMBERSHIP)
Elizabeth Wolverton

Identify who will be accountable for overseeing project progress and providing status reports.

AFFORDABLE & EQUITABLE HOUSING

AIA

FINAL SUMMARY OF WORKGROUP TOPIC

Demand for affordable and equitable housing is rising at a faster rate than the design and construction industry can currently meet. Our work has brought into focus the realization that in order to thrive in the new environmental, social, and economic context, communities must successfully integrate equitable housing. Through our work, we have identified opportunities for the AIA to support architects' efforts to affirm the right to housing. Participating in the development of a pathway to achieving this right should be a primary commitment within the AIA.

What has your ongoing research discovered that has informed your research topic? What drove your inquiry?

RESTATEMENT OF PROJECT GOALS AND POTENTIAL IMPACTS

Our group has identified specific actions tools that can be implemented by the AIA to expand its capacity and influence in this arena. Recommendations for actionable measures that can be undertaken at the national, state, and local levels to address concerns regarding housing policy, sustainability and resiliency, and healthy community development.

How did the high-level project goals evolve? – what was developed that addresses the stated challenge? What impact might the workgroups efforts have?

ALIGNMENT WITH THE STRATEGIC PLAN, BIG MOVE AND OTHER INSTITUTE INITIATIVES

This area of study aligns with AIA's focus areas on Climate Action, Healthy Community Development, Social Justice, Equity, Diversity, and Inclusion. It is integral to specific areas of the Architects Platform.

Highlight the Strategic Objectives and other current priorities that this workgroup addressed.

SUMMARY OF FINDINGS

Our efforts are focused on three key areas: Housing & Climate Action; Essential Infrastructure for Healthy & Equitable Communities; and Housing Policy. Research into these areas has revealed the following:

A. **Housing and Climate Action:** Our work in 2020 has focused on the place of Equitable Housing relative to three key areas of Climate Action: Equitable Communities; Energy; and Ecology. We have identified the need to actively partner with organizations that compliment and augment the AIA's mission in this regard. We have learned that the dual crises of climate change and housing are intertwined. The climate crisis cannot be successfully addressed without the deployment of efficient and affordable solutions to meet the housing crisis.
B. **Essential Infrastructure for Housing and Equitable Communities**: Significant opportunities have been identified in this area, which can position AIA to leverage its knowledge base to develop new tools that are outward-facing. This will support member outreach, positioning architects as a resource to community leaders and the public for thought leadership regarding integration of equitable housing in support of community economic, social, health and wellness.
C. **Housing Policy:** Opportunities exist to align existing resources within the AIA to develop and implement resources and tools associated with policy development and activism. Such resources

Describe what was learned this year through the efforts of the workgroup. Highlight items that are of greater significance or are newly developed knowledge..

RECOMMENDATIONS MOVING FORWARD

Moving into the future, the following is recommended:
1. Continue the work of this group for a minimum of 2 years.
2. Resources of Knowledge Communities be utilized in the development of new tools.
3. Align existing staff resources to implement new tools and resources for members.

What are the opportunities to carry the research forward? What is the proper venue for this inquiry?.

SC PROJECT CONVENERS & MEMBERS

Nathan Butler, FAIA – Convener	Bill Bates, FAIA – Co-Convener
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Thomas Hartman, AIA	Housing (HCD) KC Leadership

TEAM (AIA STAFF, INSTITUTE, MEMBERSHIP)

Membership, Component Leadership, Knowledge Community Leadership, LSN, coordination with GAC.

Identify who will be accountable for overseeing project progress and providing status reports.

AFFORDABLE & EQUITABLE HOUSING

AIA

FINAL SUMMARY OF WORKGROUP TOPIC

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What has your ongoing research discovered that has informed your research topic? What drove your inquiry?

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Our group has identified specific actions tools that can be implemented by the AIA to expand its capacity and influence in this arena. Recommendations for actionable measures that can be undertaken at the national, state, and local levels to address concerns regarding housing policy, sustainability and resiliency, and healthy community development.

How did the high-level project goals evolve? – what was developed that addresses the stated challenge? What impact might the workgroups efforts have?

ALIGNMENT WITH THE STRATEGIC PLAN, BIG MOVE AND OTHER INSTITUTE INITIATIVES

This area of study aligns with AIA's focus areas on Climate Action, Healthy Community Development, Social Justice, Equity, Diversity, and Inclusion. It is integral to specific areas of the Architects Platform.

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Describe what was learned this year through the efforts of the workgroup. Highlight items that are of greater significance or are newly developed knowledge..

RECOMMENDATIONS MOVING FORWARD

Moving into the future, the following is recommended:
1. Continue the work of this group for a minimum of 2 years.
2. Resources of Knowledge Communities be utilized in the development of new tools.
3. Align existing staff resources to implement new tools and resources for members.

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TEAM (AIA STAFF, INSTITUTE, MEMBERSHIP)

Membership, Component Leadership, Knowledge Community Leadership, LSN, coordination with GAC.

Identify who will be accountable for overseeing project progress and providing status reports.

INTRODUCTION
The events of 2020 have accelerated and brought into sharper focus pre-existing issues of social justice, community health and wellness, and climate change. Where the dynamics of this year could have derailed the work of the AIA, it instead offered up an opportunity to apply new thinking, with a heightened sense of urgency. The work of this study group within the Strategic Council has certainly shone a light upon the fact that **Affordable and Equitable Housing** is at the nexus of the most pressing issues of our time.

Demand for affordable and attainable housing is rising at a faster rate than the design and construction industry can currently meet. Our work has brought into focus the realization that in order to thrive in the new environmental, social, and economic context, communities must successfully integrate equitable housing. Through our work, we have determined that the AIA has an opportunity to support architects' efforts to affirm the right to housing. Participating in the development of a pathway to achieving this right should be a primary commitment within the AIA.

In 2020, the Affordable & Equitable Housing study group within the Strategic Council initiated a deep dive into issues associated with the housing crisis. Our group's work began with a focus on the relationship of affordable housing needs to the need for climate action, specifically relative to three key areas of **Equitable Communities**, **Energy and Ecology**. Having identified these areas of focus, our group then engaged the leadership of the AIA's Knowledge Community network, specifically the Housing and Community Development and the Committee on the Environment KC teams. As the effects of the global pandemic took hold early in the year, followed by a national and international movement toward social justice, the efforts of our group became organized around three primary subject areas relative to housing:

A. **Housing and Climate Action**
B. **Essential Infrastructure for Healthy and Equitable Communities**
C. **Housing Policy**

A. HOUSING AND CLIMATE ACTION
Architects have an affirmative responsibility to use maximum efforts to ensure that the built environment becomes equitable and sustainable. To achieve our mission, it is critical that housing, homelessness and equitable communities be a long-term area of focus. The escalating trend toward expanding community inequities, the widening gap between the haves and the have-nots, renders it widely understood that **the people who are most in need of housing are also the ones who will be impacted most significantly by climate change**. This fact precipitates the AIA's need to focus on Climate Action (aka the Big Move) focusing on three key components of the Framework for Design Excellence – the 'Three E's' of:

• **Equitable Communities**
• **Energy**
• **Ecology**

In the coming weeks, years and decades, the demand for equitable and affordable housing will continue to increase. Without thoughtful and strategic intervention, this will place an

expanded portion of vulnerable populations on the street and in other unstable, unhealthy and unaffordable conditions. Evidence shows that this will in turn lead to higher mortality, lower educational achievement, and loss of economic opportunity. For communities to be truly equitable, the process and business of community building must be oriented toward health and wellness, affordability, environmental and social justice, with opportunities for economic growth. Affordable and equitable housing clearly holds a central place of importance in this regard.

As an advocate, the AIA must vocally support the right to housing. To advance this effort we recommend the following actions to be undertaken:

- Adopt the United Nations Habitat Sustainable Development Goals
- Convene existing advocates to inform the AIA's efforts around Housing Policy, working closely with GAC and its housing policy initiative.
- Develop a network that connects AIA and local housing advocacy to increase our effectiveness.
- Research and share existing initiatives.
- Develop materials that help inform members about housing and development policy.
- Inform our outreach with research developed by organizations such as PolicyLink, The FrameWorks Institute, the National Low-Income Housing Coalition and the National Housing Coalition.
- Collaborate with established housing and community planners to develop systemic solutions for climate housing. This might employ strategies such as zoning policy and carbon drawdown. Housing is a consistent typology that is omni-present throughout the country. In many cases, single family, multifamily, market rate, affordable, urban or rural- housing utilizes wood framed construction, with similar building enclosures and mechanical system options providing opportunities for lowering production costs and environmental performance.
- Create a nationwide system of "MBE & WBE" for the creation of businesses in housing that are engaged in carbon drawdown. Social fragmentation and ecological degradation stem from the same problem of systematic injustice and structural economic inequality.

Opportunity is at hand. Housing presents a scalable project type that can integrate design approaches to optimize ENERGY efficiency, be a restorative force in ECOLOGY, and to create new jobs and businesses EQUITABLY. This can be accomplished within the AIA in three primary ways:

1. Contributing our collective voice to fight for racial, social and environmental justice in housing and community development.
2. Using our professional skills to develop meaningful and realistic proposals for systemic change.
3. Applying a justice framework to *all* of our work.

The AIA has a role in developing tools and educational resources to enhance practice. We can advise our membership of the opportunities and how each and every project is part of the solution. This includes action in both affordable and market rate work.

B. ESSENTIAL INFRASTRUCTURE FOR HEALTHY AND EQUITABLE COMMUNITIES

Increasing population diversity, combined with geographic, climatic, and economic challenges call for a new spectrum of housing types and community settings. In order to successfully support the demands for attainable, affordable, and equitable housing, a new framework is necessary. This complex challenge is multifaceted and is an impediment to its very success. Bringing infrastructure into this orbit enables the AIA to capture new opportunities. In order to create healthy and equitable communities, housing cannot and should not exist in a "blank slate" context, since the link to context is not an option. To accomplish this goal, this proposal suggests AIA Leadership, with reach to all AIA companion components and work areas, engage in strategic partnerships with complementary organizations such as the Department of Housing and Urban Development, and the National Low Income Housing Coalition and National Housing Coalition.

Strategies that are proven to contribute toward healthy and equitable communities include access to transportation modes, park systems, healthy foods, job training and job centers, and other community support. (See broader list below)

The following outcomes are signifiers of successful infrastructure for healthy and equitable communities:
- Diverse housing typologies - Allowing for alternative family conditions
- Housing density developed through adaptive reuse and infill of urban sites
- Availability of creative financing models that build personal and community equity

To address this challenge and move forward, we recommend focused work in three directions:

1. *Develop an Analytical Tool – A Dashboard:*
   Leverage the capacities of the regions and engage AIA Components to identify and detail *the practices* of this range. Identify housing types and building inventory, and *Make a Dashboard*.

2. *Create an Implementation Tool – A Checklist:*
   Develop a gauge or stance with a tool for scoring – a checklist for housing solutions. The Purpose of the checklist is to: Identify critical flaws and pause points, to find failure points in the past, to analyze fallibility, and to catch problems before they arise. Initiatives that achieve the criteria identified in the checklist promote Equity, Diversity, & Inclusion in community growth, with enhanced economic and social outcomes.

   Such a tool could be used as both a resource for architects to evaluate design options, and as an outward-facing document for community leaders and policy influencers to use in decision-making.

3. *Create a Resource Tool – A Reference Guide:*
   Build partnerships in a parallel activity to focus on frameworks and outcomes. Through this, we envision the development of a Reference Guide: A Policy List and AIA Guidebook of *Best Practices*. The AIA could utilize this reference to implement an

evolving snapshot of case study projects/initiatives that can be posted and updated routinely for public and member access.

A Generative *Housing Infrastructure* checklist for Equitable Housing Success:
Housing development should not be created in a vacuum. Context is critical to sustained success. Basic components must be established, serving as baseline criteria for the evaluation of housing initiatives. Important constellations that contribute to diverse, equitable, and healthy communities should include among others the following (Specifics offered here serve as examples only):

❑ Access to:
   ❑ Transportation
   ❑ Public Transit / Private Transit
   ❑ On Demand Transportation Options
   ❑ Bicycle
   ❑ Walkability
   ❑ Internet Connectivity
	❑ Access to Employment Opportunities:
	   ❑ Job Centers
	   ❑ Employment Advocacy Programs
	   ❑ On-Site Employment Options

❑ Access to Food Sources:
   ❑ Supermarket Options
   ❑ Farmers Markets
   ❑ Farm to Table Options
   ❑ Community Gardens
	❑ Access to Amenities & Services:
	   ❑ Promoting Mental & Physical Health
	   ❑ Community Parks & Playgrounds
	   ❑ Entertainment Options
	   ❑ Fitness Centers
	   ❑ Personal Services

❑ Access to Education:
   ❑ Child Care
   ❑ K-12 Education
   ❑ Higher Education
   ❑ Adult Education & Training
	❑ Access to Health Care:
	   ❑ Hospitals
	   ❑ Urgent Care
	   ❑ Clinics
	   ❑ Specialized Health Services

The items above should be calibrated into a simple graphic, diagnostic tool that can quickly demonstrate the relationship between housing and the infrastructure necessary for an equitable and healthy community.

While this *think tank* effort looks to be prescriptive, it is intended, by example, to forecast a direction. These recommendations seek to couple the complexity of the great need for better situations in housing solutions, with tools that capture the advantage of constructed infrastructure with two concise instruments and a reference. One should not underestimate this effort – *this is a moonshot project.* Engaging the AIA for leadership makes this possible.

C. HOUSING POLICY

The concept of a checklist described above has a direct relationship to housing policy. Each component of the proposed checklist is a consideration relative to any model housing policy. Therefore, the checklist can serve as a vehicle to engage stakeholders in the effort to shape policy development. The intent of such a move is to normalize essential criteria that are understood to define the success of affordable housing initiatives, so that they become part of the fundamental process and approach for housing developments.

Partnerships may be formed in the process of developing the checklist tool, such as the U.S. Green Building Council, who is actively working to develop a checklist for the incorporation of equity in design. Efforts by the United Nations to develop Sustainable Development Goals (refer to References provided in Appendix A) also present an opportunity for strategic partnerships, enabling the AIA to expand influence at the global scale.

Every jurisdiction in America now faces an affordable housing crisis. Architects play a central role in the development and implementation of housing solutions. The AIA on the national level, and members in their local communities, have the opportunity and obligation to act as advocates for equitable housing, and to serve as resources for policy development and implementation. Drawing on existing knowledge within the AIA, a strong network of partners in housing and community development, and the capacity for research and dissemination of information, the AIA can make meaningful contributions to formulating equitable housing policies. The transition in Federal Administration in 2021 may provide for greater positive interaction than in recent years.

Opportunities exist to align existing resources within the AIA to develop and implement resources and tools associated with policy development and activism. Such resources can be made available to members to support efforts at the component level.

With fiscal challenges facing the AIA in 2020 and 2021, an opportunity to utilize existing assets to advance the issue of housing should be prioritized and included in existing AIA strategic portfolios. Alignment of housing as a fundamental concern within AIA's equitable communities priority is an important initial step. Currently, the New Urban Agenda (NUA) Task Force is the AIA Committee with the most jurisdiction on equitable communities. The NUA is staffed by the AIA's Sustainability team and is working on an equitable communities guide as an initial work product. Bringing assets from the Housing Knowledge Community and NUA Task Force together to direct a prioritization of work around tackling housing issues is an opportunity for AIA to leverage existing staff and membership assets to define a set of substantive strategic goals around equity. An opportunity to influence future policy positions by prioritizing future policy work around housing. We suggest re-organizing existing assets to help prioritize housing to create cross-departmental collaboration and break down silos. This would offer the possibility for a cross-team task force on housing combining staff from Knowledge Communities, Sustainability (the equity staff), and Advocacy. Creating a group that includes committee members from the Housing KC, NUA Task Force, and Advocacy. Build a strong constituency for housing or a clear "owner" on the staff side, utilizing existing resources instead of new hires/investments.

CONCLUSION

Looking ahead to 2021 and beyond, we strongly recommend that the work of this group be continued, and that the AIA allocate and align existing resources to develop and advance the work for a minimum of 2 years into the future. Within these crucial two years, we offer the following summary of recommended actions to be undertaken:

1. Evaluate and align existing AIA staff and member resources to advance Advocacy.
2. Leverage AIA Knowledge Community leadership and engage components and members to act.
3. Develop Tools & Resources for Members and Policy-Makers:
   a. Dashboard
   b. Checklist
   c. Reference Guide
4. Adopt the United Nations Habitat Sustainable Development Goals.
5. Convene advocates to inform Housing Policy, working closely with GAC and its housing policy initiative.
6. Develop a network that connects AIA and local housing advocacy to increase our effectiveness.
7. Research and share existing initiatives.
8. Inform our outreach with research developed by other aligned/complimentary organizations.
9. Collaborate with housing and community planners to develop systemic housing solutions for climate action.
10. Create a nationwide system to promote housing businesses that are engaged in carbon drawdown.

END OF REPORT

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Thomas Hartman, AIA	Elizabeth Wolverton – Director, Governance

APPENDIX A: REFERENCES

- **The United Nations Sustainable Development Goals (SDGs):**
  Offering opportunities to advance Climate Action through the shaping of housing policy.

- **SDG Project Assessment Tool** – works in conjunction with an interactive process for aligning urban development with the UN Sustainable Development Goals and local conditions. Including support from UN experts, the Tool was developed by the Global Future Cities Programme of the UK government's Prosperity Fund in collaboration with UN Habitat,
  https://www.globalfuturecities.org/sdg-project-assesment-tool

- **SDG Impact Assessment Tool** – is a free online self-assessment tool developed by Chalmers University and a coalition of academic and public partners in northern Europe,
  https://sdgimpactassessmenttool.org

- **European Handbook for SDG Voluntary Local Review** - launched at WUF 10 the Handbook provides a detailed and useful framework for municipalities to undertake goal setting and benchmarking for achieving the SDGs. Linked to an interactive data and tracking tool,
  https://urban.jrc.ec.europa.eu/#/en, the Handbook is published by the European Commission
  https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/european-handbook-sdg-voluntary-local-reviews

- **Culture 2030 Indicators** – includes indicators for assessing cultural value and preservation on the federal and local levels including environment, resilience, prosperity, livelihoods, participation, and gender equality. It includes formulas, checklists and a framework for measuring each of the proceeding developed by UNESCO
  https://unesdoc.unesco.org/ark:/48223/pf0000371562.

- **UN-Habitat** is also developing a UN System-wide **Urban Monitoring Framework** that is expected to be complete in March of 2021.

- The **'Architects Declare'** initiative presents another opportunity for the AIA to partner with stakeholders regarding Climate and carbon reduction. https://us.architectsdeclare.com

- The **Apgar Score** – by Virginia Apgar, anesthesiologist
  A test method to quickly summarize the health of newborn children to prevent infant mortality. This test checks a baby's heart rate, muscle tone, and other signs to determine if extra medical care or emergency care is needed (five items). The test is usually given twice: once at 1 minute after birth, and again at 5 minutes after birth. The score rating is from 0-10.

- The **Checklist Manifesto** – book by Atul Gawande, surgeon

MENTAL HEALTH + ARCHITECTURE INCUBATOR

AIA

FINAL SUMMARY OF WORKGROUP TOPIC

Architecture and design have an impact on personal and social mental health. This impact can be either negative or positive, and it is important for all architects to understand this. In times of crisis, as well as in normality, we must be able to identify and design places that nurture, build community, and promote positive mental health and well-being, in and through architecture.

What has your ongoing research discovered that has informed your research topic? What drove your inquiry?

RESTATEMENT OF PROJECT GOALS AND POTENTIAL IMPACTS

The AIA has an opportunity to act as the mechanism/convener to tie multi-disciplinary leadership bodies together in order to accelerate architecture's progression to a knowledge-driven discipline and imbue evidence-based, transformative design solutions to mental health in society.

How did the high-level project goals evolve? – what was developed that addresses the stated challenge? What impact might the workgroups efforts

ALIGNMENT WITH THE STRATEGIC PLAN, BIG MOVE AND OTHER INSTITUTE INITIATIVES

Our built environment directly impacts the functions and structure of our brain and by extension, shapes society. As such, mental health considerations are critical to the design of our buildings, neighborhoods, and cities. By expanding the AIA Framework for Design Excellence to directly incorporate mental health, the AIA and its members can design truly equitable communities.

Highlight the Strategic Objectives and other current priorities that this workgroup addressed.

SUMMARY OF FINDINGS

The Incubator has discovered an immense body of knowledge relating the impact of design to mental health – both positive and negative. On one hand, architecture plays a fundamental role in providing access to wellness attributes and amenities, such as grocery stores and healthy food, jobs, transportation to jobs, schools with safe routes, pharmacies and health care facilities, and open space / nature. On the other hand, our literature review has indicated that the environmental qualities and multisensory aspects of our designs have direct correlations to neurological response, circadian rhythms, and stress management, among others.

The pandemic has provided a unique lens into our study of mental health in architectural practice, elevating the value of specific design strategies and elements that alleviate the burden of excessive social isolation and chronic stress. We've established a link between our collective trauma from COVID-19, the impact of community engagement, and the role of spatial design.

We've engaged a number of subject-matter experts – from both within the AIA Knowledge Communities and from external organizations that have a stake in mental health design. By breaking down our silos, we have begun to foster productive dialogue surrounding the mental health benefits of good design. It is clear that the AIA must encourage a broader understanding of this relationship through an evidence-based approach to understanding the cause and effect of environmental stimuli. Our research demonstrates that architecture serves as the independent variable amongst a growing body of evidence about navigation, sleep, stress, learning, creativity, healing, and longevity. Therefore, the architecture profession has an ethical responsibility to support and promote the application of research related to mental health in our design processes.

Describe what was learned this year through the efforts of the workgroup. Highlight items that are of greater significance or are newly developed knowledge..

RECOMMENDATIONS MOVING FORWARD

To elevate the AIA's leadership role, the work to expand the Framework should continue within the Council, programming should be incorporated into events and publications with AIA staff, and the roundtable discussions should expand to include additional KCs and external community leaders.

What are the opportunities to carry the research forward? What is the proper venue for this inquiry?.

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Co-Conveners: Amy Rosen, Stephen Parker

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Identify who will be accountable for overseeing project progress and providing status reports.

MENTALHEALTH+ARCHITECTURE
Incubator

2020 Strategic Council Mental Health + Architecture Incubator

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AIA Staff: Pam Day, Hon. AIA
                             Elizabeth Wolverton

Agencies: AIA, AAH, AAJ, CAE, COD, COTE, HCD,
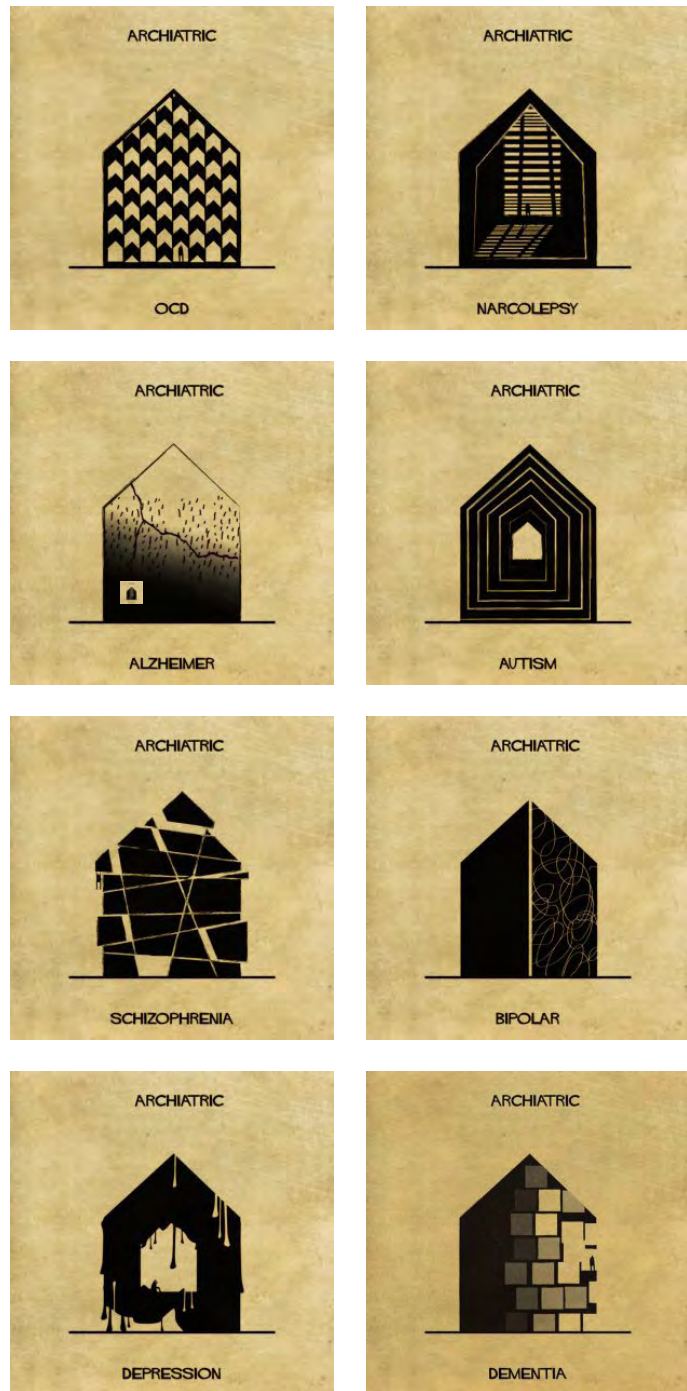   External Agencies (VA, etc.)

Year 1 Incubator Report
December 1, 2020

**The American
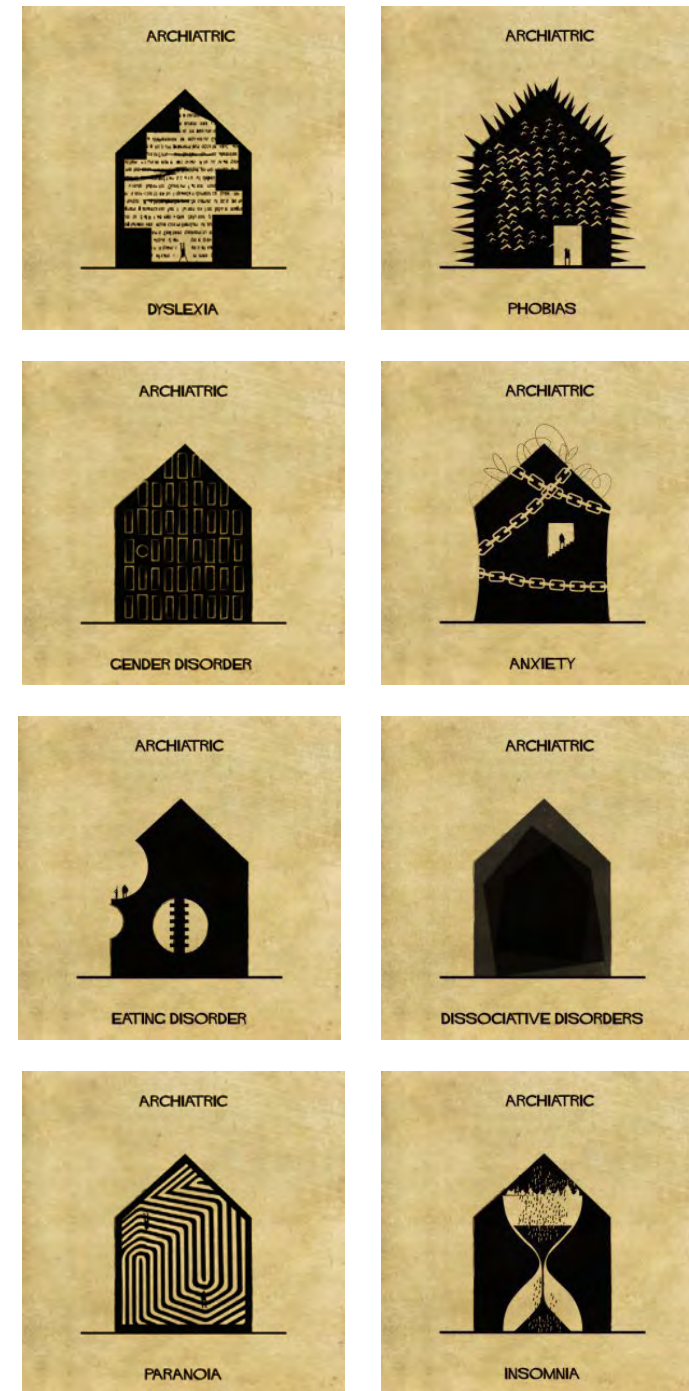Institute
of Architects**

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1.0   Executive Summary

Archiatric by Federico Babina, copyright 2017

Archiatric by Federico Babina, copyright 2017

" 'Space' does not become a 'Place' until it meets the physical and behavioral needs of people."

OVERVIEW

The Mental Health + Architecture Incubator aims to address how architecture and design have an impact on personal and social mental health. This impact can be either negative or positive, and it is important for all architects to understand this. This is critical to the design of our buildings, neighborhoods, and cities; and this topic is in support of the AIA's plan for urgent and sustained climate action, which includes an emphasis on design justice and equitable communities.

By addressing the leadership role of the AIA and its members as collaborators within communities, we have an opportunity to:

- Encourage a broader understanding of the relationship between mental health and design;
- Listen to our clients and communities for whom we design regarding the mental health impacts of their built environments;
- Foster productive dialogue surrounding the mental health benefits of good design*; and
- Collaborate with thought leaders to improve our designs from this perspective.

*The Incubator posits that good design is centered on equity, empathy, and inclusivity.

"To destigmatize mental health, we must consider its design implications and be proactive collaborators in creating a more equitable communities."

OVERVIEW

The Incubator has discovered an immense body of knowledge relating the impact of design to mental health – both positive and negative. On one hand, architecture plays a fundamental role in providing access to wellness attributes and amenities, such as grocery stores and healthy food, jobs, transportation to jobs, schools with safe routes, pharmacies and health care facilities, and open space / nature. On the other hand, our literature review has indicated that the environmental qualities and multisensory aspects of our designs have direct correlations to neurological response, circadian rhythms, and stress management, among others.

The pandemic has provided a unique lens into our study of mental health in architectural practice, elevating the value of specific design strategies and elements that alleviate the burden of excessive social isolation and chronic stress. We've established a link between our collective trauma from COVID-19, the impact of community engagement, and the role of spatial design.

We've engaged a number of subject-matter experts – from both within the AIA Knowledge Communities and from external organizations that have a stake in mental health design. By breaking down our silos, we have begun to foster productive dialogue surrounding the mental health benefits of good design. It is clear that the AIA must encourage a broader understanding of this relationship through an evidence-based approach to understanding the cause and effect of environmental stimuli. Our research demonstrates that architecture serves as the independent variable amongst a growing body of evidence about navigation, sleep, stress, learning, creativity, healing, and longevity. Therefore, the architecture profession has an ethical responsibility to support and promote the application of research related to mental health in our design processes.

BASIC REASONING

Mental wellness refers to our psychological and emotional health, but also encompasses the physical, social, occupational, spiritual, financial, and environmental aspects of our lives.

Early life exposure to trauma or adversities can have profound stress-related effects on the brain with potential lifelong consequences. Under prolonged periods of stress, the activity of the amygdala, our emotional processing center, predominates over our prefrontal cortex.

Research in **neuroplasticity** has indicated that new cells may form and rewire with stimulation from physical exercise, learning, and enriched environments.

It is estimated that 83% of the U.S. population lives in urban areas (U Michigan/US Cities_CSS09-06_e2020.pdf). More attention should be focused on the impact of higher densities and how the built environment may offset negative outcomes linked to mental health.

2020 Mental Health + Architecture Incubator

1.3 2020 Schedule of Events
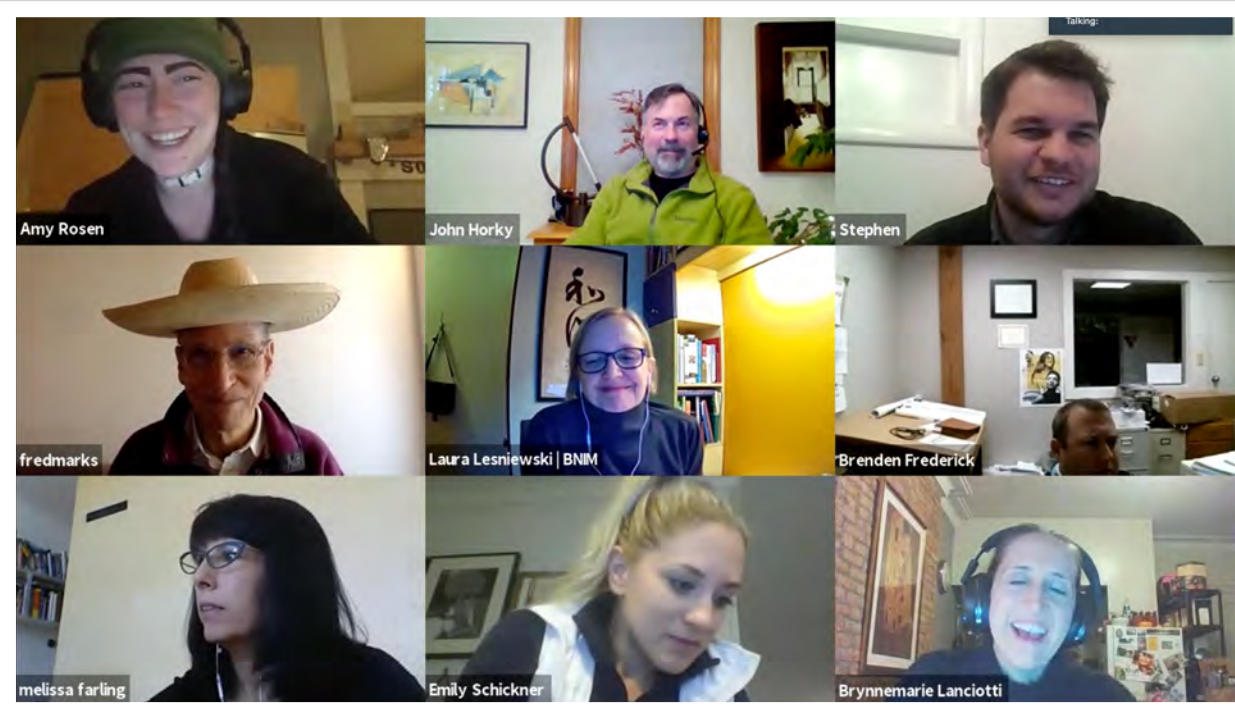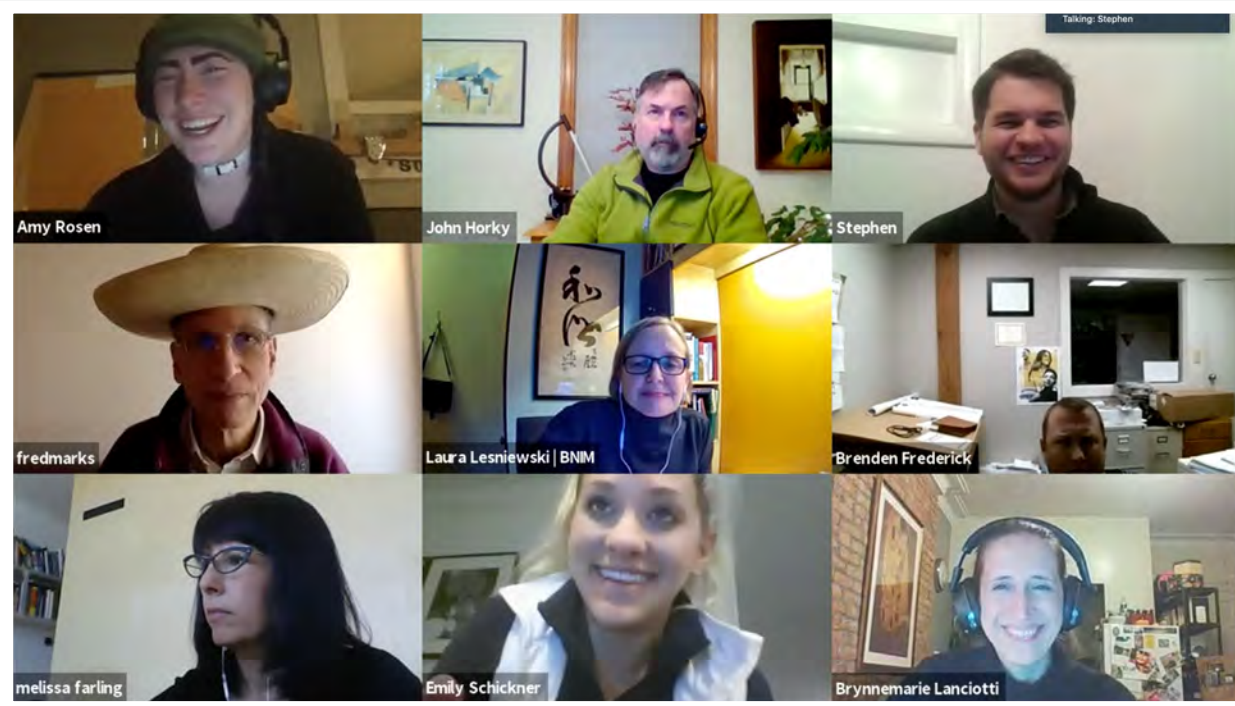
2020-02-18 - Mental Health + Architecture Incubator - Initial Breakout at Grassroots
Discussed the shared topic of Affordable Housing with guest speaker Casius Pealer, along with how we wanted to breakout the topic and build our team of experts.

2020-04-23 - Mental Health + Architecture Incubator Open Working Session
Mental Health + Architecture Incubator facilitated a discussion on mental health. Guest speaker, Dr. Cynthia Chabay,a neurologist in Los Angeles, CA, a sole practitioner and is affiliated with Cedar-Sinai Medical Center, among other local hospitals, serves as a neurology clinic volunteer at the Greater Los Angeles Area VA, and works as an Assistant Clinical Professor at UCLA.

2020-06-25 - June Virtual Strategic Council Assembly
Mental Health + Architecture Incubator facilitated a discussion on mental health in order to embed an understanding of the importance of mental health for architects to consider across practice. We have invited two guest speakers to help frame our discussion; Frederick Marks, AIA, LEED AP BD+C, and Erin Peavey, AIA, NCARB, LEED AP BD+C, EDAC.

2020-09-24 - Strategic Council Virtual Assembly
Participated with all study areas looking through the lens of EDI - Building on the justice, equity and diversity and inclusion discussion from our July Assembly, laying a foundation of mental health knowledge that any practitioner can implement in their practices. This provides a wider lens to address systemic issues and we'll provide some highlights along the way.

2020-10-23 - AIA Strategic Council Mental Health and Architecture Incubator KC Leader roundtable

2020-09-24 - Strategic Council Virtual Assembly - EDI Continued
Participated with all study areas responding to questions specific to EDI.

2020-11-13 - AIA Strategic Council Mental Health and Architecture Incubator KC Leader roundtable

2021
Workshops to be instilled moving forward - workshops with KCs and leadership in local firms. Each participating Incubator member should host a workshop in their respective region or component.

1.4 Recommendations for 2021

As we wrap up the year, we have developed a number of explorations on the topic that we wish to build on a number of initiatives. We've been overwhelmed with the keen interest and willingness to collaborate.

From the 1st Mental Health + Architecture Workshop in the spring with guest subject matter expert Dr. Chabay, to the Joint Assembly we hosted with Dr. Frederick Marks, FAIA and Erin Peavey, AIA we've sought diverse voices informed on this subject. With our KC Leader Roundtables we collaborated on with a handful of KC's and the overlap with other working groups to break down silos and share knowledge as well as a sense of purpose.

GOAL
Continue the conversation on this topic and develop a set of recommendations for implementation across the Institute.
- **Objective**: Continue the work of the Incubator through 2021, with the selection of a Co-convener, expansion of the group's KC representatives and outside experts as well as participation of AIA research staff.
- **Timeline**: Approval in Dec. with selection of Co-convener by January. Additional KC collaborators and outside representatives to be established before Grassroots.

GOAL
Explore opportunities to collaborate with KC's and the AIA for general programing, events, and initiatives to highlight mental health design considerations.
- **Objective**: Submit joint sessions with KC's collaborators at AIA National events and conferences, namely Grassroots, AIA Conference on Architecture, KLA and other program opportunities.
- **Timeline**: Work with AIA staff to identify opportunities in the existing event schedule (as much as it is known) to accelerate the engagement through the next year. Namely a session or panel at Grassroots, an exhibit or panel on during AIA Conference on Architecture and working with AIAU to capture expert content for membership use. Apply for upcoming sessions as they become available.

GOAL
Foster a proactive discussion on mental health and design, broaden the access to this knowledge as foundational to all typologies.
- **Objective**: Build on and establish ongoing KC Mental Health + Design Round tables to share knowledge, breakdown silos and provide an opportunity to engage groups outside the AIA to participate in this dialogue.
- **Timeline**: Have our next KC Roundtable in early January in 2 week intervals.

GOAL
Proactively explore opportunities to imbue mental health design considerations into facets of practice.
- **Objective**: Research model language for addressing mental health in the health, safety and welfare language that defines the role of an architect. By initiating this study, the profession can anticipate changes in liabilities and legal challenges in an increasingly complex practice environment.
- **Timeline**: Set up a subgroup to gather legal expertise and work with State Government Network representatives to collect and analyze any existing legal precedents. To be underway by Grassroots.

GOAL
Elevate mental health considerations in the design criteria for architectural awards and honors.
- **Objective**: Find opportunities to imbue the AIA's Framework for Design Excellence with mental health design considerations and evolve the Framework to include this evidence-based research. Work with AIA research staff to ensure rigor of research and proposed amendments.
- **Timeline**: Work with AIA staff to craft this recommendation and how it might be implemented and understand it's implications based on similar initiatives the Institute has explored.
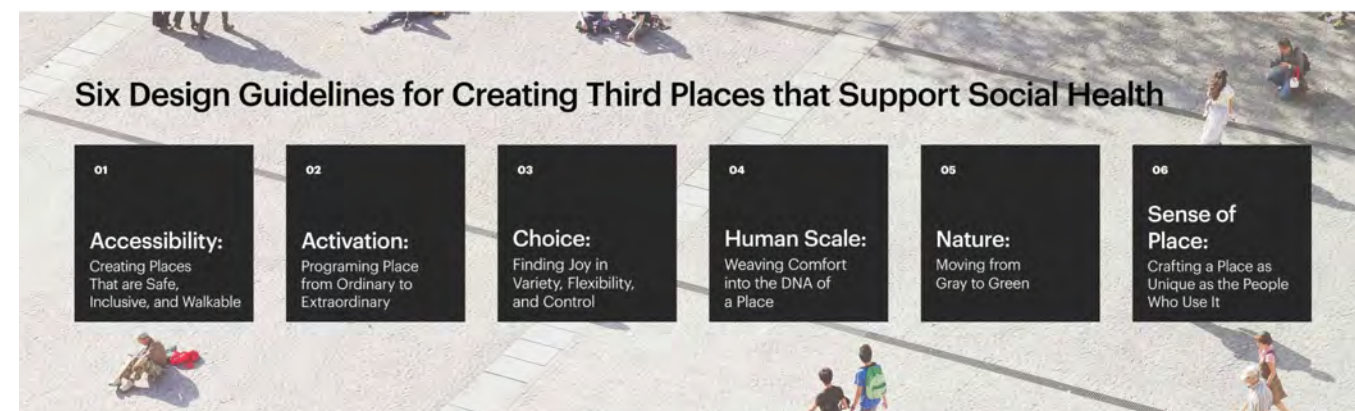
2.0 Relevance to the Institute

2.1 Well-being, Welfare, and Public Health

Mental health impacts all of us. Recent research shows approximately 1 in 5 adults in the U.S. report a mental illness disorder each year; however 45% of Americans say the pandemic has negatively impacted their mental health, and we have seen a corresponding rise in mental health services. In addition to diagnosed mental illness disorders, most of us have experienced periodic bouts of sadness, anxiety, or extreme fatigue.

Our physical environments play an important role in fostering mental wellbeing and there are an abundance of evidence-based strategies that can help to inform design decisions to mitigate depression, fatigue, social disconnection, and help to create a more well and connected society. These include fundamentals like nature, light, walkability, choice and scale.

These principles are embedded in rating systems like the WELL building standard, FitWell, and are the foundation of the field of environmental psychology. Much like active design principles that have been used to combat obesity, mental health design principles can help us combat the

challenges we face today. For this reason, the Centers for Disease Control, World Health Organization, Robert Wood Johnson Foundation and many other leading health organizations now recognize the role of the built environment in shaping mental health.

As architects, we understand that design is never neutral – it can either help, or hurt – and that we have a duty to help shape the world that we want to live in, one where everyone has a chance to live well.

Six Design Guidelines for Creating Third Places that Support Social Health

| 01 Accessibility: Creating Places That are Safe, Inclusive, and Walkable | 02 Activation: Programing Place from Ordinary to Extraordinary | 03 Choice: Finding Joy in Variety, Flexibility, and Control | 04 Human Scale: Weaving Comfort into the DNA of a Place | 05 Nature: Moving from Gray to Green | 06 Sense of Place: Crafting a Place as Unique as the People Who Use It |

2.2 Connection Between Mental Health and the Big Move

In 2019, the AIA announced its focus on The Big Move. The overarching idea of which was to create a framework for the AIA's focus on sustainability, resilience, and regenerative design for now and the foreseeable future. This idea was conceived in the January 2019 Board Retreat and culminated in a bold resolution at the A'19 Conference on Architecture in Las Vegas, 19-11: Resolution for Urgent and Sustained Climate Action. With a resounding vote of confidence at the conference, the AIA set up the Climate Action Plan Task Force, who by early 2020 formulated a plan that was approved by the Board at their April meeting.

The Big Move initially focused on three areas of resiliency in design: Design for Economy, Design for Energy, and Design for Equitable Communities. While the first two focused on making the business case and positively impacting global greenhouse gas emissions, the third focus ties directly to the impact of our designs on mental health. At the time, AIA President Bill Bates spoke about the health of our communities and the importance of

designing walkable, human-scaled communities that are diverse, accessible, and welcoming. For architects, the oath protecting the health, safety, and welfare of the public should be expanded to include considerations for mental health as well.

To provide the AIA with a more thorough definition of "equitable communities", our Incubator embraced the opportunity to perform multidisciplinary outreach in order to gain a more thorough understanding of the mental health implications of our design decisions. In particular, the Mental Health + Architecture Incubator has studied the strong connection between the designs of buildings and communities with the positive and negative impacts they have on individual mental health and social health. These relationships are both intuitive and hidden, emphasizing that mental health considerations must be incorporated into early architectural education and reinforced throughout the life of an architect. We believe this understanding is a critical component of The Big Move.
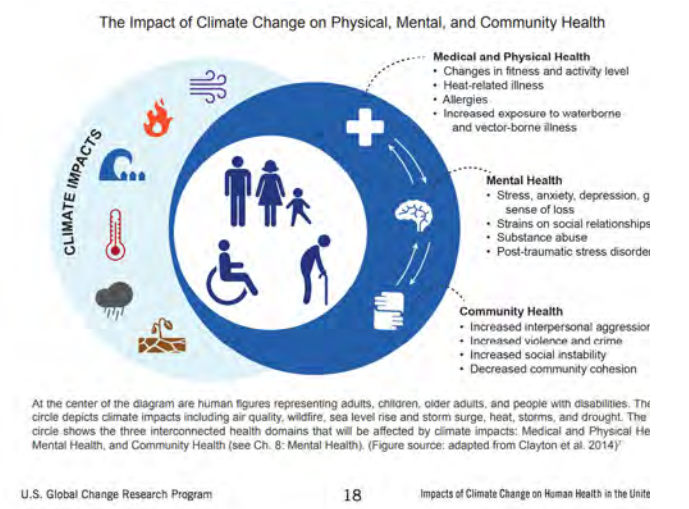
2.3 Increased Relevance amidst COVID-19

In light of the current crisis, the Mental Health and Architecture Incubator expanded our realm of inquiry in order to pursue an exploration of the mental health repercussions arising from COVID-19. Similar to our initial examination of the effects of climate trauma, we examined the pandemic's influence on social isolation, interactive community relationships, and the design of environments that promote equitable access to healthcare, housing, transportation, and jobs. These avenues of exploration allowed us to further our study into how the AIA and its members can aid in building communities that promote positive mental health and well being, through architecture and design.

As a result of COVID-19, surveys suggest that the U.S. is not a very happy place right now—Americans are experiencing significantly higher levels of stress—and it's not hard to see why. Many people have lost their jobs. Many of those who are still employed have had to make significant adjustments and may be simultaneously caring for children, parents, or other members of their community. People have missed landmark events like weddings, graduations and attending the births of children. Necessary public health measures have resulted in a rapid global acceleration towards widespread isolation and job loss, which in turn have exposed society at-large to poor mental health outcomes at an unprecedented scale.

In a KFF Tracking Poll conducted in mid-July, 53% of adults in the United States reported that their mental health has been negatively impacted due to worry and stress over the coronavirus--a significant increase from the 32% reported in March (just 4 months earlier in the year). Some specific mental health and wellbeing concerns arose from the poll as well. In particular, many adults reported difficulty sleeping (36%) or eating (32%), increases in alcohol consumption or substance use (12%), and worsening chronic conditions (12%), due to worry and stress over the coronavirus. As noted in the July KFF report, "During this unprecedented time of uncertainty and fear, it is likely that mental health issues and substance use disorders among people with these conditions will be exacerbated. In addition, epidemics have been shown to induce general stress across a population and may lead to new mental health and substance use issues."
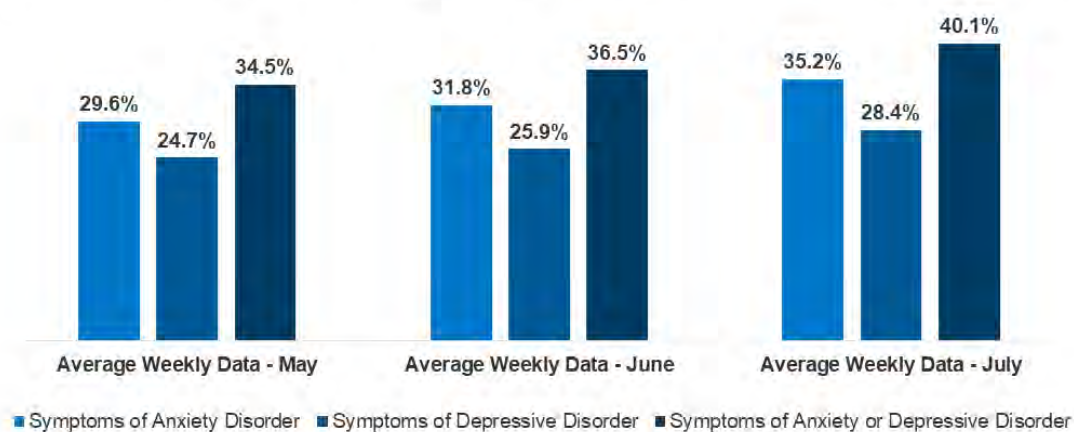
Furthermore, the unique characteristics of COVID-19—from its airborne nature to the risks it poses on community gathering and spending extended periods of time with others in the built environment—make this a unique time for insisting on architecture being a matter of public health. Buildings, and the work we do in them, shape our behavior every day. For good or for ill, the decisions of designers, owners, and operators have a direct impact on peoples' wellbeing.

The powerful psychological effects of environments are well known to professionals in medicine and social science. As far back as the 1950's, researchers were already discussing the mental health impacts of design in settings such as hospitals and psychiatric facilities. They knew that patients who received treatment in facilities that looked dingy or unappealing tended to do worse. They saw that the design of spaces and policies could shape the interactions between patients and impact real treatment outcomes.

To date, this knowledge has been under-appreciated in the architecture profession—much like mental health in general. Business and design decisions often have a psychological cost. Take telework as an example. Just because home offices were the norm for centuries doesn't mean that people are inherently good at using them. Working outside the office is a skill that needs to be practiced. Ready or not, many people are now doing it without training or adequate support.

Unfortunately, buildings and organizations evolve slowly, and oftentimes leaders fall short in their duty to nurture and protect. Given that COVID-19 is an ongoing concern—with the psychological implications lasting even longer—this is a pivotal moment in architectural history to recognize the mental health implications of our environment and our designs. There has been a palpable degree of destigmatization towards discussions about mental health as a result of the pandemic, and the AIA has an ethical responsibility to amplify this momentum.

Average Share of Adults Reporting Symptoms of Anxiety or Depressive Disorder During the COVID-19 Pandemic, May-July 2020

Average Weekly Data - May: 29.6%, 24.7%, 34.5%
Average Weekly Data - June: 31.8%, 25.9%, 36.5%
Average Weekly Data - July: 35.2%, 28.4%, 40.1%

■ Symptoms of Anxiety Disorder   ■ Symptoms of Depressive Disorder   ■ Symptoms of Anxiety or Depressive Disorder

NOTES: These adults, ages 18+, have symptoms of anxiety or depressive disorder that generally occur more than half the days or nearly every day. Data presented for "symptoms of anxiety or depressive disorder" also includes adults with symptoms of both anxiety and depressive disorder. Data presented for May is the average of the following weeks of data: May 7-12, May 14-19, May 21-26, May 28- June 2; for June, data is the average of June 4-9, June 11-16, June 18-23, and June 25-30; for July, data is the average of July 2-7, July 9-14, and July 16-21 (last week of published data).
SOURCE: U.S. Census Bureau, Household Pulse Survey, 2020.
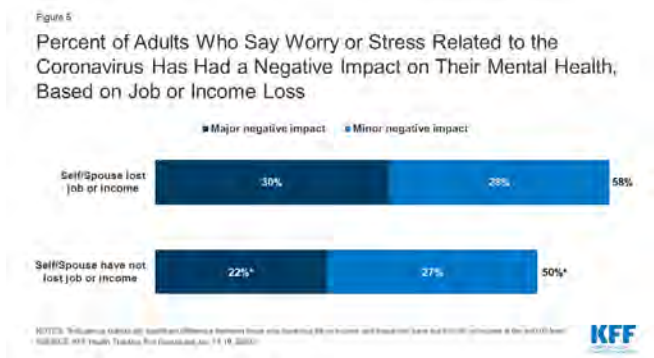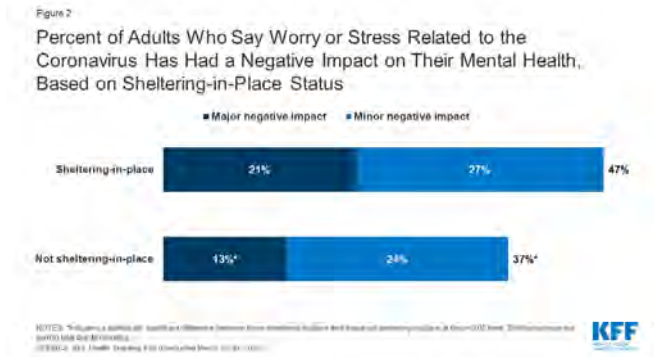
Figure 2
Percent of Adults Who Say Worry or Stress Related to the Coronavirus Has Had a Negative Impact on Their Mental Health, Based on Sheltering-in-Place Status

Figure 5
Percent of Adults Who Say Worry or Stress Related to the Coronavirus Has Had a Negative Impact on Their Mental Health, Based on Job or Income Loss

Percent of Adults Who Say Worry or Stress Related to the Coronavirus Has Had a Negative Impact on Their Mental Health, by Health Status

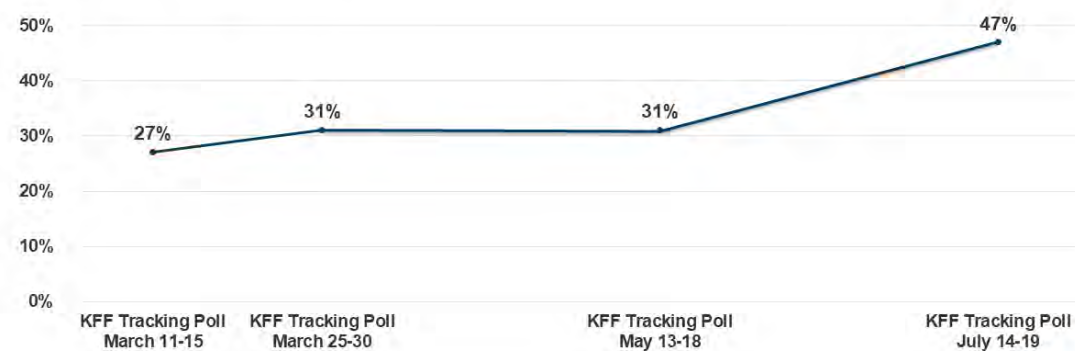■ Major negative impact   ■ Minor negative impact

Excellent, Very Good, or Good Health	23% — 28%	51%
Only Fair or Poor Health	38%* — 24%	62%*
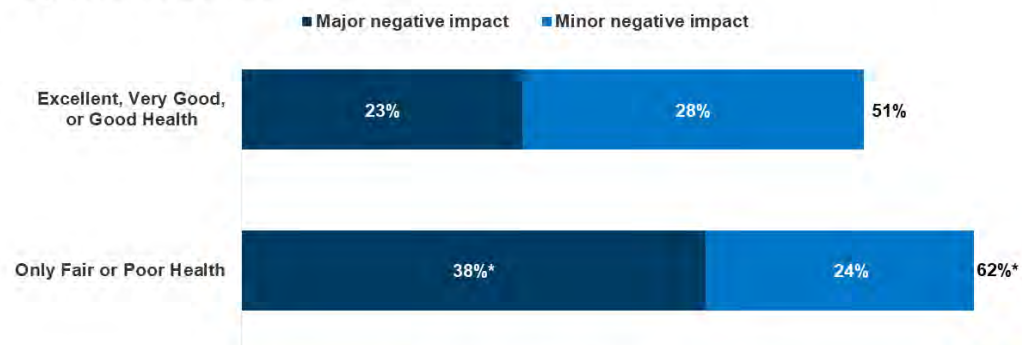
NOTES: *Indicates a statistically significant difference between those with excellent/very good/good health at the p<0.05 level. Distribution may not sum to total due to rounding.
SOURCE: KFF Health Tracking Poll (conducted July 14-19, 2020).

KFF HENRY J. KAISER FAMILY FOUNDATION

Percent of Older Adults (Ages 65 and Up) Who Say Worry or Stress Related to the Coronavirus Has Had a Negative Impact on Their Mental Health

	KFF Tracking Poll March 11-15	KFF Tracking Poll March 25-30	KFF Tracking Poll May 13-18	KFF Tracking Poll July 14-19
	27%	31%	31%	47%

SOURCE: KFF Tracking Poll (conducted March 11-15, March 25-30, May 13-18, and July 14-19, 2020).

KFF HENRY J. KAISER FAMILY FOUNDATION

The Institute can and should do more to support the mental and social wellbeing of our members, our firms, and the public—as individuals and as a collective. This includes ensuring that systems and policies are not only equal, but equitable. Failing to articulate and act on a pro-equity policy is inherently biased to the status quo. For an example of the distinction, we can examine telework policies. When companies do not articulate a clear policy about who can work out of the office, they often leave it up to the discretion of managers. Managerial autonomy is supposed to be a good thing, and often is. But what often happens is that the people with social status or power in an organization take advantage of these programs while those with less power do not. Recognizing the benefits of flexible work on work-life balance, this lack of policy becomes a bias with mental health implications.

Now is a time of unprecedented conversation and increased awareness of the impact of buildings on our wellbeing, both physical and emotional. As the conversation grows, so do the resources to support exploring these themes. For instance, we can utilize the MIND section of the WELL building standard as a resource for metrics that can be deployed in our design processes. We can also leverage prior research conducted within the AIA and apply new learnings from the disruption brought by COVID-19 to those findings, such as the results of the AIA Committee on Architecture for Education's (CAE) multi-disciplinary summit in 2019 on "The Design of Safe, Secure, & Welcoming Learning Environments". In this endeavor, interventional and curative design implications for schools were analyzed through three lenses: Crime Prevention Through Environmental Design (CPTED), Mental Health, and Community and Pedagogy.

One of the strategies identified in this summit references a standard human instinct to believe, "if it looks safe, it is safe". In the context of schools, this concept can be seen in the application of bars on windows and doors or security cameras. Though these might originally seem like valiant efforts towards additional safety, these types of design solutions increase perceptions of isolation, decrease connections to community and adjacent environments, and reduce a sense of autonomy—all examples of issues that lead to exacerbated mental health problems (and subsequently poor academic/professional performance and increased aggressive behavior). The group comments on the need to emphasize less invasive solutions like natural surveillance and natural barriers, such as through large grass lawns as an added distance measure from the street to the front door coupled with large windows along the facade. These types of natural barriers can maximize the amount of time it would take an intruder to get to the building, and the windows enable teachers and students to be able to see a threat before it is a problem.

COVID-19 has reinforced the need to balance perceived safety and mental health sensitivities in all environments, including schools, in order to address both physical and mental health risks simultaneously. This poses a challenge to architects in our immediate context to find means of reducing virus transmission that do not simultaneously minimize the potential for community, connectivity, and mental wellness. Since the attributes that aid in minimizing mental health risk are generally tied to active, comfortable, and vibrant qualities, there is an imminent need to advocate against the emergence of homogenized and institutional solutions.

One of the key factors of wellbeing, and the extent to which our environments impact wellbeing, is that of how differently each individual experiences the world around us. This topic of cognitive or neuro-diversity has been gaining traction in recent years, especially with regards to the multisensory aspects of design and how we can be more human-centric by starting with a focus on our senses. Because of their outside role in shaping the systems that define our lives, designers can make a significant contribution toward making environments more just, equitable and supportive of all occupants. Some have accepted this challenge, such as the Design as Protest collective, but more should. It is possible for environments to be functional and high-performing without sacrificing mental health or leaving the vulnerable to fend for themselves. Indeed, it is imperative.

We are learning that architecture plays a fundamental role by providing access to wellness attributes or amenities

Throughout our literature review, we found numerous articles and other references that create these linkages between our built environment, social equity, and climate change as well. This example was particularly striking.

Examples of key opportunities in architecture/design to support mental health are:

- Access to amenities for basic needs such as grocery stores and healthy food, jobs, transportation to jobs, schools with safe routes, pharmacies and health care facilities, and open space / nature.

- Access to affordable utilities. Some families have a hard time paying their utility bills because they are living in substandard housing where utilities are expensive, and energy is not often renewable or clean.

- Access to healthy light (in terms of quality and quantity) is not always available; and in many urban environments, access to darkness at night is a challenge … there is a strong connection to sleep deprivation, for example, and mental well-being.

- Access to water. Over the past decade, we've been learning more and more about public water systems and how they may be challenged to provide both the quantity (due to climate change and drought) and the quality (due to decaying systems) of water for our populations. Poor water quality has a direct impact on a person's development and possible learning disabilities in children.

- Access to safe spaces. In more disinvested communities, lack of access to a safe space or safe environment increases stress, which brings a host of physical and mental challenges

The modern sustainability movement has emphasized building performance (energy, water, carbon, etc.) with corresponding benefits to the environment and human's physical health. We have not really emphasized mental health yet … to the extent that it is important to our overall well-being.

We also have leaned into the **Framework for Design Excellence** as a resource and guide to organize our thinking and research.

The architectural profession has an ethical responsibility, like its current stance on environmental sustainability, to support and apply research related to mental health for all citizens.

The Incubator recognized the importance of a research when addressing mental health in the architecture profession. As such we referenced the **AIA SC TAE Final Work Group Report 2019**

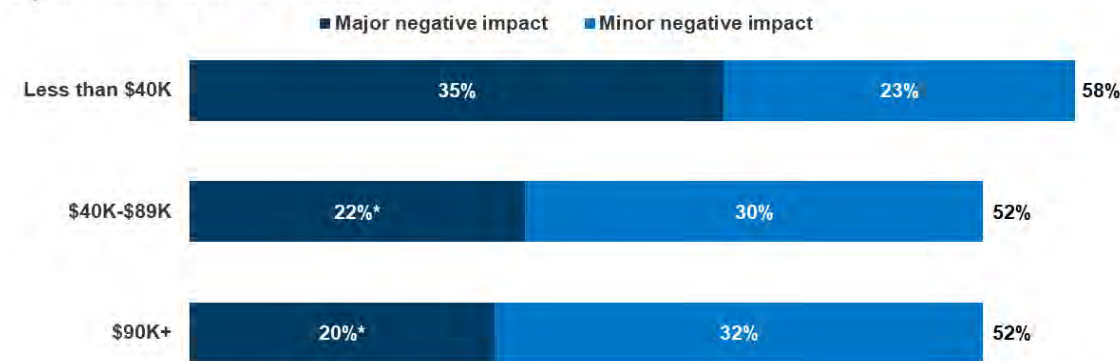**Themes from Transforming Architectural Education**
- Be more holistically
- Provide diversity
- Benchmark other professions

"Educating Lawyers identified three strands of professional education that all professions should employ: intellectual training to learn the academic knowledge of the profession; a focus on students acquiring the skills required to succeed in their profession; and finally the development of ethical standards, social roles, and responsibilities of the professional."

Both the legal and medical profession debate the value of either emphasizing a Case-based versus Clinical-based training. Architectural students need both and should have applied research findings made more integral with their studio, required and elective courses.

"The research subgroup on the AIA Board Knowledge Committee has also been discussing an approach to bridge the gap between practice knowledge and academic research. "Practice" has many questions that they do not have time or resources to answer while "academia" has an interest in researching topics/issues/questions that are relevant to practice. One way to bridge the two is through a database of questions posed by practice with hopes that someone in academia may find the question interesting and worthy of research, or has already completed the research. This is an opportunity to bridge the gap between academia and practice, while contributing to the architectural education continuum."

Percent of Adults Who Say Worry or Stress Related to the Coronavirus Has Had a Negative Impact on Their Mental Health, by Household Income

Major negative impact ■ Minor negative impact

	Major	Minor	Total
Less than $40K	35%	23%	58%
$40K–$89K	22%*	30%	52%
$90K+	20%*	32%	52%

NOTES: *Indicates a statistically significant difference between those earning less than $40K at the p<0.05 level.
SOURCE: KFF Health Tracking Poll (conducted July 14-19, 2020).

KFF

Percent of Adolescents Ages 12-17 with Anxiety, Depression, and Depression and/or Anxiety, 2016-2018

- Currently Have Depression: 6%
- Currently Have Anxiety: 10%
- Currently Have Depression and/or Anxiety: 12%

SOURCE: KFF analysis of National Survey of Children's Health, 2016-2018.

KFF

3.0 Dialogue with Subject Matter Experts

3.1 Neurology, Mental Health, & Architecture: Dr. Cynthia Chabay

NEUROLOGY, MENTAL HEALTH, & ARCHITECTURE
Open Working Session with Dr Chabay

On April 23rd, the Mental Health + Architecture Incubator facilitated an informational Strategic Council working session to raise awareness of the neurological repercussions of the pandemic, such as the impacts of trauma, stress, and change of environment on the brain. Dr. Cynthia Chabay, MD, was invited to help frame our discussion. She is a neurologist in Los Angeles, CA, where she owns and runs an independent, solo practice business. She is also affiliated with Cedar-Sinai Medical Center, among other local hospitals, serves as a neurology clinic volunteer at the Greater Los Angeles Area VA, and works as an Assistant Clinical Professor at UCLA.

Our primary goal for this discussion was to embed an understanding of the importance of mental health as a portion of our work as architects. By virtue of Dr. Chabay's expertise in neurology, participants were able to engage in a dialogue that helped to bridge the gaps in our design mindset pertaining to the brain. Though it may be becoming more acceptable to talk about mental health disorders, Dr. Chabay emphasized that mental health is oftentimes too generalized.The discussion began with an evaluation of the overlaps between mental health and neurology. Dr. Chabay illustrated that the overlaps are intrinsic, due to the fact that anxiety and depression, among other mental health issues, affect all neurological diseases. In particular, she noted that stress can exacerbate any neurologic disease, especially when compounded by extraneous visual or sensory stimulation.

In light of the current crisis, the neurological impacts of pandemic-induced increased stress becomes critical to recognize. For instance, Dr. Chabay commented on the potential risk for increased PTSD from COVID-19. She mentioned that this would in turn result in extraneous irritability, anxiety, sleep disturbance, and depression - all of which directly impact human cognition, especially in relation to insight and judgement. With a better understanding of the contributing factors to post-traumatic stress, Dr. Chabay suggested that architects can increase their capacity to design in a way that is both sympathetic to this altered state and conducive to healing. This implies a need for architecture to balance the need to stimulate occupants' senses while minimizing the potential for chaotic response.

The emergence of widespread pseudo-dementia was also introduced in the conversation, due to its direct correlation to PTSD. Dr. Chabay noted that pseudo-dementia can look like dementia when in fact patients really just have anxiety and depression. According to Dr. Chabay, these conditions are typically not successfully treated and can lead to daily cognitive processing difficulties. This allowed participants to recognize the relevance of architectural clarity and wayfinding in reducing additional cognitive strain on occupants. Furthermore, the discussion demonstrated a direct responsibility of HR and organizational management. Dr. Chabay claimed that leaders and architects in communities must recognize that they have a responsibility to adopt different strategies for accountability and patience given the neurological implications of the current crisis (and any future crisis) on their employees. Key strategies that can be addressed and deliberately incorporated into practices at this time were cited, such as person-centered interventions that involve an understanding that each person reacts differently psychologically to an environment or situation.

Dr. Chabay proceeded to share personal anecdotes from her experience in normal circumstances as well as in crisis scenarios to provide an overview of how we might be able to examine the global, local, and individual mental health repercussions arising from COVID-19 as a potential short-term example of what may arise from the long-term and more devastating effects of climate trauma. One anecdote was in reference to a Multiple Sclerosis (MS) patient in order to illustrate the visual disruptions that neurological illnesses can invoke in individuals and the immense role that design can play in providing accessibility when the vision of MS patients, for instance, is compromised. This highlighted a potential bridge towards ADA codes and compliance with regards to how we might change our designs to address the emotional and mental aspects of accessibility more directly.

Cynthia C

Left

Right

- object/tool identity and shape
- event knowledge and semantics
- spatial orientation and maths
- action and motor representation
- words, music, sounds and speech
- social cognition and emotion
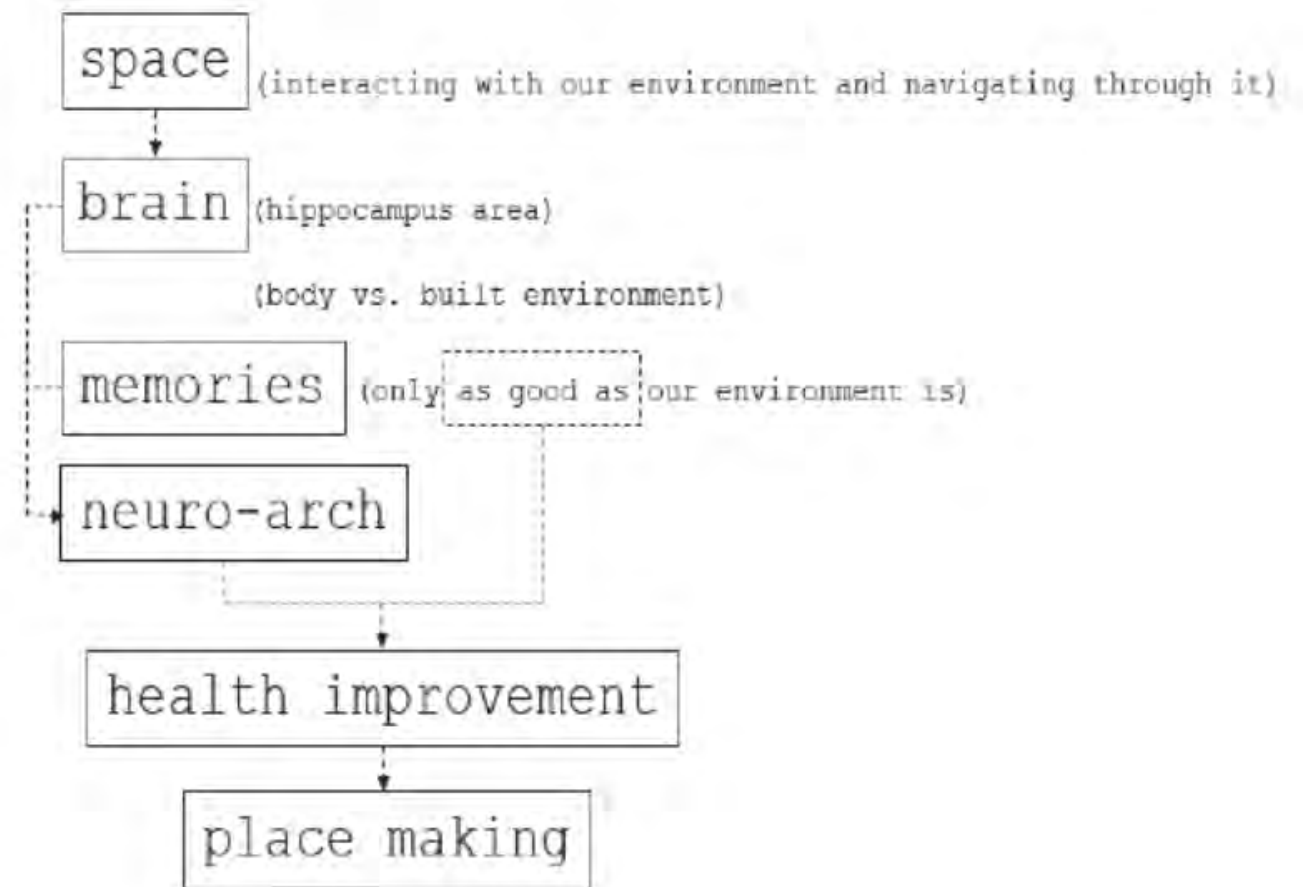- motion discrimination

With her dementia patients, Dr. Chabay commented on a dramatic reliance on patience and a willingness to accommodate for changes in human processes and behaviors. She made sure to highlight that patients with Dementia may be easily overwhelmed by some spaces and environments and depend on visual cues to direct their understanding of where to perform different activities. As architects, we can expand our use of environmental modifications or adaptations to improve overall functioning in individuals with dementia. For example, by focusing on communication needs, spaces can be designed in ways that reduce cognitive, visual, and auditory barriers and minimize the impact of impaired body functions.
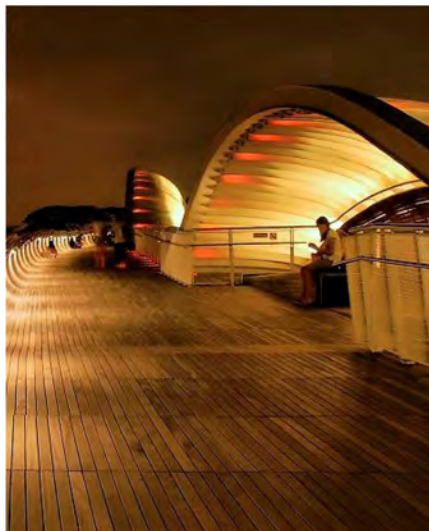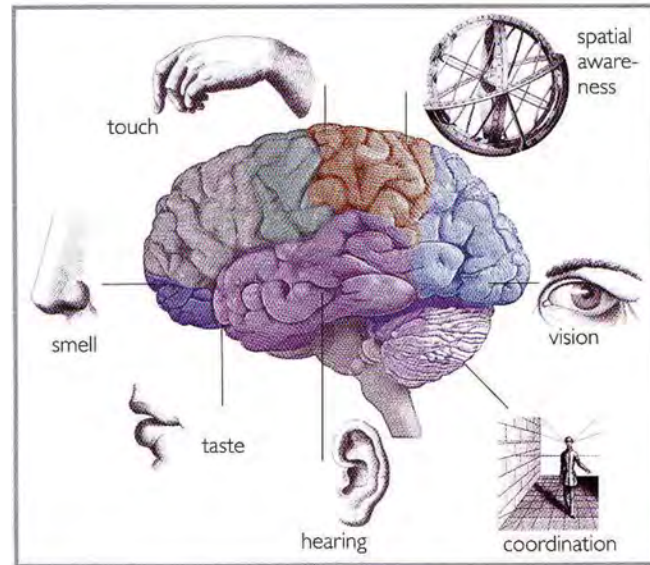
Towards the end of the working session, Dr. Chabay addressed the relationship between cognitive functions and environmental stimulation. In particular, she referenced that dementia patients must be encouraged to remain as active as possible and must receive continuous verbal stimulation even if seemingly not understood. She emphasized that with many neurological conditions, increased sensory experience can equate to numerous benefits. For instance, exposure to light, outdoor space, and vegetation can aid in keeping human circadian rhythms at their correct balance, which in turn can lessen levels of fatigue and irritability. A particularly relevant comment for the audience was that visual stimulation, especially through patterning and variation, can be extremely beneficial for occupants struggling with cognitive problems, such as a loss of their sense of community and recognition of their support system. This can be provided through many different means, such as in the form of wall hangings, strategically-placed colors, and biophilic textures along walls and corridors to increase stimulation.

Further on in the working session, the group looked further at behavioral patterns and human nature. For instance, the natural tendency for people to be reflexive and perform the same actions over and over again. Dr. Chabay noted that this habit of repetition directly conflicts with climate change and general adaptability, emphasizing the importance of training and change management. For instance, she noted that we can look towards Pavlovian responses when training pets in order to unveil means of uncoupling our associations of response and conditioning to stimuli in response to the need to adapt to global crises like COVID-19 and climate change.

Overall, this working session provided an opportunity for members of the Council to engage in a thought-provoking dialogue with a subject-matter expert at a critical point in the COVID-19 crisis when many were recognizing the increased strain of mental health concerns in our society. The Incubator left this session with a clear recognition that the AIA has an obligation to bring awareness to mental health issues and their correlation to our design decisions.

space (interacting with our environment and navigating through it)

brain (hippocampus area)

(body vs. built environment)

memories (only as good as our environment is)

neuro-arch

health improvement

place making

COUNCIL ASSEMBLY: 25 JUNE 2020

Introduction
On June 25, 2020, the Mental Health and Architecture Incubator Group hosted two guest speakers to explore the importance of mental health in the practice of architecture.

Frederick Marks, AIA, is a Visiting Scholar and Research Collaborator at the Salk Institute for Biological Studies. He is a founding Board member and President of the Academy of Neurosciences for Architecture and is President of AIA Palomar.
Erin Peavey, AIA, is an Architect and Design Researcher at HKS, holding dual degrees in architecture and psychology. She has been named a Rising Star by Healthcare Design Magazine and Healthcare Design's Best Under 40 by the AIA Academy of Architecture for Health Knowledge Community.

BRAIN, MIND, BODY, SPACE: FREDERICK MARKS, AIA

Mr. Marks' presentation addressed the following topics:
- Brain, Mind, and Body
- Space and Aesthetics
- Theory and Evidence
- Moving Forward

Excerpts from the presentation follow:

Brain, Mind, and Body
- Bodily functions such as breathing, digestion, movement and feeling occur because of a connection between the brain and body. It is a mutually supportive relationship.
- The female brain–body connection is dramatically different from its male counterpart and may also be influenced by age, race, and physical or cognitive disabilities.
- The environments within which we live, work, and play are changing our brains and our behavior all the time. While the brain controls our behavior and genes control the blueprint for the design and structure of the brain, the environment can modulate the function of genes and, ultimately, the structure of our brain.

Space and Aesthetics
- A definition of (built) Space varies dependent upon who is defining it.
- "Space" does not become a "Place" until it meets the physical and behavioral needs of people.
- The visual environment has measurable statistics consisting of contrast and spatial frequency. These statistics influence our perception of beauty, or in the words of Vitruvius, ''delight."
- While vision is the most dominant of human senses, we continuously test our surroundings through smell, touch, hearing, and taste.

Theory and Evidence
- "Architectural theory tradition encompasses critical commentary on or explanations of architectural works or styles or movements; instructions … guidelines … musings" (Stanford Encyclopedia of Philosophy); "the realization of architectural objects."
- Interaction with the built environment is a dynamic experience. Most people react viscerally. Nearly all of our decisions, actions, emotions, and behavior happen beyond our conscious awareness.
- Research in neuroscience and much of cognitive science requires translation to be applicable for creative exploratory design thinking.
- There is a growing body of evidence about navigation, sleep, stress, learning, creativity, healing, and longevity with architecture as the independent variable.

Moving Forward
- Consumer wearable technology, along with building sensors, that records and analyzes data such as physiological markers will continue to change the expectations of the lay public.
- Artificial and Virtual Intelligence will have a profound influence on building form and experience.
- The architectural profession has an ethical responsibility, like its current stance on environmental sustainability, to support and apply research related to mental health for all citizens.
- The relationship between the Arts & Sciences has a long tradition. Stronger collaborations are necessary between the A/E profession and brain-mind-body scientists/practitioners to question and resolve challenges related to equity, empathy and inclusivity.

One of the strongest takeaways from Mr. Marks' presentation is the statement that the architectural profession has an ethical responsibility to support and apply research that is related to mental health for all – something for the AIA to consider going forward.

> "**Health is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity.**"

SOCIAL INFRASTRUCTURE: THE CRITICAL ROLE OF OUR PHYSICAL ENVIRONMENT IN LONELINESS AND SOCIAL HEALTH: ERIN PEAVEY, AIA

Ms. Peavey's presentation addressed the following topics:
- Loneliness Epidemic: A Health Imperative
- Built Environment: A Social Determinant of Health
- Power of Third Places: A Framework for Design
- Design Excellence: A Social Health Lens

Excerpts from the presentation follow:

Social health was defined as "how well a person forms and maintains relationships, receives and reciprocates support, and feels connected to others".

Social isolation is "objectively being along, having few relationships, or infrequent social contact".

Loneliness is "subjectively feeling alone, a discrepancy between one's desired level of connection and one's actual level of connection".
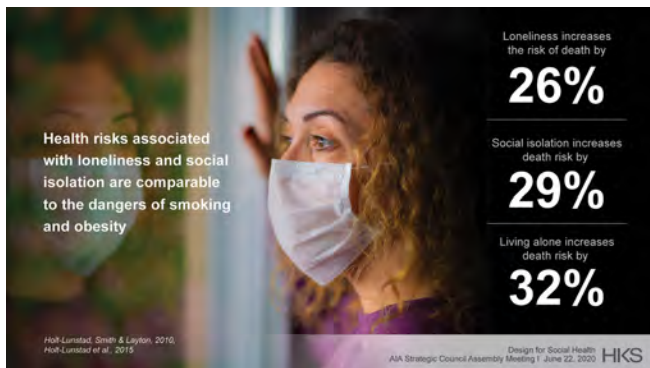
Comparisons of the impacts of loneliness and social isolation are made with the dangers of smoking and obesity.

Loneliness is identified as a national health epidemic.

The built environment was identified as a social determinant of health and the physical environment as the foundation of health.

The design quality of a place – including walkability, sense of place, greenness, street design, and architecture – can increase: social interaction, integration of diverse people, social support, civic pride, social resilience, and social and political involvement.

The power of "third places" (informal and public spaces) can strengthen social capital, foster social connection, boost diversity and well-being. (Think of water coolers, coffee shops, city parks, and street blocks.)

Take-aways for designing for social health include:
- Accessibility: creating places that are safe, inclusive, and walkable
- Activation: programming place from ordinary to extraordinary
- Choice: finding joy in variety, flexibility, and control
- Human Scale: weaving comfort into the DNA of a place
- Nature: moving from gray to green
- Sense of Place: crafting a place as unique as the people who use it

Examination of AIA's Framework for Design Excellence through a social health lens emphasized:
- Designing for Integration
- Designing for Equitable Communities
- Designing for Economy
- Designing for Wellness
- Designing for Change
- Designing for Discovery

Ms. Peavey concluded by unequivocally stating that: "Design is never neutral. It either supports health or hinders it."

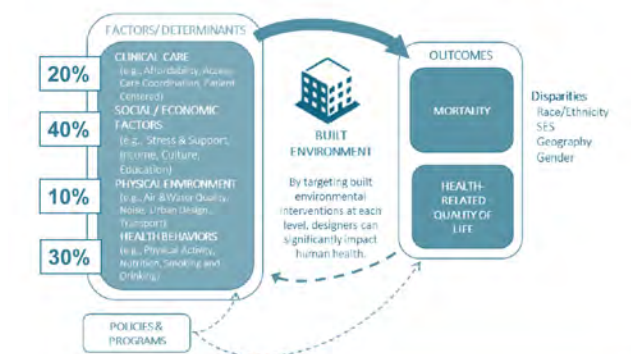**Built Environment as a Social Determinant of Health**

Figure 1: Model of Population Health (Based on Kindig, Asada, & Booske [2008] and Heart Dimensions Report in 2000)

Image Credit: Peavey & Taylor, 2016

4.0 Connection to AIA's Framework for Design Excellence

"We design for health, safety and welfare of the public. To be holistic in our approach, we must consider the mental health of our community as well"
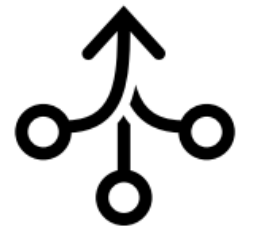
DESIGN FOR INTEGRATION

Design for Integration is a broad topic that connects the conceptual design process with the successful completion of a project by embracing cross-disciplinary (inter/multi/trans) discourse and collaboration. When considering design for mental health and wellbeing, the collaborative process may include additional stakeholders who may provide important insights into how the success of a project might be both defined and accomplished.

Two critical measures stand out when considering design integration for mental health: how the project will engage the senses and connect people to place, and what design strategies can provide multiple benefits across the triple bottom of social, economic, and environmental value. Any successful design must be committed to understanding the needs of stakeholders from varied perspectives, which can only be accomplished through open, honest dialogue and the cultivation of trust between members. Social constructs that are clearly evident to those most impacted by them may be difficult for others to identify, and by empowering participants to shape our expectations the entire process will benefit.

The integrative process can inform the central design concept by allowing diverse stakeholders to shape and to elaborate on how a solution might be considered dignified, restorative, or inspirational. It can also provide a framework to understand cultural and contextual implications. When considering mental health and wellness, there is no universal approach to design that will meet the needs of every potential user, but by implementing an integrated approach to design a broad understanding of design impacts can be leveraged into a solution that provides a multitude of scales in a flexible approach.

Additional thoughts:

- Research exists within the KC's that can help the profession to better understand the impacts of the built environment on mental health and equity.
- Optimizing the environment to reduce stressors (what are the obstacles to mental wellbeing) so as not to overtax the individual's coping mechanisms may uncover additional affordances to enhance mental health and well-being).
- Environment that provides choices, safety, dignity, control, access to natural light and views, thermal comfort, etc.

4.2 Design for Equitable Communities

DESIGN FOR EQUITABLE COMMUNITIES

AIA's Mission (Equity, Diversity, and Inclusion): The American Institute of Architects, as part of the global community, champions equity, diversity, and inclusion within the profession of architecture to create a better environment for all. This subject can not be discussed without the inclusion of **justice**, especially in light of historical grievances and the current political landscape. Achieving the vision has a direct impact on the relevance of our profession and the world's prosperity, health, and future.

Equitable Communities through Lens of Mental Health

Fundamentally, there is inequality across several cohorts and their ability to access those things we collectively consider "good design". That is coupled with the fact that what or who defines good design practices can vary amongst those same diversified cohorts, while the consensus tends to favor a small percentage of society. Regardless, limited access to good design has the corollary to higher incidence of negative mental health within those communities and populations suffering from this inequality.

In our Mental Health discussions, we have focused on how design can have negative and positive effects to mental health for the public at large, rather than individual clinical presentations. From the research to date, it is apparent that the more the community is engaged with strong leadership and amongst each other, the greater the ability for those communities to weather high stress situations, thus reducing the impact to one's mental health.

This is evident in communities with long lifespans, known as Blue Zones, which have emphasized low-stress, enriching diet and commonly, a shared sense of purpose, among other attributes. This helps build mental wellbeing into a community, each successive layer of shared behavior, resources and values lifting up residents as a whole. In the same manner, a series of crises can degrade the mental health of a community. A health crisis, such as a pandemic, leads to an economic crisis. An economic crisis and its subsequent job loss, can exacerbate a homeless crisis. Each crisis layers in stress, anxiety and can lead to mounting mental health challenges. If this domino effect is to be broken in a community, the equitable development of their built environment and distribution of resources needs to be addressed as well. In this manner, design plays a role. For example, the value of a balcony in an apartment, the backyard of a house or the green space in a neighborhood to contribute positively to the mental well-being of a community is immense.

The question becomes, how can design foster community engagement and wellbeing? Some of those design strategies could be topics such as Walkable Communities, Human Scale, Alternative Transportation, public spaces, parks, landscaping, etc. These design strategies are typically integral to what are considered award winning projects whether that be COTE, LEED, AIA, etc. with significant design resources available on these topics.

To this initial point, the glaring gap is that those design strategies are not equally accessible to all. To increase accessibility, we must identify what the current and potential future barriers to accessibility are, then ask how do we remove these barriers? Perhaps more robust zoning or codes, tax incentives, other prescriptive strategies that either require or strongly encourage implementation.

To the second point, if we are going to deal fairly and equally with all concerned, then those voices must be present in the conversation. They must be involved in determining what constitutes negative / positive design strategies. What do they view as barriers to equitable communities and what they view as potential bridges?

4.3 Design for Ecosystems

DESIGN FOR ECOSYSTEM

There are a number of opportunities to expand this Realm with mental health considerations. We sourced a few relevant studies and pulled relevant sections from the **Principles of Biophilic Design.**

Landscaping/Habitat/Biodiversity
Access to nature has been established by peer-reviewed research to provide a stress-relieving effect upon inhabitants of facilities that offer them Brown, Barton Gladwell (2013). Both the physical and visual access to nature *(Lee, Sargent, Williams and Williams 2018),* such as nearby parks, but access to open spaces as well. Outdoor space in general is also stress reducing and shifting behavior *(Gueguen and Stefan 2016),* so long as the outdoor space is of sufficient size and design to be of use to nearby residents. The value of a private balcony, patio or any outdoor space is an opportunity to integrate or enhance natural elements with those of the built environment.

Dark Skies
Light helps regulate the sleep cycle of both humans and animal life. The presence of certain wavelengths and temperature ranges of artificial light can interrupt this sleep cycle, contributing to sleep disorders and other health implications. Consideration of these lighting characteristics should be included as well. *https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2627884/*

Site Acoustics/General Acoustics
Beyond site acoustics, interior sound and acoustic considerations should also be folded into the design process. Auditory distraction has been shown to induce stress, impact sleep and distracting or disrupt concentration and focus. Research shows that exposure to nature sounds, when compared to urban or office noise, accelerates physiological and psychological restoration up to 37% faster after a psychological stressor *(Alvarsson et al., 2010)* and reduces cognitive fatigue and helps motivation *(Jahncke et al., 2011).*

Olfactory Considerations
Studies have also shown that olfactory exposure to herbs and phytoncides (essential oils from trees) have a positive effect on the healing process and human immune function, respectively *(Li et al., 2012; Kim et al., 2007).*

4.4 Design for Water

DESIGN FOR WATER

When designing for water, a distinction must be made between preventative measures (designing against water-related risks) and biophilic measures (designing with water-related attributes). Both are immensely valuable approaches with direct implications on individual and community mental health.

Designing against water-related risks
As illustrated in the Framework, water is a fundamental resource for life and community. Due to climate change, the predictability of water-related crises and availability of potable water is becoming increasingly more strained in many regions around the world. As such, the health implications of these threats are subsequently becoming more critical to address in the built environment through preventative measures. Helen Louise Berry, Kathryn Bowen, and Told Kjellstrom note in their research on "Climate change and mental health: a causal pathways framework" that, "psychological and health outcomes of climate change are less dependent on the form of the impact than on how severe it is, how long the effects last, and the timescale on which it onsets". Thus, preventative measures must recognize two different types of climate risk in the context of mental health: impacts from disasters and impacts from more gradual effects. This ensures that the distinction between direct and indirect mental health risks are understood and can be addressed through more integrated developments.

Water-related disasters, such as hurricanes and floods, occur at specific moments in time and are typically highly visible. This results in direct exposure to trauma and more palpable mental health repercussions. In the US, these types of impacts have been seen most closely tied to hurricanes and floods. With further increases in the severity, frequency, or duration of these types of extreme weather events due to climate change, more people will experience the stress and trauma that comes with these them. In the U.S. Department of Health and Human Services' scientific assessment of "The Impacts of Climate Change on Human Health in the United States", additional mental health problems were found in connection to water-related disasters. A few notable examples are quoted below:

> "Depression and general anxiety are also common consequences of extreme events (such as hurricanes and floods) that involve a loss of life, resources, or social support and social networks or events that involve extensive relocation and life disruption. Long-term anxiety and depression, PTSD, and increased aggression (in children) have been found to be associated with floods. First responders following a disaster also experience increased rates of anxiety and depression. Persons directly affected by a climate- or weather-related disaster are at increased incidence of suicidal thoughts and behaviors. Increases in both suicidal thoughts (from 2.8% to 6.4%) and

actual suicidal plans (from 1.0% to 2.5%) were observed in residents 18 months after Hurricane Katrina. Following Hurricanes Katrina and Rita, a study of internally displaced women living in temporary housing found reported rates of suicide attempt and completion to be 78.6 times and 14.7 times the regional average, respectively. In the six months following 1992's Hurricane Andrew, the rate of homicide-suicides doubled to two per month in Miami-Dade County, where the hurricane hit, compared to an average of one per month during the prior five-year period that did not include hurricane activity of the same scale."

With gradual effects, however, the risk factors build up over time and are typically more difficult to observe. Some examples of climate-related gradual effects on water include sea level rise and decreased availability of freshwater. Long-term droughts, in particular, have been shown to have a substantial indirect impact on mental health, due to their impact on food and water supplies. The strain on these additional resources that results from a lack of water availability devastates the economic and mental well-being of land-based workers. Research indicates an evident relationship between increased rates of farmer suicides as a result of droughts. This trend can be seen in Australia as well as India, among other geographic locations. Additionally, the crop failures that result from unexpected droughts cause farmers to experience increased levels of economic hardship which further exacerbate the rate of suicide attempts in this type of community.

In their article on "Climate change and mental health: risks, impacts, and priority actions," Katie Hayes, G. Blashki, J. Wiseman, S. Burke, and L. Reifels highlight that, "long-term drought has also been increasingly linked to conflict and forced migration, which can influence psychosocial outcomes like the propensity for stress, PTSD, anxiety, and trauma. Pervasive ecological degradation, poor policy response to water and food insecurity, and ongoing tensions between rural and urban community members, have arguably all contributed to civil unrest and ongoing conflict in Syria".

Gradual effects in relation to man-made crises must also be taken into account, such as those tied to the degradation of water infrastructure. Long-term mental health complications have been shown in relation to infrastructure crises in many cities to-date, such as Flint, MI and Montreal, Canada. This is due to the emergence of lead chemicals in the degraded piping, which subsequently pollute the water supply and negatively impact brain development in children. It must also be noted that a dependence on urban infrastructure to mitigate and manage urban stormwater poses additional threats, due to the elevated rainfall rates imposed by climate change. It is imperative that the Framework for Design Excellence stresses the mental health benefits of deploying ecological solutions to aid in managing urban water issues.

Designing with water-related attributes

As it currently exists, the Design for Water realm in the Framework for Design Excellence notably does not address the positive ramifications of incorporating water into the built environment. As a biophilic design tool, research indicates that the mere presence of water evokes positive emotional responses. Additionally, research on visual presence for environments containing water elements suggests that exposure to water features results in reduced stress, increased feelings of tranquility, and lower heart rate and blood pressure(Alvarsson, Wiens, & Nilsson, 2010; Pheasant, Fisher, Watts et al., 2010; Biederman & Vessel, 2006). Water features also provide fluctuating visual stimuli that has been shown to improve concentration and memory restoration (Alvarsson et al., 2010; Biederman & Vessel, 2006); and by stimulating multiple senses simultaneously, water can also enhance perception and psychological and physiological responsiveness (Alvarsson et al., 2010; Hunter et al., 2010). Finally, auditory access to water, as well as perceived or potential tactile access, reportedly reduces stress (Alvarsson et al., 2010; Pheasant et al., 2010).

4.5 Design for Energy

DESIGN FOR ENERGY

AIA's Framework for Design Excellence highlights the importance of designing for energy. As noted on AIA's website, *"Good design reduces energy use and eliminates dependence on fossil fuels while improving building performance, function, comfort, and enjoyment."* Emphasis is placed on passive design strategies, exceeding building code efficiency standards, net zero energy and carbon goals, renewable energy sources, and continuous performance improvements over the lifetime of a building.

Literature reviews reveal little direct connection between the ultimate goals of energy-efficiency and clean energy sourcing with mental health for an individual or society. That said, some connections can be inferred. If a person or community live nearby to fossil fuel extraction sites (such as coal strip mining), industrial processes have been shown to be detrimental to the physical health of these communities. This can come in the form of air and water pollution, loss of natural resources, and degradation of the regional landscape. Each of these can negatively impact mental health. The European Union's (EU) series of ExternE (External Costs to Society) projects is a well-known effort to quantify environmental and health damages due to electricity production. (Wiley InterScience) In the Packard Foundation's "Building for Sustainability", Jonathon Levy's research is referenced and includes a survey of costs to society for several air pollutants, done by several utilities and government research entities. Part of these externalized costs include health care, which may or may not have included impacts on mental health. This inquiry would benefit from further literature review and/or research.

Similarly, lack of access to affordable energy can cause stress on individuals and families that may need to choose between putting food on the table and being comfortable in hot and cold seasons. This stress contributes to the mental health of those individuals and whole communities.

Again, further literature review and research is needed.

Existing literature that was reviewed for this Design for Energy section include:

"Energy + The Challenge of Sustainability" – WEA (Jan 2000) (506 pgs)

"Building for Sustainability: Six Scenarios for The David and Lucile Packard Foundation – Packard Foundation" (Oct 2002)

"Photovoltaics Energy Payback Times + GHG Emissions + External Costs" – Wiley InterScience (Jan 2006)

"Hope Despair + Transformation – Climate Change + Promotion Of Mental Health + Wellbeing" – IJMHS (Sep 2008)

"The Built Environment + Climate Change + Health Opportunities for Co-Benefits" – ScienceDirect (Nov 2008)

"Climate Change + Human Health" – NCBI (Jan 2009)
"The Impact of Climate Change on Mental Health (but will mental health be discussed in Copenhagen?)" – CambridgeCore (Feb 2010)

"The Impacts of Dietary Change on GHG Emissions + Land Use + Water Use + Health" – PLOSOne (Nov 2016)

4.6 Design for Well-Being

DESIGN FOR WELL-BEING

We are learning that architecture plays a fundamental role in providing access to wellness attributes or amenities. We are learning that safe spaces, environments free from stress or over-stimulation and secure access to core amenities such as food, light and dark, utilities, healthcare, etc., have an impact on not only our physical health but also our mental health and wellness. Additionally, communities with these amenities compared to those without shines a light on architecture and its influence on shaping the equity, diversity and inclusion culture in our communities.

Evidence/Article Database References:

'Architecture for Well-being and Health' by Koen Steemers

- The article approaches positive mental health responses by researching three main categories: 1-spatial relevancy; 2-researched opportunities for architecture; and 3-rules of thumb. The notion of well-being consists of two key elements, feeling good and functioning well. Recent research has demonstrated connections of key physical design characteristics with the Five Ways to Well-Being (Connect, Keep Active, Take Notice, Keep Learning and Give), which have been associated with positive mental health.
- The relationship between architecture and health has historically received little attention. Science of "well-being" is a relatively recent area of inquiry and deserves our attention. Architect and Mental Health would be better served if defined as the study of well-being emphasising the behaviours that support a 'flourishing' population rather than focusing on ill health.
- Potential AIA Initiatives derived from the article include the focus on Indoor quality through sound, temp, light & exterior/community design promoting activity and interaction for well-being.

'Climate Change and Mental Health: Risks, Impacts, and Priority Actions' by Katie Hayes, G. Blashki, J. Wiseman, S. Burke, L. Reifels

- The article provides an overview of the current and projected climate change risks and its impact on mental health. Recommendations are provided as a priority of actions to address the mental health consequences of climate change.
- Mental health refers not just to mental illness, mental problems, and mental disorders, but also includes states of mental wellness, emotional resilience and psycho-social well being.
- Evidence provided include: the World Health Organization (WHO)

estimates an increase of 250,000 excess deaths per year between 2030 and 2050 due to the "well understood impacts of climate change" Impacts include heat-related morbidity and mortality, increases in vector-borne diseases (e.g. den-gue fever, malaria), increased respiratory illness, and morbidity and mortality due to extreme weather events. The article focuses on the lesser-known, and often overlooked, effects of climate change: the risks and impacts to mental health.

- Supportive evidence is also provided in the disproportionate impact on underprivileged communities and mental health (an EDI topic): The first key message from the Lancet's Countdown on Climate Change and Health report emphasizes the disproportionate impact climate change has on the world's most marginalized people and the consequential impacts this has on these populations if social and environmental justice concerns are not addressed. Watts et al. state: "By undermining the social and environmental determinants that under-pin good health, climate change exacerbates social, economic, and demographic inequalities, with the impacts eventually felt by all populations" Those who are at greatest risk to the effects of climate change are those who are most marginalized based on socially and environmentally mediated factors, such as socioeconomic status, culture, gender, race, employment, and education. Marginalized groups who tend to be the most affected by the mental and physical health implications of climate change are: Indigenous peoples, children, seniors, women, people with low-socioeconomic status, outdoor laborers, racialized people, immigrants, and people with preexisting health conditions
- Potential AIA initiatives include: Equity in design to combat the risks imposed on marginalized groups whose mental health and well-being are impacted by climate change

'UMN Well-Being Summary' By Minnesota Climate & Health Program

- The article provides focused research on climate and health impacts as a study for Minnesota. Climate change is significantly impacting human well being, a more intangible and hard to measure consequence. "Solastalgia is characterized by a sense of distress or emotional pain felt when someone's homeland is diminished or destroyed."
- Three "Step Actions" are provided in the article to protect one's health and environment: 1-use less energy; 2-burn less gas; and 3-lower your "food print". The article also lists clear outcomes as a result of climate change on mental health which include: distress, relationship strain, alcohol and substance abuse, post-traumatic stress disorder.
- AIA initiatives could include the following Steps : 1-Integrate mental health and wellbeing considerations; 2-Learn more to help more; 3-Strengthen networks and build community; 4-Communicate with intention; 5-Support recovery and resilience; 6-Focus on equity.

4.7 Design for Discovery

DESIGN FOR DISCOVERY

When thinking about the design of workplaces or other facility uses, it is important to simultaneously account for building performance and human performance through metrics and methodologies that go beyond traditional architectural practice. By including mental health as a measurement in doing both pre and post occupancy evaluation, critical links are established between design elements, occupancy behavior and outcomes. Providing a variety of spaces designed specifically for comfort, safety and wellness is as important and ethically responsible as making buildings sustainable. Ensuring that there are feedback loops between what is programmed, designed, constructed & managed with the people who will occupy these environments offers a continuous course-correction approach to improving delivery.

This realm also introduces the concept of "discovery that influences behavior." Behavior is only used in reference to occupant engagement with building systems and operations, despite the inherent psychological and psychosocial behavioral implications of the built environment. Emotional response is a standard attribute of occupant experience, and even negative emotions are a necessary part of a fulfilling life. In the extreme case, however, spaces that are not designed with human behavioral response in mind can interfere with individuals' ability to think rationally, plan their behavior, and consider alternative actions. For example, experiencing difficulty navigating through a space or understanding directionality can be a source of trauma, and this can cause disabling emotions.

Innovative and interdisciplinary paths of discovery emerge when neurological stimuli are acknowledged as a metric of space. By applying new modes of thinking to the way in which architects curate the physical environment, sensory experience can be maximized to enable more diverse physical spaces and subsequently more diverse cultures. Biophilic design principles, for example, incorporate biology and ecology strategically in order to allow architecture to mimic elements of nature, human behavior, and circadian rhythms. This in turn results in environments that better align with the cognitive complexity present in an organization, setting, or community.

Looking forward, in order for architecture to truly enable discovery, a discipline of evidence-based research and inter-disciplinary knowledge-sharing must be applied to the planning and programming of spaces in an ongoing fashion. Opportunities to leverage emergent literature and scientific understanding must not be constrained to the design process; rather, they must be utilized throughout the lifetime of a building by inventing in and deploying tools that allow for continuous evaluation and adaptation as new discoveries are made.

4.8 Other Framework Principles (2021)

DESIGN FOR ECONOMY

If we advance onto another year, these additional Realms will be a focus of the Incubator's work.

Economy, Change and Resources will be updated with additional opportunities to incorporate mental health considerations.

As well, the Realms we've touched on will be continually examined and amended as the Incubator continues it's explorations.

DESIGN FOR CHANGE

DESIGN FOR RESOURCES

"When considering mental health and wellness, there is no universal approach to design that will meet the needs of every potential user, but an integrated approach can be leveraged to provide a flexible approach."

5.0   Roundtables with AIA Knowledge Communities

After engaging with a number of KC's throughout the year, notably the Academy of Architecture for Justice (AAJ) and the Academy for Architecture for Health (AAH), the virtual Knowledge Leadership Assembly provided an opportunity to reach each of the 21 Knowledge Communities. Those interested in the topic of mental health and architecture were offered to participate in a Roundtable on the topic. Over several months of scheduling and follow-up conversations, 6 KC's agreed to participate this fall.

Overall, the tone of the KC Roundtables was very encouraging. Each representative or representatives was extremely interested in the topic and sought ways to collaborate. Some had extensive knowledge with mental health considerations in their practice areas, while others were open to exploring it with their respective membership. Few if any had developed much in the way of programming or events beyond episodic efforts.

Having engaged with the Incubator for the past year, both AAJ and AAH had extensive examples to offer and members specialized in mental health design for their respective typologies.

Both the Committee on Architecture for Education (CAE) and the Housing and Community Development (HCD) Knowledge Community have been socializing this topic among their members. CAE and HCD are interested in being part of developing foundational knowledge on mental health design considerations for all areas of practice. CAE has been discussing this issue as they contend with the reality of safe schools balanced with learning environments to educate the whole person. HCD, with the momentum of the KC Roundtable, is forming a group dedicated to Mental Health and Housing Design, and the Incubator is looking to appoint a liaison to their ranks.

The Committee on Design has been an ongoing participant in the Roundtables this fall. They have expressed interest in updating the Framework for Design Excellence with mental health design considerations. As well, they are open to updating design award criteria to champion these and other social issues and how they are expressed in the designs our profession celebrates.

5.2 Select Input from Knowledge Communities

Education
CAE is interested in this topic and tying it into wellbeing/wellness that is part of the WELL system. After Columbine and Sandy Hook, active shooter and safety have become dominant themes but many students' mental well being needs to be addressed holistically to help their learning and growth as a person. Schools are transforming into community support hubs and providing additional services, and thus demands for greater integration of disciplines and practices than ever before.

Housing
HCD expressed interested in connecting other programs and wrap around services goes beyond the building limits to include urban and landscape design, the value of community being integrated into the housing of every type. They also wish to explore a variety of stakeholders in communities, from top down to bottom up organizations such as mayors, policymakers and grassroots organizers. HCD is also forming a mental health design working group internally to align with our efforts.

Healthcare
For AAH members, acute psychiatric facilities have long been for the most severe cases, and they are looking to address these issues before they get to our buildings. Addressing co-morbidity patients (mental health+substance use, etc) in a holistic way that hasn't been considered or even possible from a treatment standpoint. How these facilities are weaved into any community has been an issue and one that needs to be addressed along with the stigma of mental health.

Design
While we look at awards and how we celebrate design, this is a lens that has not been considered consistently and if we use the Framework to better inform how we honor projects of note, we can look beyond constraints and see these opportunities to design for rather than against. This includes folding in mental health considerations and other social justice movements.

COTE
The environmental impact on mental health has been researched to some degree, and the value of quality of spaces on productivity, resilience and mental wellbeing have been brought into focus due to the pandemic. The intersectionality of these different practices areas is an opportunity to fold in this knowledge further.

Justice
Often our facilities house individuals contending with mental health issues and while we know that how our spaces have been designed in the past (solitary confinement, etc) would exacerbate these issues, we are striving to address the prison pipeline. We should be focusing on the effects of spaces on mental well being and not the disorders themselves. We are all cognizant that we are not health professionals but architects looking to develop better design strategies for all levels of society. This includes addressing the design of the
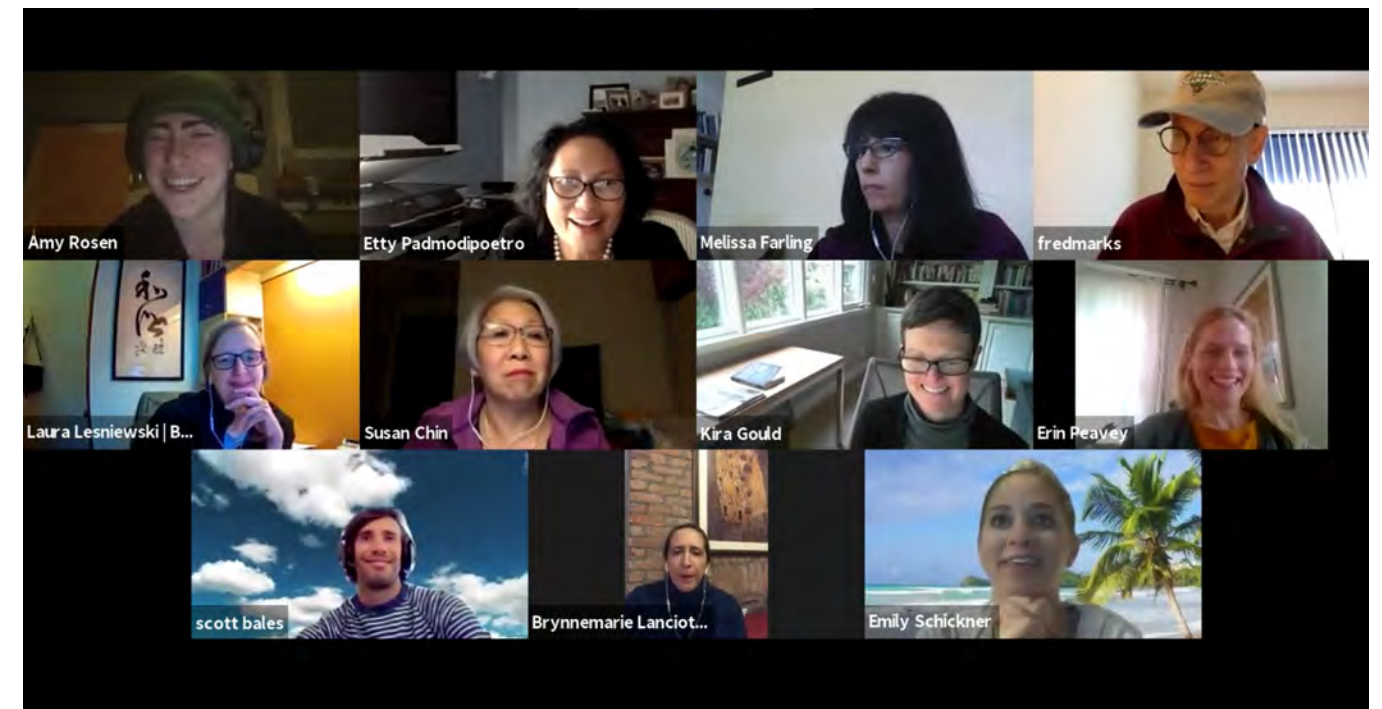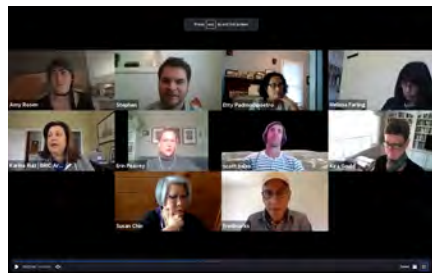
"The architecture profession
has an ethical
responsibility, like
its current stance
on environmental
sustainability, to
support and apply
research related to
the mental health
impacts of design
for all citizens."

The second Round Table left us with two possible lanes to explore: One to identify challenges to good mental health and continuing to prioritize those obstacles as we broaden our perspective on the topic. And secondly, to outline what goals we want to produce, enable or create to solve for the obstacles we identify. As we re-prioritize those obstacles, we'll refine which solutions are most applicable and relevant as part of a positive feedback loop. This will allow us to create subgroups to align with the passion and interest of our participants. This feedback loop will allow us to further frame and target issues as they become fertile breeding grounds for new ideas and solutions. As the Roundtables look to grow in diversity and scale, this will become our mechanism for strategic change within the Institute and beyond.

This second lane was particular fruitful for engaging outside groups. Groups such as grassroots housing organizers to mayoral leaders, policymakers and community leaders of all levels. For example, this allows KC's such HCD to rally around a specific subtopic with mental health design and housing and gain perspective and momentum for tackling these challenges. Other possible avenues that emerged in our first two Roundtables include examining the Equitable Guide for Practice through a mental health lens, community workshops on mental health design and justice, policies on the legal definitions and liabilities in the profession with regard to mental health of occupants.

We look forward to continuing this dialogue, sharing knowledge and insights and bridging silos through additional KC Roundtables in the coming year. As the group becomes more familiar and organized, we'll continue to expand our reach to hopefully include outside organizations with a stake in the topic.

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A.2 Presentation: Frederick Marks

Mental Health and Architecture Incubator Group
AIA National Strategic Council
The American Institute of Architects

Strategic Council Assembly
Virtual Meeting, June 25, 2020

Guest Speaker: Frederick Marks, AIA
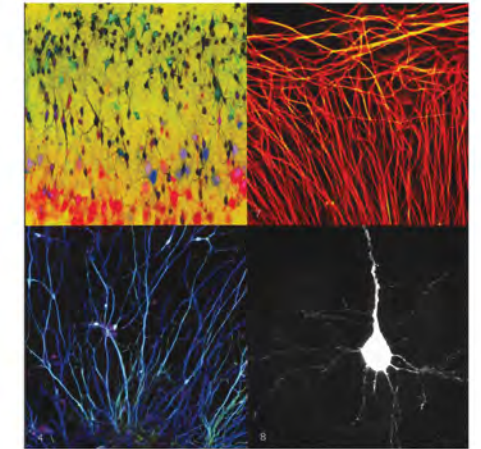Salk Institute for Biological Studies

Stephen Sonheim lyrics 1957 *America*

Skyscrapers bloom in America
Cadillacs zoom in America
Industry boom in America
Twelve in a room in America

Brain, Mind & Body

- The functions we take for granted such as breathing, digestion, movement and feeling occur because of a connection between the brain and body. It is a **mutually supportive relationship**. There are neural pathways made up of neurotransmitters, hormones and chemicals. The immune system, for example, is intertwined with the nervous and endocrine systems.

- The female brain-body connection is dramatically different from its male counterpart. Besides gender, this connection may be influenced by age, race, and physical or cognitive disabilities.

- The environments we live, work and play in are changing our brains and our behavior all the time. While the brain controls our behavior and genes control the blueprint for the design and structure of the brain, **the environment can modulate the function of genes and, ultimately, the structure of our brain**. Neuroplasticity indicates that with stimulation, there may be rewiring and new cell formation (with enriched environments).

New York City Lower East Side, c. 1850

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Space & Aesthetics

- A definition of (built) **Space** varies dependent upon who is defining it. The architect may see it as *manifest image* that includes **intentions, thoughts and appearances**. A *scientific image* describes the world in terms of theoretical physical sciences including the **principles of Gestalt** and phenomenology.

- Space is does not become a **Place** until it meets the physical and behavioral needs of people. Successful built and natural environments relate to **narratives** about social and architectural history, collective memory and individual perception.

- The visual environment has **measurable statistics** consisting of contrast and spatial frequency. These statistics influence our perception of beauty, or in the words of Vitruvius, "delight." Levels of familiarity and novelty come into play.

- While vision is the most dominant of human senses, we continuously test our surroundings through smell, touch, hearing, and taste. Additional stimulation is activated through our vestibular and proprioceptive systems.

Seagram Building 1958 NYC Mies van der Rohe

Paley (vest pocket) Park" 1967 NYC Robert Zion

THE NEW YORKER

touch
smell
taste
hearing
coordination
vision
spatial aware-ness
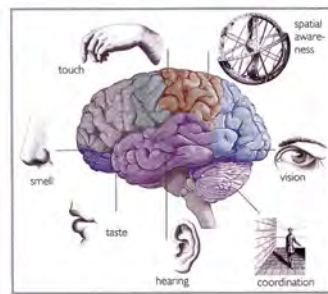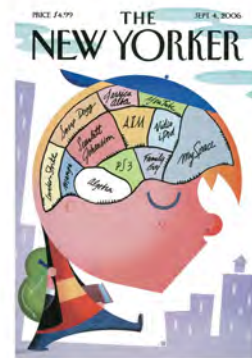
Mapping The Mind Rita Carter U Cal. Press 1999

Brain, Mind & Body

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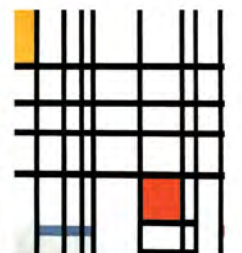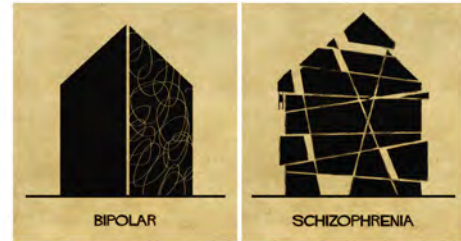
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BIPOLAR   SCHIZOPHRENIA

House VI 1975 Connecticut Peter Eisenman

Tilted Arc Federal Plaza NYC removed 1981 Richard Serra

Pruitt-Igoe removed 1972 St. Louis Minoru Yamasaki

Space & Aesthetics

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- Space is does not become a **Place** until it meets the physical and behavioral needs of people. Successful built and natural environments relate to narratives about social and architectural history, collective memory and individual perception.

- The visual environment has measurable statistics consisting of contrast and spatial frequency. These statistics influence our perception of beauty, or in the words of Vitruvius, "delight." Levels of **familiarity** and **novelty** come into play.

- While vision is the most dominant of human senses, we continuously test our surroundings through **smell, touch, hearing**, and **taste**. Additional stimulation is activated through our **vestibular** and **proprioceptive** systems.

Thermal Baths 1996 Vals Switzerland Peter Zumthor

Theory vs. Evidence

- "Architectural theory tradition encompasses critical commentary on or explanations of architectural works or **styles** or **movements**; instructions ... guidelines ... musings" (Stanford Encyclopedia of Philosophy); "the **realization of architectural objects**."

- The interaction with the built environment is a **dynamic experience**. Most people react viscerally. Nearly all of our decisions, actions, emotions, and behavior happen **beyond our conscious awareness**. An evidence-based approach to understanding the cause and effect of stimuli needs **protocol**.

- Research in neuroscience and much of cognitive science requires translation to be applicable for creative exploratory design thinking.

- There is a growing body of evidence about navigation, sleep, stress, learning, creativity, healing and longevity with architecture as the independent variable.

Rococo   International style

artist Saul Steinberg

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Moving Forward

- Consumer wearable technology, along with building sensors, that records and analyzes data such as physiological markers will continue to change the expectations of the lay public.

- Artificial and Virtual Intelligence will have a profound influence on building form and experience.

- The architectural profession has an ethical responsibility, like its current stance on environmental sustainability, to support and apply research related to mental health for all citizens.

- The relationship between the Arts & Sciences has a long tradition. Stronger collaborations are necessary between the A/E profession and brain-mind-body scientists/practitioners to question and resolve challenges related to equity, empathy and inclusivity.

The Digital House Hariri & Hariri

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Lovell Health House 1929 Los Angeles Richard Neutra
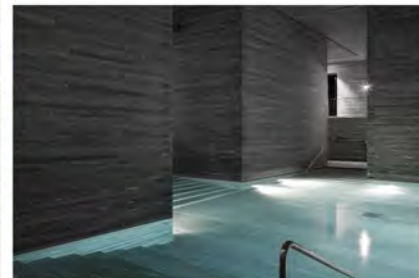
Tuberculosis Sanatorium 1932 Finland Alvar Aalto

A.3 Presentation: Erin Peavey

Determinants of Social Connection

Determinants of Social Connection

Design qualities of a place— walkability, sense of place, greenness, street design, architecture—can increase
- social interaction,
- the integration of diverse people,
- social support,
- civic pride,
- social resilience,
- social and political involvement.

Power of Third Places

Third Places –
places unlike the private, informal home and the public, formal workplace, being both informal and public (Oldenburg, 1999).

Strengthen social capital, foster social connection, boost diversity and wellbeing.

Serve as "enabling places".

Match social support deficit elsewhere.

All scales and places: water coolers, coffee shops, city parks and street blocks.
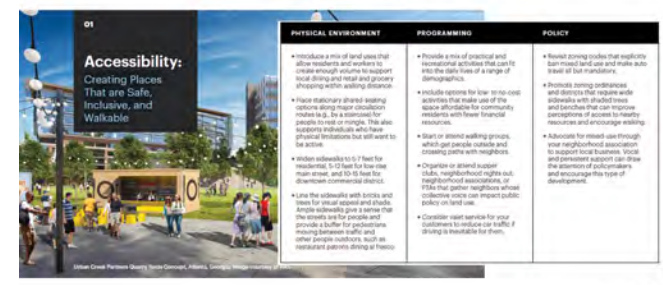
Take-Aways for Designing for Social Health
Before the Coronavirus

Take-Aways for Designing for Social Health

Take-Aways for Designing for Social Health
After the Coronavirus

Accessibility

Accessibility:
Creating Places That are Safe, Inclusive, and Walkable

People in walkable neighborhoods report being more likely to trust others, participate politically, know their neighbors, and be socially engaged..

Accessibility

Accessibility

Six Design Guidelines for Creating Third Places that Support Social Health
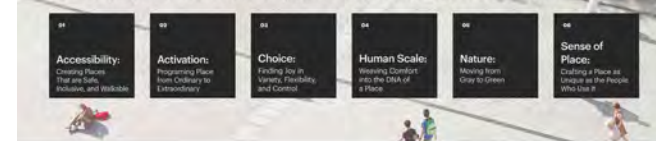
Design is Never Neutral.

It either supports health or hinders it.

A.4 Presentation: Strategic Council Assembly on EDI+B

THE RURAL AGENDA

THE CHALLENGE

Rural architectural practice and communities suffer two major problems since 2009: ISOLATION and LACK OF ACCESS to resources. As an organizational stakeholder in the New Urban Agenda, the Institute now has an opportunity to develop the symbiotic complimentary Agenda for the equitable and sustainable practice of architecture affecting 19.3% of our population and 95% of the U.S. landmass.

Describe the need or challenge faced by the architecture profession that we are trying to address.

What evidence exists to confirm this challenge?

THE PROJECT GOAL & ANTICIPATED IMPACT

Our goal is to create a series of objectives that align with the AIA Strategic Plan Climate Action and Equity goals to EMPOWER architects working and teaching in rural settings and demonstrate how the AIA can align with new specific organizations and schools of architecture for equitable futures.

Describe the high-level project objective or goal – what will we produce that addresses the stated challenge?

ALIGNMENT WITH THE BIG MOVE

Energy: As cities grow, the rural landscape is becoming the locus of alternative energy production. **Economy:** Rural and urban areas directly affect each other economically through a symbiotic relationship of supply/demand. **Equity:** Rural landscapes are challenged by geographic isolation, lack of representation and diminishing resources. Focusing on these challenges will help the AIA align its priorities and resources by creating a new "lens" for Climate Action and Equity in the profession.

Highlight the Strategic Objectives that this project will address.

SCOPE OF ACTIVITIES AND KEY MILESTONE DATES

- 1. Creating the positions of a "New Rural Agenda".
  2. Define more specifically the role of the architect, particularly practicing in "rural" areas.
  3. Delineating the needs within architectural education to support these responses above.
  4. Promote the incentives for architects to practice serving "rural" areas.
  5. Create a central "place" or clearinghouse identifying funding sources.
- Research subcommittees formed
  - Quantitative Research: Benchmarking data
    - Defining 'rural' – *COMPLETED*
    - Knowledge communities – COTE, PMKC, PD, HCD, RUDC, and key staff
    - Academic design programs with emphasis on rural. Outreach map and draft communications strategy – *COMPLETED*
  - Establish cache of relevant data and research by other organizations
  - Qualitative Research: Member-engagement workshops across the country
    - Workshops –
      - Identification of essential challenges of rural practitioners and communities through member engagement – SWOT workshops
- Next Steps
  - Hosting Rural Online Workshops in Q1-Q3, 2021
  - Forging partnerships with schools of architecture with rural programs
  - Forging partnerships with KCs
  - Engage and leverage the interest of our non-SC volunteers
    - Learn how to leverage partnerships with Rural advocacy programs – Citizen's Institute on Rural Design (CIRD), Housing Assistance Council, National Endowment for the Arts, National Endowment for the Humanities, USDA, Rural Sociological Society etc. see attacments

Describe the general scope of the project in terms of key activities, outputs, and anticipated dates.

SC PROJECT CONVENER & MEMBERS

2020 Co-conveners:
Terry Welker, FAIA + Patri Acevedo, AIA
Members: Belinda Stewart, FAIA, Jeffrey Stivers, AIA Nate Hudson, AIA, Jody Andres, AIA, Ross Miller, AIA, Walton Teague, FAIA, Kevin Alford, AIA, Kirk Narburgh, AIA (proposed new co-convener w/ Terry)

TEAM (AIA STAFF, INSTITUTE, MEMBERSHIP)

Sarah Curry, Assoc AIA, Miranda Moen, Assoc. AIA, Ryan Turner AIA ACHA EDAC, Stephanie Howe AIA, Karen Lu AIA NOMA, Rebecca Lewis FAIA, Katie Kangas AIA NCSR YARD, Jacob Mans (UMN), Omar Hakeem (CIRD), Joel Mills (AIA), Erin Simmons (AIA), Marie McCauley

Identify who will be accountable for overseeing project progress and providing status reports.

THE RURAL AGENDA

APPENDIX TO Q4 REPORT

1. Defining the "Rural" in Rural America
2. Rural America at a Glance
3. Three Rural Definitions
4. Frontier and Remote (FAR) Maps
5. Demographics in Rural America
6. Poverty in Rural America
7. Ruralities: The Changing Face of Rural America
8. Rural Equity, Diversity, Inclusion & Belonging Response
9. A Rural Agenda – 9-23-20 Draft
10. Rural Agenda Organizational Scan
11. Schools of Architecture Rural Programs – University Target Map
12. Schools of Architecture Rural Programs -Spreadsheet
13. Workshop Agenda
14. Workshop 1 moment map

Rural America At A Glance
2019 Edition

Overview

Nonmetropolitan (nonmetro) America encompasses a diverse set of counties, from those that are closely tied to metropolitan (metro) areas with relatively large urban populations, to those that are isolated and sparsely populated. About two-thirds of nonmetro residents (30 million people) live in counties that are adjacent to metro areas, and nearly 14 million of them live in counties with an urban population of at least 20,000 people ("more urban" nonmetro counties). Among the one-third of residents in nonmetro areas that live in nonadjacent counties, about 5 million live in more urban counties. The remaining 11 million nonmetro residents live in nonadjacent counties that have fewer than 20,000 urban residents ("less urban," having 2,500 to 19,999 urban residents, or "completely rural," having fewer than 2,500 urban residents).

This report focuses on demographic and socioeconomic trends after the end of the Great Recession in 2009. Varying demographic and socioeconomic trends are evident for different places along the rural-urban continuum. Between 2010 and 2018, population grew in metro counties and in nonmetro areas having more urban population, while population declined in other types of nonmetro counties. Employment grew in all types of counties except for completely rural, nonadjacent counties, but grew more slowly in all types of nonmetro counties than in metro counties. In addition to slower population growth, lower rates of labor force participation in nonmetro areas—due to an older, less educated population that is more likely to be disabled—also contributed to slower employment growth in nonmetro than in metro areas. Poverty rates are highest in the most rural, isolated settings, and the gap between poverty rates in these and other settings has grown. Even so, poverty rates have declined since 2013 in all types of nonmetro counties.

Real personal income per person (PIPP) was significantly higher and grew faster in metro counties than in nonmetro counties during 2010-17. Among nonmetro counties, the levels and changes in PIPP were fairly similar across the rural-urban continuum, although real PIPP declined between 2015 and 2017 in the most rural and remote type of nonmetro counties. Part of the reason for this was the decline in farm income and mining income during the latter part of the study period, since these industries are more prominent in more rural and remote counties. Real PIPP declined in farming-dependent nonmetro counties after 2013, and in mining-dependent nonmetro counties after 2014. Nonmetro recreation counties had the most rapid growth in real PIPP during 2010-17 and the highest level of PIPP after 2013. Other nonmetro county types—manufacturing-dependent, Federal and State Government-dependent, and non-specialized counties—had similarly low levels and slow growth of real PIPP from 2010 to 2017.

Nonmetro America encompasses a diverse set of places

2013 Rural-Urban Continuum Codes

Nonmetro counties:
size of urban population, adjacency

- 20,000 or more urban, adjacent
- 20,000 or more urban, nonadjacent
- 2,500 to 19,999 urban, adjacent
- 2,500 to 19,999 urban, nonadjacent
- < 2,500 urban, adjacent
- < 2,500 urban, nonadjacent

Metro counties:
population size of metro area

- 1 million or more
- 250,000 to 1 million
- Fewer than 250,000
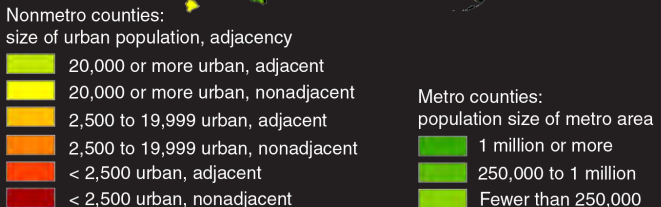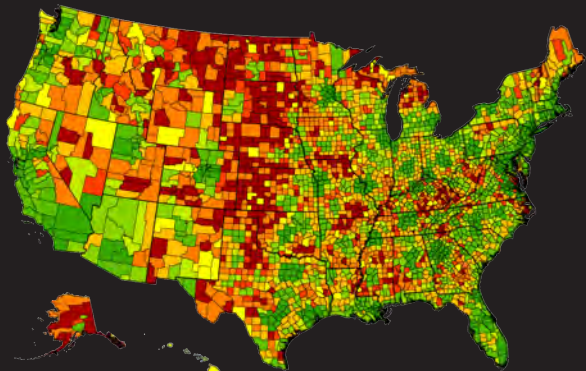
Source: USDA, Economic Research Service using data from the U.S. Census Bureau.

The nonmetro population has declined since 2010 outside areas with larger towns

Nonmetro counties contained 46.1 million residents in July 2018, 14.1 percent of the Nation's population, according to the latest estimates from the U.S. Census Bureau. This compares with 46.3 million residents in July 2010, a 0.4-percent decline during this decade. Renewed population growth since 2016 (nonmetro counties added an estimated 54,000 residents during 2016-18) did not offset the loss of 260,000 people during 2010-16, which was the first-ever period of nonmetro population decline. Overall population loss from 2010 to 2018 resulted from a historically low population gain of 272,000 nonmetro residents from natural change (births-deaths), which did not offset population loss of 478,000 from net outmigration (more people moving out of nonmetro counties than moving in).

Rates of population change varied across the rural-urban continuum during 2010-18, from a nearly 7-percent increase in metro counties to a nearly 2-percent decrease in completely rural, nonadjacent counties. The only nonmetro categories that gained population during this decade were the more urban nonmetro counties, both adjacent and nonadjacent to metro counties. In these counties, high rates of natural increase (compared with other nonmetro counties) more than offset population loss from net outmigration. In both categories of less urban nonmetro counties, natural increase was insufficient to offset population loss from net outmigration. Both natural decrease and net outmigration contributed to population loss in completely rural nonmetro counties. Nonmetro net migration tends to fluctuate with the business cycle and often returns from net outmigration to inmigration during periods of economic recovery. In contrast, natural decrease is more closely linked with long-term declines in fertility rates and population aging, and therefore is less likely in any given county to return to previous levels of natural increase.

The highest rates of population loss from 2010 to 2018 were in isolated, completely rural nonmetro counties
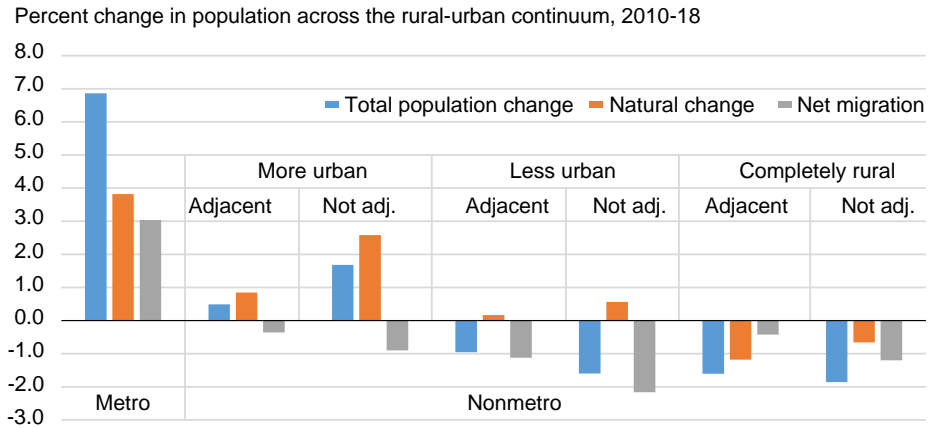
Percent change in population across the rural-urban continuum, 2010-18

Note: Nonmetro adjacent counties are physically adjacent to one or more metro counties and have at least 2 percent of their workers commuting to metro counties. "More urban" nonmetro counties have an urban population of 20,000 to 49,999, "less urban" nonmetro counties have an urban population of 2,500 to 19,999, and "completely rural" nonmetro counties have an urban population of less than 2,500.

Source: USDA, Economic Research Service using data from the U.S. Census Bureau, Population Estimates Program.

Nonmetro employment continues to grow more slowly than metro employment

Employment in both nonmetro and metro counties fell by 5 percent between the end of 2007 and the end of 2009, reflecting the effects of the Great Recession. Between 2010 and 2018, nonmetro employment grew at an average annual rate of 0.4 percent, compared to 1.5 percent per year in metro areas. By the second quarter of 2019, nonmetro employment remained more than 1 percent below the pre-recession level, while metro employment exceeded the pre-recession level by more than 9 percent. This difference in employment growth between metro and nonmetro counties is due in part to slower population growth in nonmetro counties than in metro counties during this period.

Employment growth between 2010 and 2018 has been fastest (totaling more than 4 percent over the 8-year span) in more urban nonmetro counties. Less urban and completely rural nonmetro counties, especially those not adjacent to a metro county, generally saw slower employment growth. In fact, completely rural nonadjacent counties experienced a slight decline (-0.4 percent) in employment between 2010 and 2018.

These differences in employment growth rates across the rural-urban continuum may be related in part to differences in population growth across these settings. The slowest employment growth occurred in the same areas that had negative population growth—i.e., less urban or completely rural nonmetro counties. Employment growth since 2010 was faster than population growth in all groups of counties, indicating that a rising share of the population was employed.

Employment has grown more rapidly in metro than nonmetro areas since the Great Recession

Percent difference from 2007 Q4
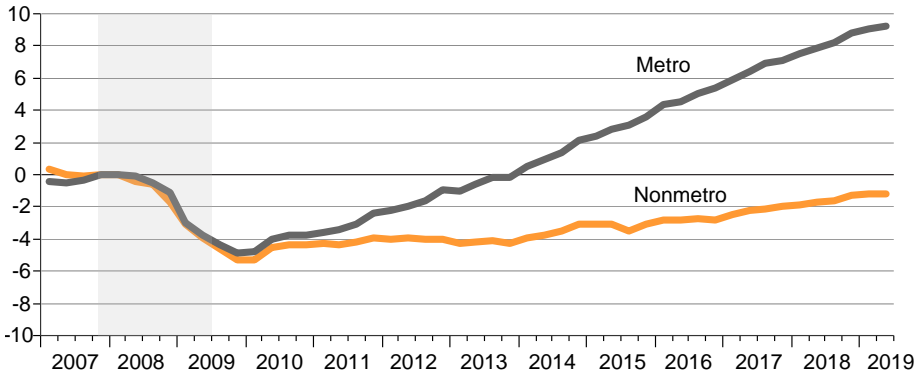
Note: Shaded area indicates Great Recession. Data are seasonally adjusted.

Source: USDA, Economic Research Service using data from the U.S. Bureau of Labor Statistics (BLS), Local Area Unemployment Statistics (LAUS).

Employment has grown more rapidly than population since 2010 across the rural-urban continuum, but has declined in the most isolated rural areas

Percent change in employment and population across rural-urban continuum, 2010-18
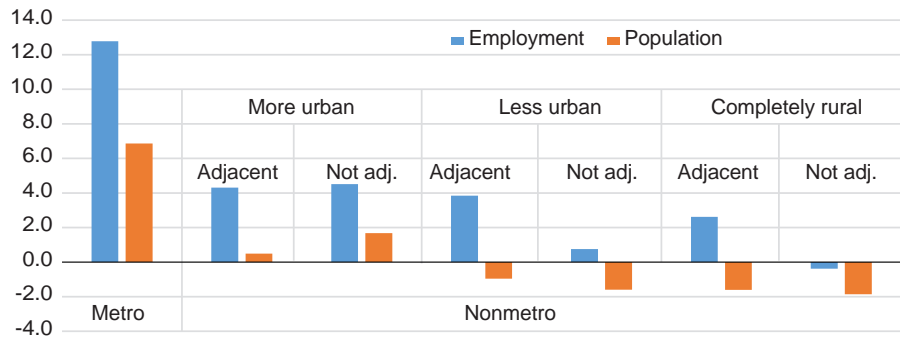
Note: Nonmetro adjacent counties are physically adjacent to one or more metro counties and have at least 2 percent of their workers commuting to metro counties. "More urban" nonmetro counties have an urban population of 20,000 to 49,999, "less urban" nonmetro counties have an urban population of 2,500 to 19,999, and "completely rural" nonmetro counties have an urban population of less than 2,500.

Source: USDA, Economic Research Service using data from the U.S. Bureau of Labor Statistics (BLS), Local Area Unemployment Statistics (LAUS) and the U.S. Census Bureau, Population Estimates Program.

Declining labor force participation in nonmetro areas contributes to slower nonmetro employment growth

Besides population growth, two other factors that affect differences in employment growth between metro and nonmetro areas are changes in labor force participation (the share of the adult population that is in the labor force; i.e., either employed or actively seeking employment) and changes in the demand for labor. Although it is difficult to isolate the independent effect of each of these factors, it is clear that labor force participation rates have been slower to recover in rural than in urban areas. In 2018, labor force participation was only 58 percent in nonmetro counties, compared to 64 percent in metro areas, a larger gap than in 2010. A decomposition analysis reveals that about half of the current participation gap can be explained by the fact that residents of nonmetro areas are older, on average, and more likely to be retired. Another quarter of the gap reflects the fact that, on average, residents of nonmetro counties have slightly lower levels of education. The remaining one-quarter of the participation gap can be explained by the higher rates of disability reported by residents of nonmetro counties.

An older population, lower educational attainment, and a greater share of the population with disability account for lower labor force participation in nonmetro areas

	Metro	Nonmetro	Difference	Amount each factor contributes to participation gap	Share of total gap
LF participation rate, 2018	63.7%	57.6%	6.1%		
Average age	46.1	48.9		3.3%	55%
Median education category	Some college, no degree	High school		1.4%	23%
Share with disability	10.9%	16.5%		1.5%	25%
Other factors				-0.2%	-3%
				6.1%	100%

LF = Labor Force.

Note: The contribution of each factor is assessed using the Oaxaca-Blinder decomposition method. "Other factors" refers to the unexplained component of that method.

Source: USDA, Economic Research Service decomposition analysis of nonmetro-metro differences in labor force participation rate, using data from the U.S. Census Bureau, Current Population Survey.

The decline in the unemployment rate since 2010 has been similar in metro and nonmetro areas – falling in metro areas from an average of 9.7 percent in 2010 to 3.9 percent in 2018, and in nonmetro areas from 9.2 percent to 4.2 percent. While part of this decline is the result of job creation, much is also due to declining labor force participation rates—or a drop in the number of people who have or want a job—especially in nonmetro areas. Declining labor force participation explains two-thirds of the drop in the nonmetro unemployment rate, compared to one-third in metro areas.

Falling labor force participation rates are partly the result of an aging population, but other forces are at work as well. One way to see this is to focus on the participation rate for those between the ages of 25 and 54, the prime working-age population. Studies suggest that, nationally, the remaining shortfall in the prime-age labor force participation rate (compared to pre-recession levels) is driven not by demographic or other structural factors but by the lingering effects of the recession itself, particularly for less educated workers. For metro areas, as of 2018 the prime-age participation rate has recovered to within 0.7 percentage points of its 2007 level. This suggests that continued economic growth could restore the metro prime-age participation rate to its pre-recession levels. Whether this conclusion holds for nonmetro areas is unclear; the prime-age labor force participation rate in nonmetro areas remains 3.0 percentage points below its pre-recession rate.

Labor force participation of the prime working-age population is lower in nonmetro than metro areas, and the gap has grown since the recession

Labor force participation rate, 2007-18, ages 25-54
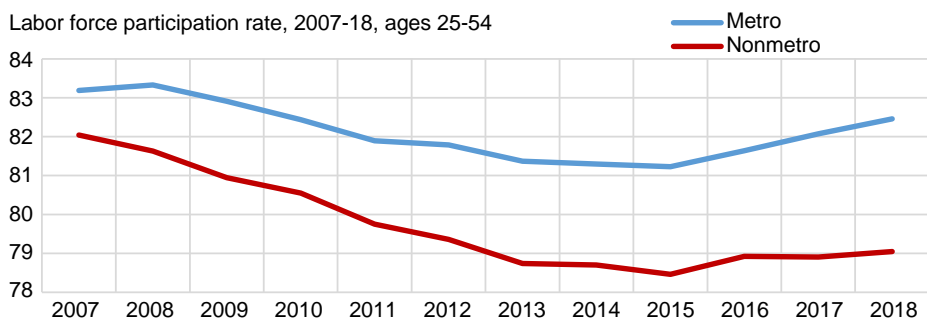
Source: USDA, Economic Research Service analysis of data from U.S. Census Bureau and U.S. Department of Labor, Current Population Survey

Poverty rates have been decreasing since 2013, but are higher in more rural and more isolated nonmetro areas

The official poverty rate has historically been higher for nonmetro than metro residents, and this remains true. From 2010 to 2017 (the most recent estimates available), the nonmetro poverty rate fell from a high of 18.5 percent in 2011 and 2013 to a low of 16.4 percent in 2017. The metro poverty rate fell from a high of 15.5 percent in 2011 and 2012 to a low of 12.9 percent in 2017.

Nonmetro poverty rates and their changes from 2010 to 2017 varied across the rural-urban continuum. In 2017, poverty rates were higher in more rural and remote counties. Poverty rates peaked during 2011-13 and have declined between 1.7 percentage points and 2.3 percentage points across all types of nonmetro counties. The decline in poverty rates was smaller in more remote and rural counties, indicating a growing poverty gap between more remote/rural areas and other nonmetro areas.

Poverty rates are highest in the most isolated and rural nonmetro areas

Nonmetro poverty rates across the rural-urban continuum, 2010-2017 (percent poor)
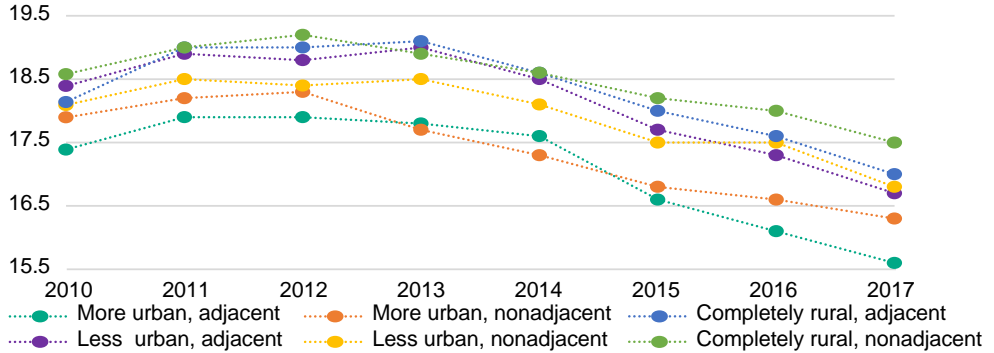
- More urban, adjacent
- Less urban, adjacent
- More urban, nonadjacent
- Less urban, nonadjacent
- Completely rural, adjacent
- Completely rural, nonadjacent

Note: Nonmetro adjacent counties are physically adjacent to one or more metro counties and have at least 2 percent of their workers commuting to metro counties. "More urban" nonmetro counties have an urban population of 20,000 to 49,999, "less urban" nonmetro counties have an urban population of 2,500 to 19,999, and "completely rural" nonmetro counties have an urban population of less than 2,500.

Source: USDA, Economic Research Service using Census Bureau Small Area Income and Poverty Estimates, 2010-2017.

Personal income per person is lower and growing more slowly in nonmetro areas

In 2017, personal income per person (PIPP) was nearly $54,000 in metro areas but less than $40,000 in nonmetro areas. The gap in PIPP between metro and nonmetro areas has grown since 2010, as real (adjusted for inflation) PIPP grew 13.5 percent in metro areas between 2010 and 2017, versus 9.7 percent in nonmetro areas. Among metro areas, PIPP is highest and growing most rapidly in the largest metro areas—those with populations of at least 1 million. Among nonmetro areas, the levels and changes in PIPP have been fairly similar across the rural-urban continuum, although real PIPP declined between 2015 and 2017 in completely rural, nonadjacent counties.

Real personal income per person is higher and growing more rapidly in metro areas than in nonmetro areas

Real personal income per person across the rural-urban continuum (2017 $)
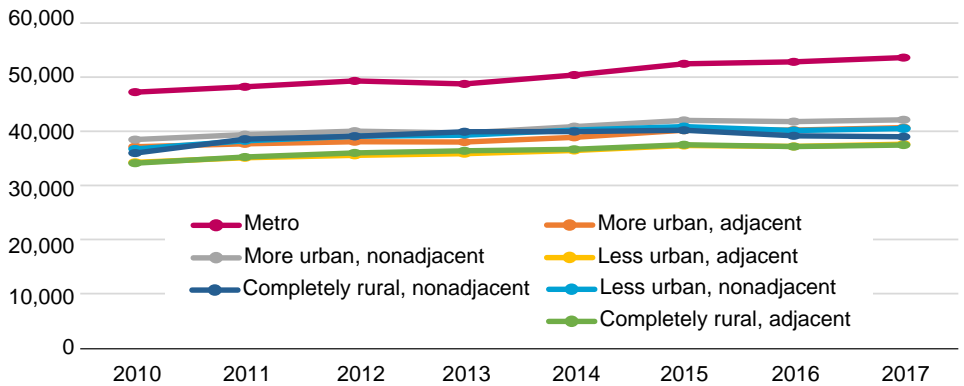
- Metro
- More urban, nonadjacent
- Completely rural, nonadjacent
- More urban, adjacent
- Less urban, adjacent
- Less urban, nonadjacent
- Completely rural, adjacent

Note: Nonmetro adjacent counties are physically adjacent to one or more metro counties and have at least 2 percent of their workers commuting to metro counties. "More urban" nonmetro counties have an urban population of 20,000 to 49,999, "less urban" nonmetro counties have an urban population of 2,500 to 19,999, and "completely rural" nonmetro counties have an urban population of less than 2,500.

Source: USDA, Economic Research Service using data from the U.S. Bureau of Economic Analysis.

Real personal income per person has declined in recent years in farming-dependent and mining-dependent nonmetro counties

One reason that real PIPP has declined in more rural/remote nonmetro counties is that farm income and mining income—which are more important in more rural and remote nonmetro counties—have declined in recent years after peaking earlier in the decade. After net farm income peaked in 2013 at $137 billion, it declined 52 percent by 2016 (to $66 billion) and remained 41 percent below the 2013 level ($81 billion) in 2017, driven by falling agricultural commodity prices. Similarly, mining sector value-added declined 48 percent from a peak of $413

billion in 2014 to a low of $216 billion in 2016, driven largely by declining oil and gas prices, and remained 35 percent below the 2014 level in 2017.

Corresponding to these declines in farming and mining income were declines in personal income per person in farming-dependent and mining-dependent nonmetro counties. In farming-dependent nonmetro counties, real PIPP declined by 5.1 percent between 2013 and 2017; in mining-dependent nonmetro counties, real PIPP declined by 7.8 percent between 2014 and 2017.

In nonmetro counties *other than those dependent on farming or mining*, real PIPP grew slightly between 2010 and 2013, then more rapidly after 2013. The greatest growth over the entire 2010-17 period occurred in recreation counties, which by 2014 (and subsequently) had the highest average PIPP among all economic types of nonmetro counties. The other three nonmetro economic types—manufacturing-dependent, Federal and State Government-dependent, and nonspecialized counties—all experienced similarly low levels of, and slow growth in, real PIPP over the period. Although real PIPP declined after 2013 and 2014 in farming- and mining-dependent counties, PIPP was still higher in these counties in 2017 than in all other economic types, except recreation counties.

In nonmetro areas, real personal income per person grew the most and was highest in 2017 in recreation counties

Nonmetro real personal income per person by county economic type (2017 $)
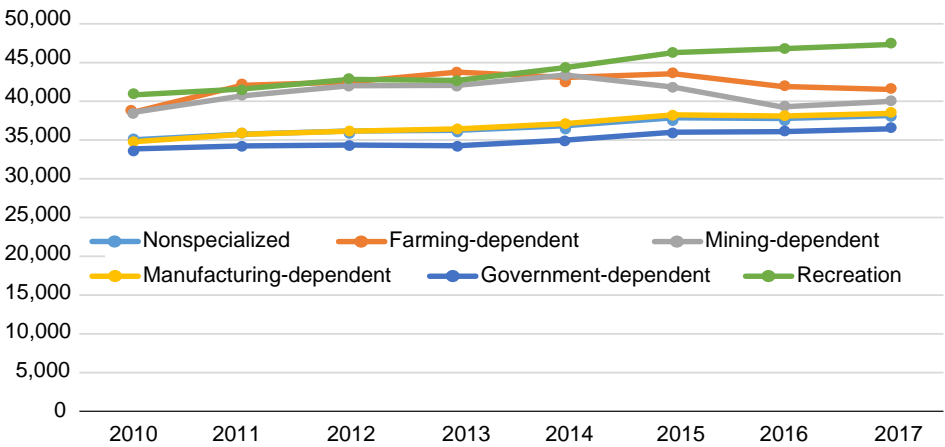
Note: County economic types are classified by USDA, Economic Research Service using U.S. Bureau of Economic Analysis data on the share of employment and earnings by industry (for all types), and U.S. Census Bureau data on the percentage of vacant housing units intended for seasonal or occasional use (for recreation counties only).

Source: USDA, Economic Research Service using data from the U.S. Bureau of Economic Analysis.

Data sources
Population Estimates Program, Census Bureau, U.S. Department of Commerce.
Small Area Income and Poverty Estimates, Census Bureau, U.S. Department of Commerce.
Regional Economic Accounts, Bureau of Economic Analysis, U.S. Department of Commerce.
Local Area Unemployment Statistics, Bureau of Labor Statistics, U.S. Department of Labor.
Current Population Survey, Bureau of Labor Statistics, U.S. Department of Labor.

Definitions and additional information
For more on the 2013 definitions of metropolitan and nonmetropolitan areas as well as related concepts such as urbanized areas and central counties, visit the ERS "What Is Rural?" topic page.

ERS Website and Contact Person
Information on rural America can be found on the ERS website. For more information, contact **John Pender** at **john.pender@usda.gov** or **(202) 694-5568.**

Ohio

Three rural definitions based on Census Places

Rural locations are those outside Census Places with a population...

...greater than or equal to 2,500

	Outside Census Places >= 2,500 people

...greater than or equal to 10,000

	Outside Census Places >= 2,500 people
	Census Places: 2,500 - 9,999

...greater than or equal to 50,000

	Outside Census Places >= 2,500 people
	Census Places: 2,500 - 9,999
	Census Places: 10,000 - 49,999

Urban locations under all three defintions:

	Census Places: >= 50,000 people

For more information on definitions, see documentation
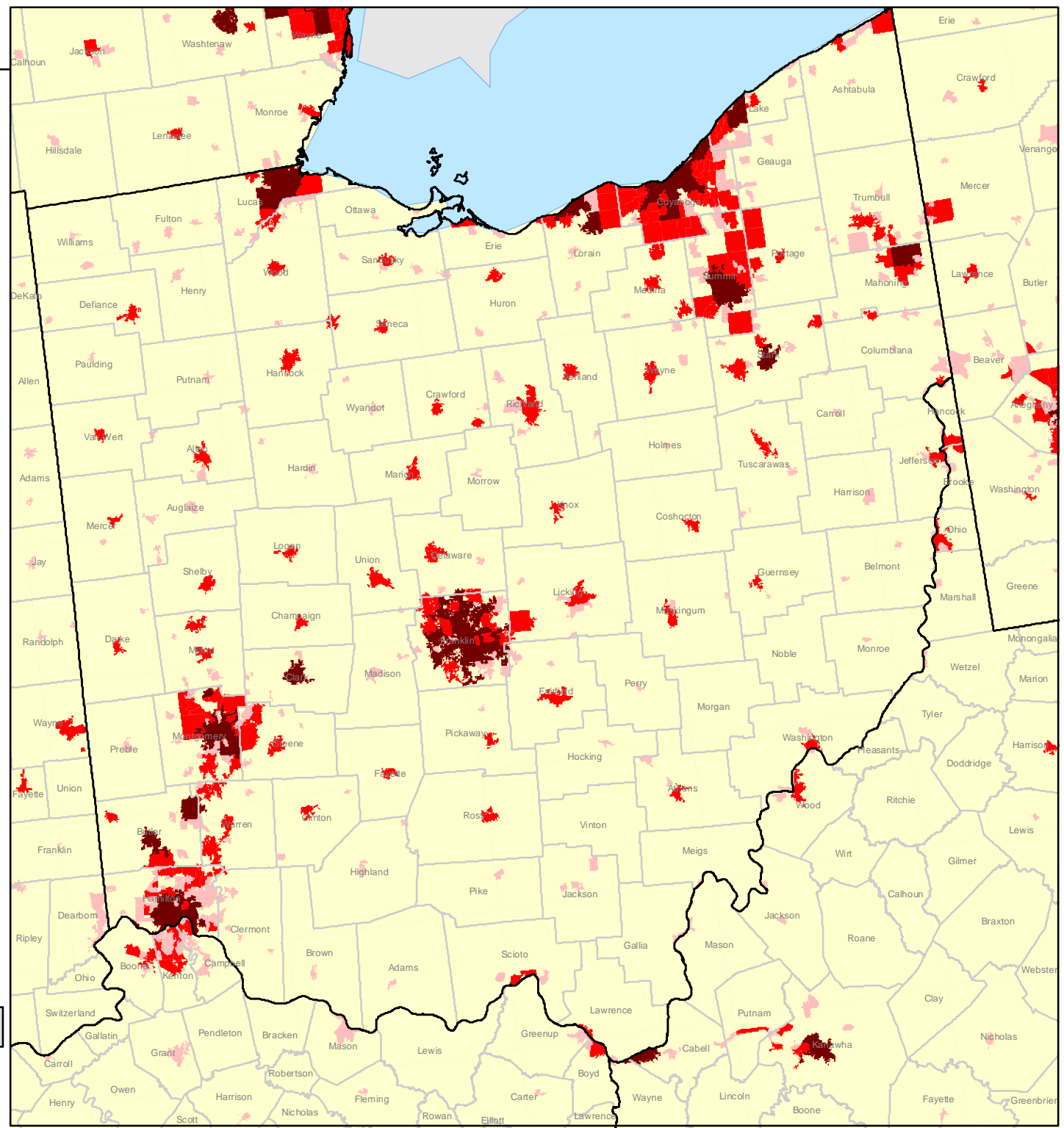
Ohio

Three rural definitions based on Census Urban Areas

Rural locations are those outside Census Urban Areas with a population...

...greater than or equal to 2,500

- Outside Census Urban Areas >= 2,500

...greater than or equal to 10,000

- Outside Census Urban Areas >= 2,500
- Census Urban Areas: 2,500 - 9,999

...greater than or equal to 50,000

- Outside Census Urban Areas >= 2,500
- Census Urban Areas: 2,500 - 9,999
- Census Urban Areas: 10,000 - 49,999

Urban locations under all three definitions:

- Census Urban Areas: >= 50,000

For more information on definitions, see documentation
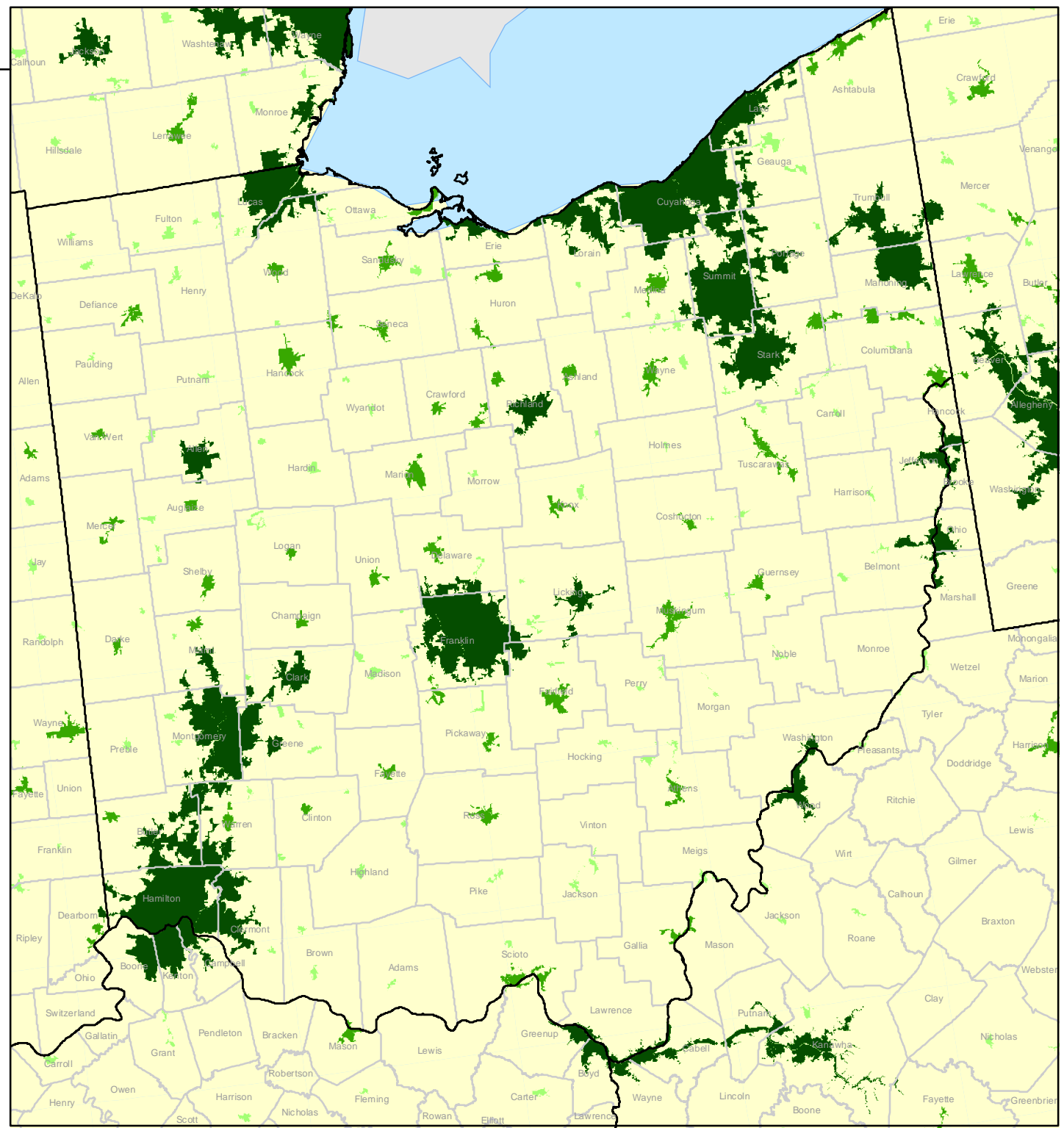
Ohio

Rural definition based
on Office of Management
and Budget (OMB)
metro counties

Legend:
- Rural: Nonmetro county
- Urban: OMB metro county
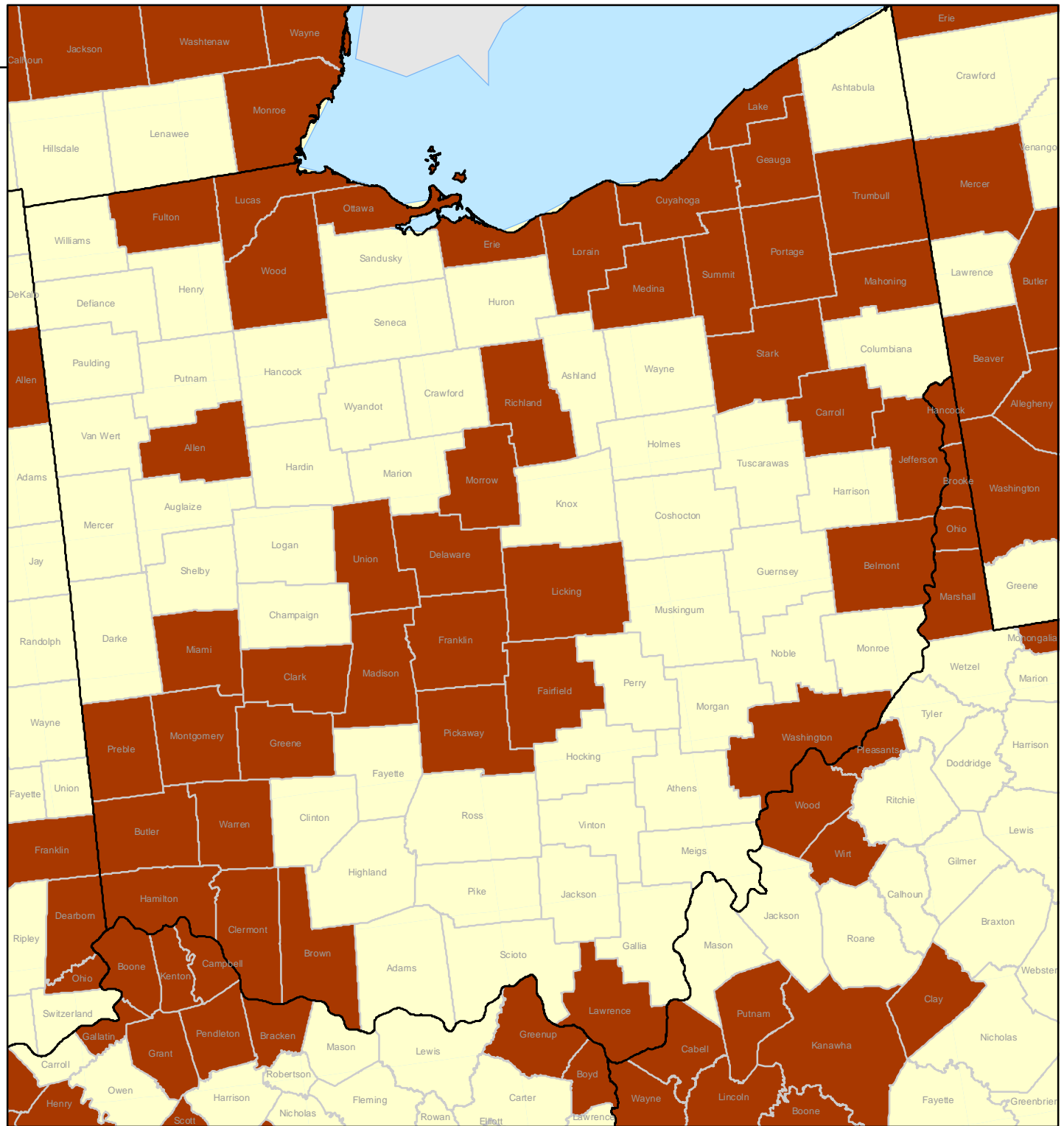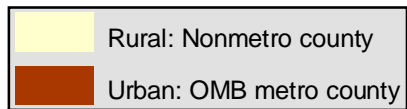
For more information on definitions,
see documentation

Ohio

Rural definition based
on Economic
Research Service
Rural-Urban
Commuting
Areas (RUCA)

Rural: RUCA tracts with codes 4-10
Urban: RUCA tracts with codes 1-3
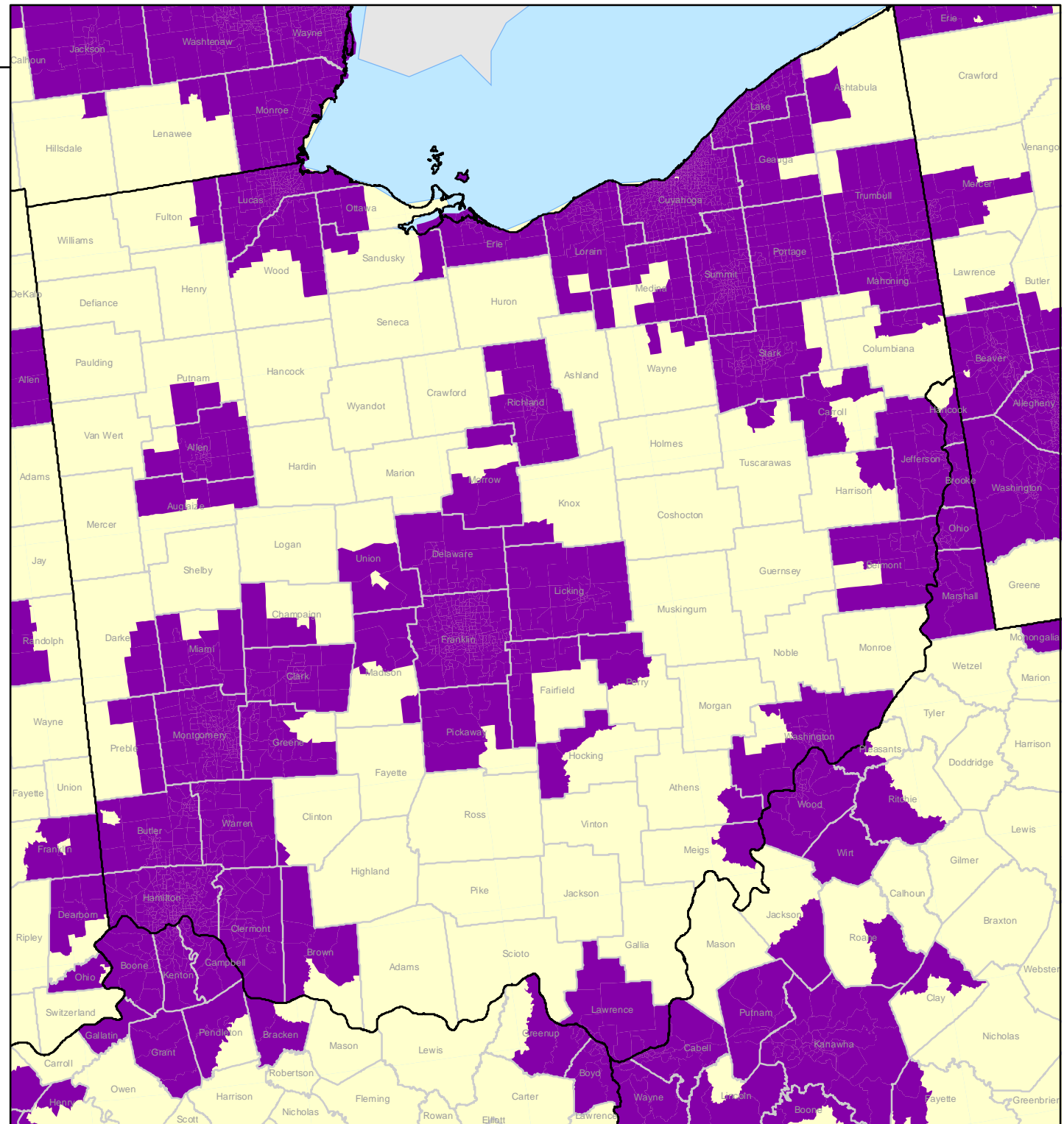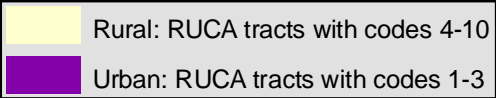
For more information on definitions,
see documentation

Ohio

The USDA Business and Industry ineligible locations are Census Places greater than 50,000 people and their adjacent and contiguous Urbanized Areas

Rural

Urban: USDA B&I ineligible locations
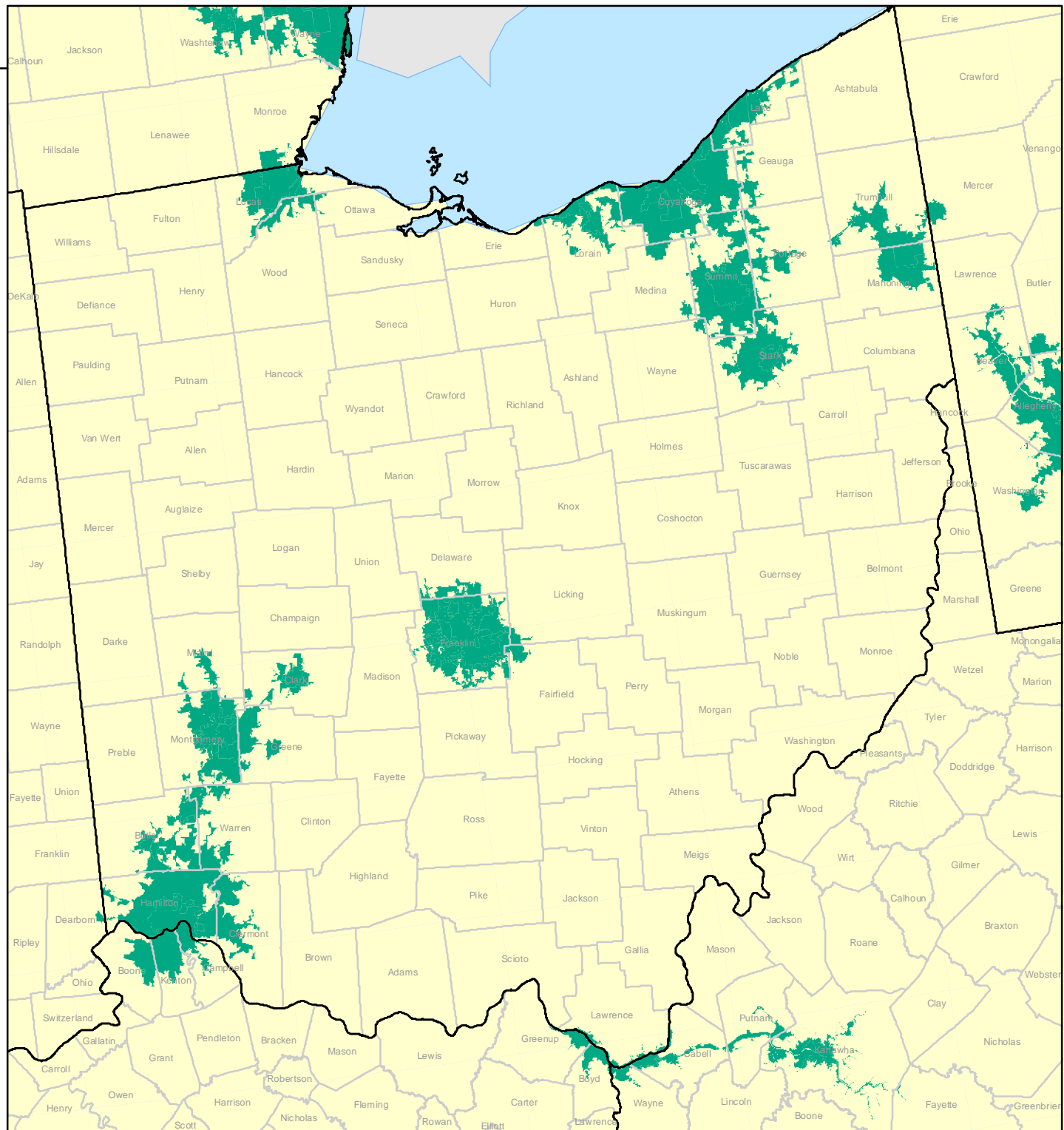
For more information on definitions, see documentation

Rural Population Indicators for United States, 2000

Rural is defined as areas outside…	Census Places with a population ≥			Census Urban Areas with a population ≥			OMB metro counties	ERS RUCA tract codes 1-3	USDA B&I ineligible locations	U.S. total
	2,500	10,000	50,000	2,500	10,000	50,000				
Population										
Total population considered rural (million)	87.7	115.8	177	59.1	70.6	89.5	48.8	57.6	101.9	281.4
Percent of population considered rural	31.1	41.1	62.9	21	25.1	31.8	17.4	20.5	36.2	N/A
Percent of land area considered rural	97	97.9	99	97.4	97.6	98	74.6	81.2	97.9	N/A
Population density (people/sq mile)	25.6	33.4	50.5	17.1	20.4	25.8	18.5	20	29.4	79.6
Age										
Percent younger than 18	26	25.9	25.7	26.1	26	25.7	25.2	25.3	25.6	25.6
Percent 19 to 64	61.5	61	61.1	61.1	60.8	60.7	59.9	59.9	60.7	61.9
Percent 65 or older	12.5	13.1	13.1	12.8	13.2	13.6	15	14.8	13.7	12.4
Ethnicity										
Percent non-Hispanic Black	6.9	7.2	8.3	5.9	6.6	7.2	8.4	8.4	7.5	12
Percent American Indian	1.2	1.1	0.9	1.6	1.6	1.4	1.8	1.8	1.3	0.7
Percent Hispanic	5	5.8	7.8	4	4.8	6.1	5.3	6.6	6.4	12.5
Education										
Percent not completing high school	19.2	19.1	18.4	21.2	21.6	21.8	23.5	23.7	21.4	19.6
Percent completing high school only	33.7	33.1	31.2	36.2	35.8	35	35.9	35.5	34.5	28.6
Percent with only some college	20.4	20.5	21	20.1	20.1	20.3	19.7	19.8	20.5	21
Percent with a college degree or higher	26.8	27.3	29.4	22.5	22.4	22.9	20.8	21	23.6	30.7

Rural definition (see details in data appendix)

Rural Population Indicators for United States, 2000

Rural is defined as areas outside…	Census Places with a population ≥			Census Urban Areas with a population ≥			OMB metro counties	ERS RUCA tract codes 1-3	USDA B&I ineligible locations	U.S. total
	2,500	10,000	50,000	2,500	10,000	50,000				
Income										
Average household income ($1,000)	56	56	57	51	50	49	43	43	49	57
Percent in near-poverty households	8	8.2	8	9	9.3	9.6	10.9	10.9	9.5	8.6
Percent in below-poverty households	9.9	10.3	10.5	11	11.7	12.5	14.8	14.8	12.5	12.4
Percent in deep-poverty households	4.1	4.3	4.5	4.5	4.8	5.2	6.1	6.1	5.2	5.6
Employment										
Percent in agriculture, forestry, fishing, hunting, mining industries	4	3.5	2.6	5.6	5.2	4.7	5.7	5.6	4.3	1.9
Percent traveling > 1/2 hour to work	10.3	9.9	9.8	10.3	9.8	8.9	6.6	6.6	8.5	10.4
Housing										
Percent seasonal housing	7	6.2	4.7	8.9	8.1	7	8.5	8.2	6.8	3.3
Percent without complete plumbing	2	1.7	1.3	2.7	2.4	2.1	2.5	2.4	1.9	1.2
Houshold composition										
Percent 65 and older and living alone	25	26.4	27.2	25.2	26.5	27.6	29.3	29.3	27.8	28.2
Percent own children under 18 in female-headed houshold	13.5	14.9	16.5	12.8	14.4	16.2	18.6	18.8	16.9	20

Rural definition (see details in data appendix)

Rural Population Indicators for Ohio, 2000

Rural is defined as areas outside…	Census Places with a population ≥			Census Urban Areas with a population ≥			OMB metro counties	ERS RUCA tract codes 1-3	USDA B&I ineligible locations	State total
	2,500	10,000	50,000	2,500	10,000	50,000				
Population										
Total population considered rural (million)	3.9	5.1	8.4	2.6	3.0	4.1	2.2	2.5	4.4	11.4
Percent of population considered rural	34.0	45.0	73.7	22.6	26.6	35.8	19.5	22.4	39.0	N/A
Percent of land area considered rural	91.7	94.0	98.0	90.2	91.0	92.4	56.0	58.8	92.8	N/A
Population density (people/sq mile)	102.8	132.9	208.5	69.6	81.2	107.4	96.6	105.6	116.5	277.3
Age										
Percent younger than 18	26.1	26.0	25.4	26.8	26.5	25.7	26.0	25.6	25.5	25.4
Percent 19 to 64	61.7	61.1	61.0	61.3	61.1	61.3	60.4	60.7	61.2	61.3
Percent 65 or older	12.2	12.9	13.5	11.9	12.4	13.0	13.7	13.7	13.2	13.3
Ethnicity										
Percent non-Hispanic Black	2.1	2.5	4.9	0.8	1.0	1.7	1.7	1.9	2.4	11.3
Percent American Indian	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Percent Hispanic	1.1	1.2	1.3	0.9	1.0	1.3	1.5	1.6	1.3	1.9
Education										
Percent not completing high school	16.7	16.3	15.5	17.5	17.8	18.1	20.0	19.7	18.2	17.0
Percent completing high school only	41.5	40.3	37.5	44.9	44.6	43.8	45.6	44.9	43.5	36.1
Percent with only some college	18.4	18.7	19.4	17.6	17.7	17.7	16.5	16.8	17.8	19.9
Percent with a college degree or higher	23.5	24.7	27.5	20.0	19.9	20.4	17.9	18.6	20.5	27.0

Rural definition (see details in data appendix)

Rural Population Indicators for Ohio, 2000

Rural is defined as areas outside…	Census Places with a population ≥			Census Urban Areas with a population ≥			OMB metro counties	ERS RUCA tract codes 1-3	USDA B&I ineligible locations	State total
	2,500	10,000	50,000	2,500	10,000	50,000				
Income										
Average household income ($1,000)	57.0	57.0	57.0	55.0	53.0	51.0	45.0	45.0	50.0	53.0
Percent in near-poverty households	6.6	6.6	6.6	7.0	7.2	7.7	9.0	8.9	7.9	7.5
Percent in below-poverty households	7.3	7.4	8.0	7.6	8.0	9.3	11.0	11.2	9.7	10.6
Percent in deep-poverty households	3.0	3.1	3.4	3.1	3.3	3.9	4.6	4.8	4.0	4.8
Employment										
Percent in agriculture, forestry, fishing, hunting, mining industries	2.5	2.0	1.4	3.5	3.2	2.6	3.1	2.8	2.4	1.1
Percent traveling > 1/2 hour to work	10.2	10.3	10.2	10.1	10.0	9.0	6.8	6.6	8.6	10.3
Housing										
Percent seasonal housing	2.5	2.1	1.4	2.9	2.8	2.4	2.4	2.8	2.3	1.1
Percent without complete plumbing	1.1	0.9	0.7	1.5	1.4	1.1	1.4	1.3	1.1	0.7
Houshold composition										
Percent 65 and older and living alone	24.1	25.8	28.1	23.6	25.3	27.6	29.6	29.8	28.1	29.9
Percent own children under 18 in female-headed houshold	11.1	12.6	15.4	9.8	11.3	14.1	15.7	16.2	15.1	21.0

Rural definition (see details in data appendix)

Rural Definitions: Data Documentation and Methods

Identifying Nine Rural Definitions

The rural definitions presented here are based on four sources described in detail below: Census Bureau's list of places, Census Bureau's list of urban areas, Office of Management and Budget's metropolitan areas, and ERS rural-urban commuting areas.

Three Definitions Based on Census Places

To generate statistical tabulations, the Census Bureau maintains a list of places that, in 2000, included 19,452 incorporated and 5,698 unincorporated places. Incorporated places have legally defined boundaries established by each State. Unincorporated places, known as census-designated places (CDPs), are delineated by committees of local experts to recognize population concentrations that are identifiable by name but not legally incorporated. Because they are based on administrative or locally determined boundaries and not statistical criteria, places can be of any population size or density. See a list of all places in the U.S. and their 2000 population, or visit the Census website for more details.

Definition	Description	Percent of people and land area considered rural in the U.S. under definition (2000)
Rural definition #1	All areas outside Census places with 2,500 or more people	87.7 million people 31% of U.S. population 97% of U.S. land area
Rural definition #2	All areas outside Census places with 10,000 or more people	115.8 million people 41% of U.S. population 98% of U.S. land area
Rural definition #3	All areas outside Census places with 50,000 or more people	177 million people 63% of U.S. population 99% of U.S. land area

Three Definitions Based on Census Urban Areas

The U.S. Census Bureau defines an urban area as: "Core census block groups or blocks that have a population density of at least 1,000 people per square mile and surrounding census blocks that have an overall density of at least 500 people per square mile."

There are two categories of urban areas. An urbanized area (UA) denotes an urban area of 50,000 or more people. An urban cluster (UC) is an urban area with fewer than 50,000 people, but more than 2,500. UAs were first delineated in the United States in the 1950 census, while UCs were added in the 2000 census. See a list of urban areas in the U.S. and their 2000 population, or visit the Census website for more details.

The Census Bureau classifies as rural all territory outside of urban areas. Definition #4 corresponds with this classification, widely recognized as the "official" Federal definition of rural for statistical purposes. Definitions #5 and #6 broaden the rural definition to include urban areas with populations less than 10,000 and 50,000, respectively.

Definition	Description	Percent of people and land area considered rural in the U.S. under definition (2000)
Rural definition #4	All areas outside urban areas. This places the upper limit of rural at 2,500, since urban areas must have at least 2,500 people.	59.1 million people 21% of U.S. population 97% of U.S. land area
Rural definition #5	All areas outside urban areas with 10,000 or more people.	70.6 million people 25% of U.S. population 98% of U.S. land area
Rural definition #6	All areas outside urban areas with 50,000 or more people.	89.5 million people 32% of U.S. population 98% of U.S. land area

One Definition Based on Office of Management and Budget (OMB) Metropolitan Statistical Area Designation

Metropolitan statistical areas (metro areas) are geographic entities defined by the U.S. Office of Management and Budget (OMB) for use by Federal statistical agencies in collecting, tabulating, and publishing Federal statistics. A metro area includes one or more counties containing a core urban area of 50,000 or more people, together with any adjacent counties that have a high degree of social and economic integration (as measured by commuting to work) with the urban core. OMB also defines micropolitan statistical areas using the same method but centered around urban areas with at least 10,000 but no more than 50,000 people. Definition #7 classifies micropolitan counties as rural. See a list of metro and micro counties or visit the Census website for additional information.

Definition	Description	Percent of people and land area considered rural in the U.S. under definition (2000)
Rural definition #7	All counties outside metropolitan areas in 2003 (based on 2000 census data)	48.8 million people 17% of U.S. population 75% of U.S. land area

One Definition Based on ERS Rural-Urban Commuting Area Codes (RUCAs)

The RUCA system classifies census tracts following the same theoretical concepts and data used by OMB to define metro and micro areas. Measures of population density, urbanization, and daily commuting are used to identify metropolitan, micropolitan, and small-town urban cores, adjacent tracts that are economically integrated with those cores, and outlying rural tracts. The use of census tracts instead of counties provides a different and more detailed geographic pattern of settlement classification.

The classification contains 10 primary and 30 secondary codes. Few, if any, research or policy applications need the full set of codes. Rather, the system allows for stricter or looser delimitation of metropolitan, micropolitan, and small-town commuting areas, and different definitions of rural based on selected combinations of codes. The rural definition used here consists of RUCA primary codes 4-10. In addition to the RUCA system based on census tracts, a zip code version is also available. See the Measuring Rurality Briefing Room for more information and data.

Definition	Description	Percent of people and land area considered rural in the U.S. under definition (2000)
Rural definition #8	Census tracts with 2000 RUCA codes 4 through 10	57.6 million people 20% of U.S. population 81% of U.S. land area

One Definition Based on USDA's Business and Industry (B&I) Loan Program Definition

As part of its eligibility criteria, the B&I Loan Program adopted a definition established in the 2002 Farm Bill that includes as rural all areas outside "places of 50,000 or more people and their adjacent and contiguous urbanized areas." This language combines criteria from two of the sources described here: Census Places and Census Urban Areas.

Definition	Description	Percent of people and land area considered rural in the U.S. under definition (2000)
Rural definition #9	Locations outside places of 50,000 or more people and their associated urbanized areas.	101.9 million people 36% of U.S. population 98% of U.S. land area

Note that all of the above definitions are based on the 2000 Census. Over time, changes, additions, and corrections are made. For the most up-to-date Census and OMB definitions, see the links to their sites.

Developing Socioeconomic Indicators

The following table summarizes the methods used to compute socioeconomic indicators presented in the data product. It is meant as a guide to those wishing to duplicate the indicators, and for those interested in more detail about the indicators. The first column lists the indicator. The second column lists the Census 2000 Summary File 3 (SF3) segment (for users of the machine-readable file). The third column gives the formula for computing the indicator, using the SF3 variable naming convention. SF3 data files and technical documentation may be downloaded from the Census Bureau's website.

Sociodemographic Indicator	Segment	Variable/Formula
Population		
Total population	Segment 1	p001001
Percent of population considered rural	Segment 1	Varies for each rural definition, but is always defined by (aggregate of p001001 for the defined rural area) / (aggregate of p001001 for the reference area) In our case the reference area is either the U.S. or a particular State.
Percent of land considered rural	Geo	Varies for each rural definition, but is always defined by (aggregate of AREALAND for the defined area) / (aggregate of AREALAND for the reference area) In our case the reference area is either the U.S. or a particular State.
Population density (people / sq mile)	Geo	p001001 / (AREALAND * .38610) AREALAND is transformed from square meters
Age		
Percent younger than 18	Segment 1	sum(p008003 through p008020, p008042 through p008049, p008050 through p008059) / p001001
Percent 19 to 64	Segment 1	sum(p008021 through p008034, p008060 through p008073) / p001001
Percent 65 or older	Segment 1	sum(p008035 through p008040, p008074 through p008079) / p001001
Ethnicity		
Percent non-Hispanic Black	Segment 3	p007004 / p001001
Percent Hispanic	Segment 3	p007010 / p001001
Percent American Indian	Segment 3	p007005 / p001001

Education (for the population 25 years and over)		
Percent not completing high school	Segment 3	sum (p037003 through p0370019, p037020 through p037027) / p037001
Percent completing high school only	Segment 3	(p037011 + p037028) / p037001
Percent completing some college	Segment 3	sum(p037012,p037013, p037029,p037030) / p037001
Percent completing college or more	Segment 3	sum(p037014 through p037018, p037031 through p037035) / p037001
Income		
Average household income ($1000)	Segment 6	p054001 / p052001
Poverty (for the population for whom poverty is determined, i.e. not living in group quarters)		
Percent near poverty (ratio of income to poverty level is 1.00 to 1.49)	Segment 7	(p088005 + p088006) / p088001
Percent below poverty (ratio of income to poverty level is less than 1.00)	Segment 7	(p088002 + p088003 + p088004) / p088001
Percent in deep poverty (ratio of income to poverty is less than .50)	Segment 7	p088002 / p088001
Employment		
Percent in agriculture, forestry, fishing and hunting, and mining industries (for the employed civilian population 16 years and over)	Segment 5	(p049003 + p049030) / p049001
Percent traveling 30 minutes or longer to work (for workers 16 years and over)	Segment 3	sum(p031009 through p031014) / p031002
Housing		
Percent seasonal housing (for housing units)	Segment 56	h008005 / h001001
Percent without complete plumbing facilities (for housing units)	Segment 59	h047003 / h047001
Household composition		
Percent 65 years and older living alone	Segment 1	(p011013 + p011016) / p011001
Percent own children under 18 in female-headed household	Segment 2	p016019 / p016001

More About Census Summary File 3

The primary source of data for building rural definitions and the associated socioeconomic indicators was Census Summary File 3. Specifically, we used summary level 85. Summary level 85 gives census data for the intersection of States-Counties-Places/Remainder-Tract-Urban/Rural. We needed to use summary level 85 in order to identify the portions of Census Places that were also part of Urban Areas.

In the case of the Census Place-based definitions, Census Urban Area-based definitions, and the Business and Industry (B&I) Loan Program definition, we were able to designate an observation as "rural" based on SF3 geographic identifiers. For the OMB-based definition, we merged a file identifying metro/nonmetro counties into SF3, matching by a county ID number. For the RUCA-based definition, we merged a file identifying tracts by RUCA code into SF3, matching by a tract ID number.

For more information, contact: John Cromartie and Shawn Bucholtz

Frontier and Remote (FAR) ZIP-Code Areas, 2000

FAR Level One

Remote from urban areas
of 50,000 or more people

FAR

Not FAR
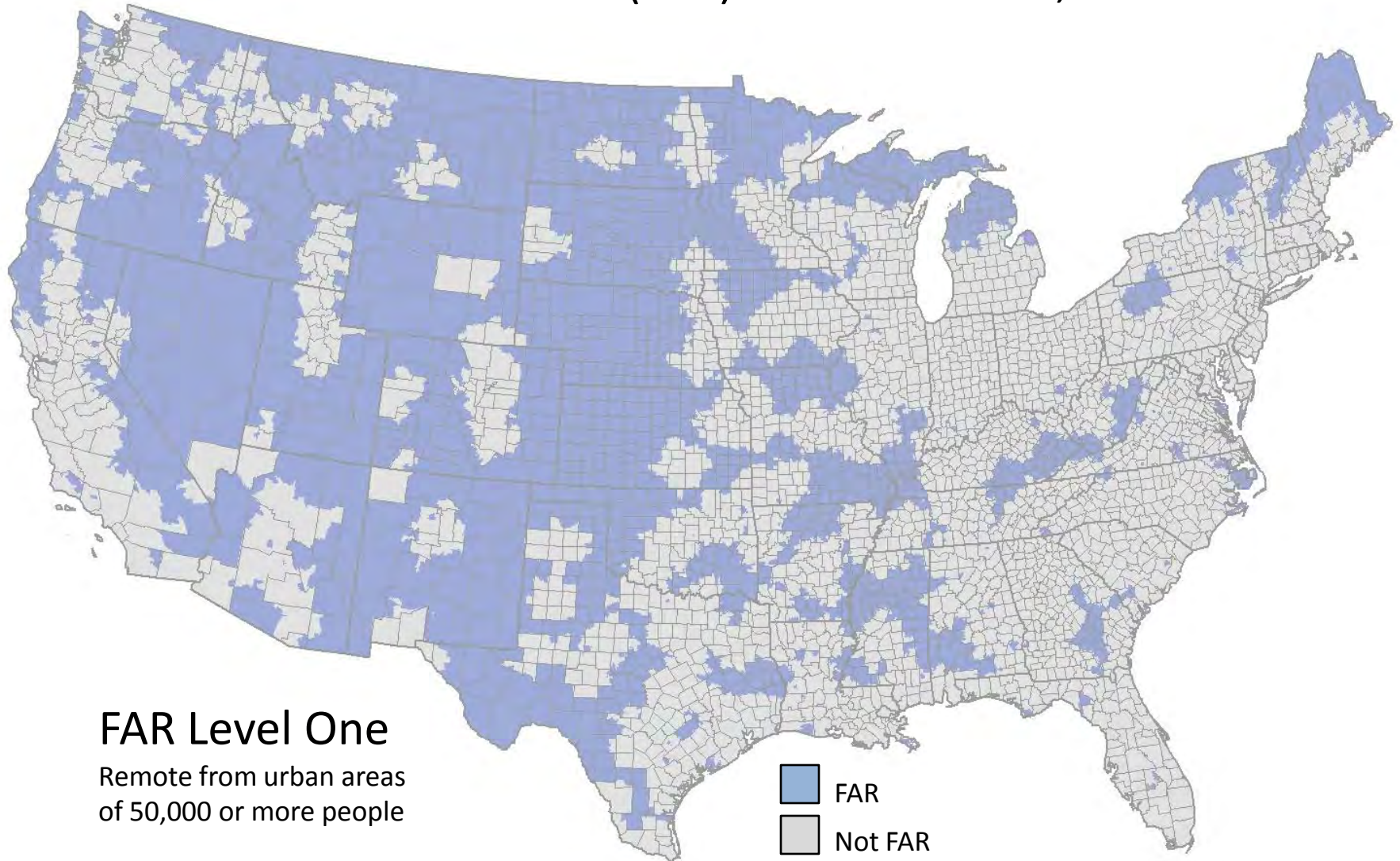
FAR level one includes ZIP Code areas with majority populations living 60 minutes or more from urban areas of 50,000 or more people.

Source: Economic Research Service, U.S. Department of Agriculture, using data from the U.S. Census Bureau, the Center for International Earth Science Information Network, and ESRI.

Frontier and Remote (FAR) ZIP-Code Areas, 2000

FAR Level Two

Remote from urban areas
of 25,000 or more people

FAR

Not FAR
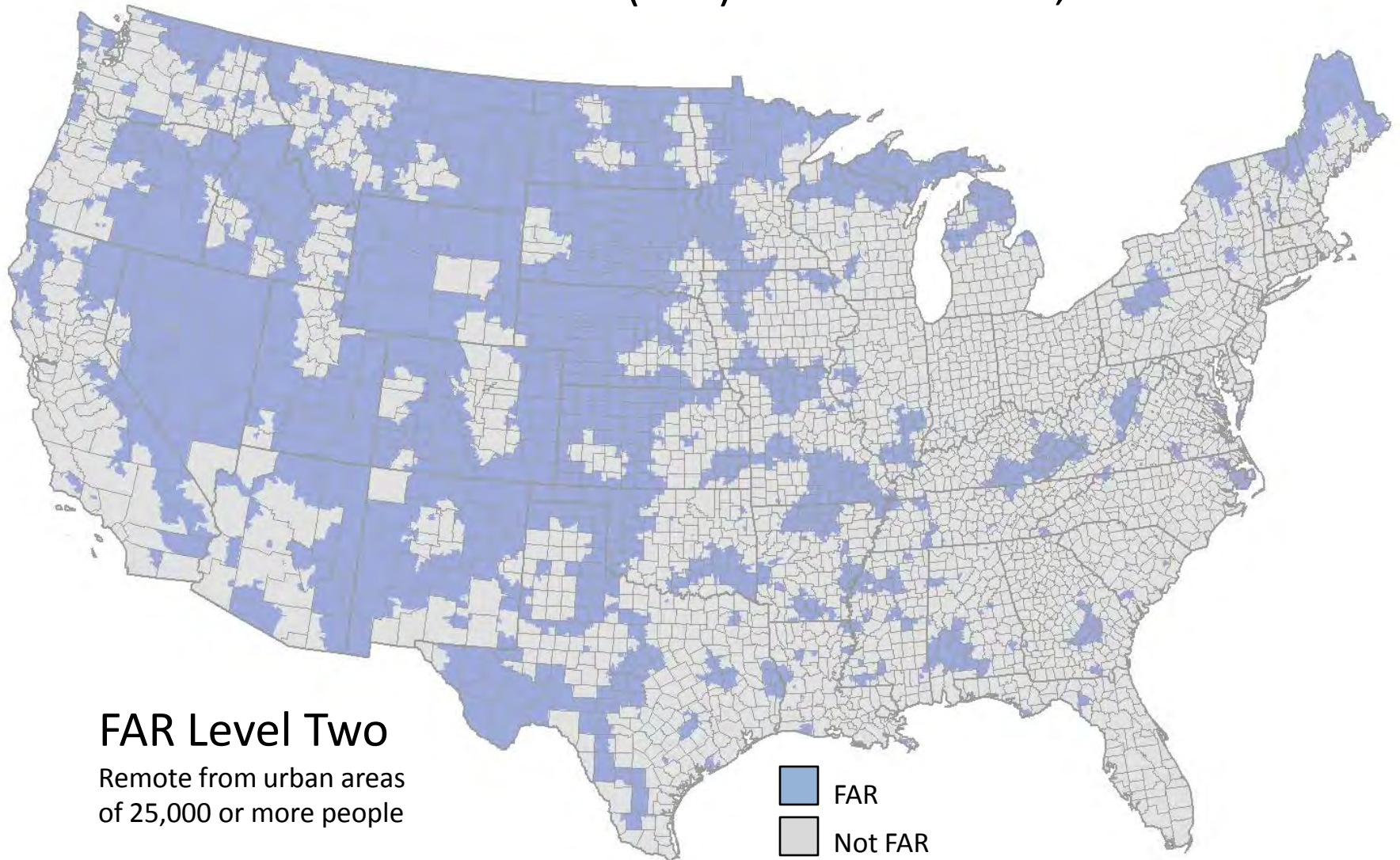
FAR level two includes ZIP Code areas with majority populations living 60 minutes or more from urban areas of 50,000 or more people; and 45 minutes or more from urban areas of 25,000-49,999 people.

Source: Economic Research Service, U.S. Department of Agriculture, using data from the U.S. Census Bureau, the Center for International Earth Science Information Network, and ESRI.

Frontier and Remote (FAR) ZIP-Code Areas, 2000

FAR Level Three

Remote from urban areas
of 10,000 or more people

FAR

Not FAR
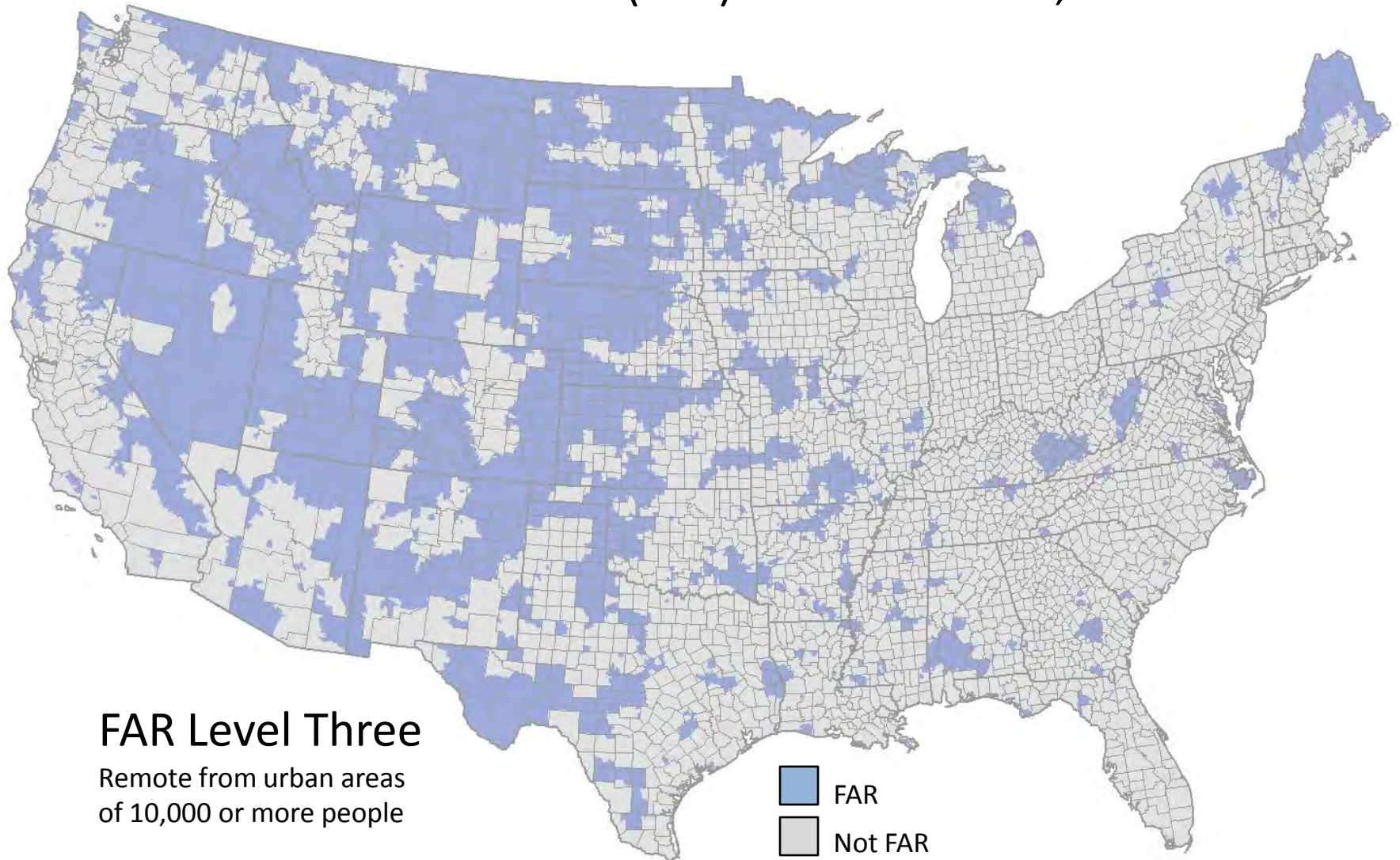
FAR level three includes ZIP Code areas with majority populations living 60 minutes or more from urban areas of 50,000 or more people; and 45 minutes or more from urban areas of 25,000-49,999 people; and 30 minutes or more from urban areas of 10,000-24,999 people.

Source: Economic Research Service, U.S. Department of Agriculture, using data from the U.S. Census Bureau, the Center for International Earth Science Information Network, and ESRI.

Frontier and Remote (FAR) ZIP-Code Areas, 2000

FAR Level Four

Remote from urban areas
of 2,500 or more people

■ FAR

□ Not FAR
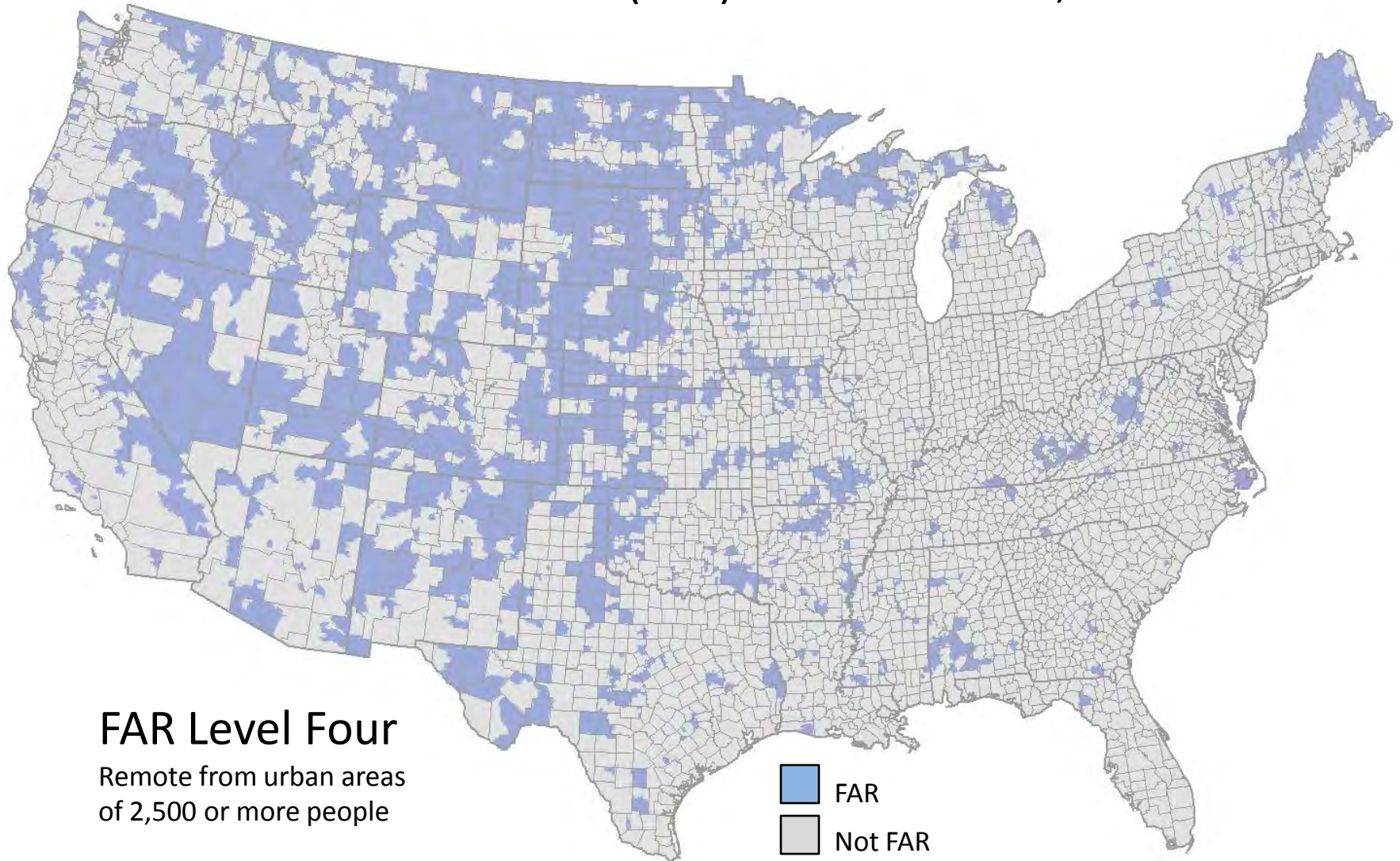
FAR level four includes ZIP Code areas with majority populations living 60 minutes or more from urban areas of 50,000 or more people; and 45 minutes or more from urban areas of 25,000-49,999 people; and 30 minutes or more from urban areas of 10,000-24,999 people; and 15 minutes or more from urban areas of 2,500-9,999 people.
Source: Economic Research Service, U.S. Department of Agriculture, using data from the U.S. Census Bureau, the Center for International Earth Science Information Network, and ESRI.

DEMOGRAPHICS IN RURAL AMERICA

Rural communities cover a large geographic land mass

POPULATION

Rural & Small Town

Suburban & Urban

LAND MASS

Suburban & Urban
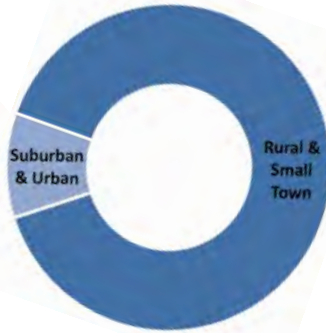
Rural & Small Town

60, 333, 520 People live in rural and small town communities, that's **18.8%** of the population and spanning **89.2%** of the landmass.

Source: HAC Tabulations ACS 2017 Five Year Estimate

Rural America is more diverse than you may think
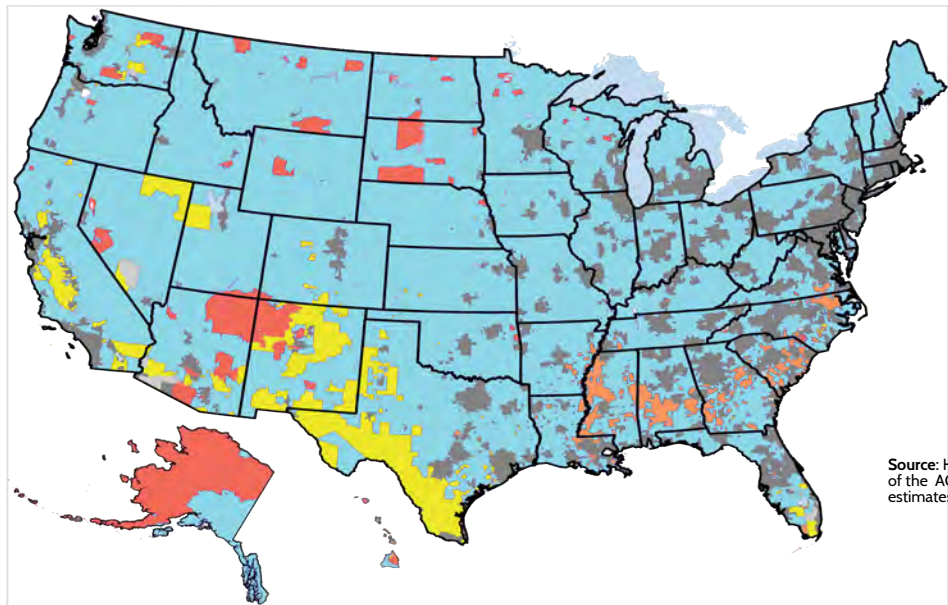
Source: HAC Tabulations of the ACS 2017, five-year estimates

White · Native American · African American · Hispanic · Metro Area · No Plurality

Rural America is older than the rest of the country

Population 5 to 9 Years Old	6.4
Population 10 to 14 Years Old	6.5
Population 15 to 19 Years Old	7.1
Population 20 to 24 Years Old	6.5
Population 25 to 34 Years Old	11.6
Population 35 to 44 Years Old	12.2
Population 45 to 54 Years Old	14.7
Population 55 to 59 Years Old	6.9
Population 60 to 64 Years Old	6.2
Population 65 to 74 Years Old	8.6
Population 75 to 84 Years Old	5
Population 85 Years Old or Older	2

HAC Tabulations of the Census 2010 SF1 Population Counts.

Educational Attainment is lower in rural America

Population 25 and older with a BA Degree

19%
Rural and Small Town

30.3%
United States

Source: HAC Tabulations of the ACS 2012-16 Five Year Estimates Education Data.

Poverty in Rural America

Approximately 45 million Americans, or 15 percent of the population, had incomes below the official poverty rate in 2012. In rural America, the poverty rate is above 17 percent with more than 10 million people living in poverty.

Poverty in the United States, 2012

Percent in Poverty
- 0.00-9.99
- 10.0-14.9
- 15.0-19.9
- 20.0-29.9
- 30.0-49.9
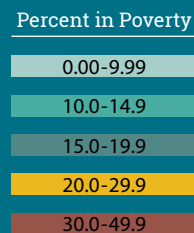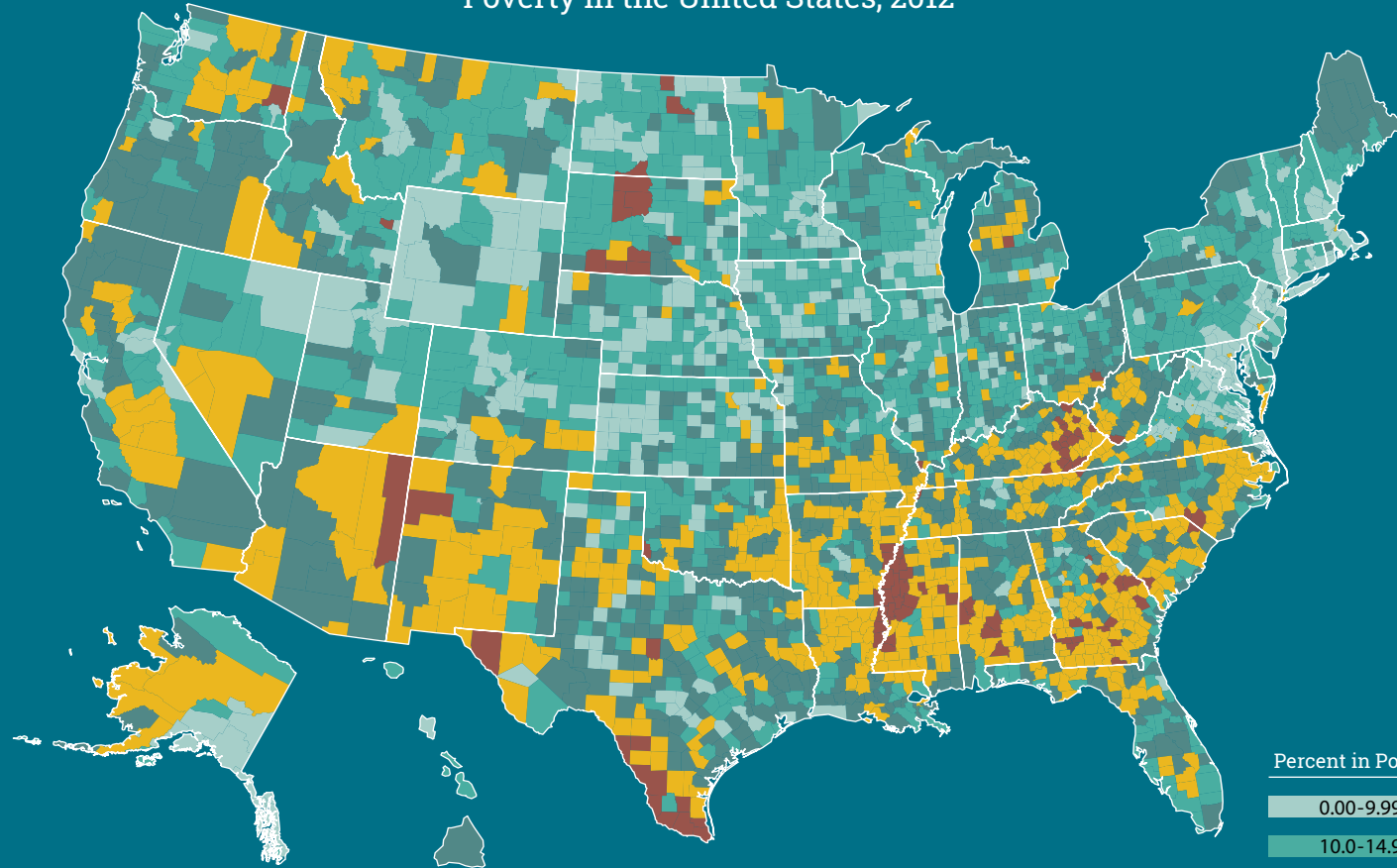
Source: Housing Assistance Council (HAC) Tabulations of 2008-2012 American Community Survey Data and U.S. Census Bureau Decennial Census Data

Poverty in 1960

Poverty in 1980

Poverty in 2000

Nearly Half of Rural Families Headed by Single Mothers Live Below the Poverty Line

Poverty by Location and Family Status, 2012

FAMILIES
- U.S — 10.9%
- Rural — 12.5%
- Rural with Children — 20.8%
- Rural Female Headed with Children — 47%

Source: HAC Tabulations of U.S. Census Bureau 2008-2012 American Community Survey

Poverty by Race & Ethnicity

PERCENT IN POVERTY

Total | White Not Hispanic | Asian | Hispanic | Native American | African American

- U.S
- Rural and Small Town

Source: HAC Tabulations of U.S. Census Bureau 2008-2012 American Community Survey (ACS) Data

Poverty in the U.S. by Residence, 1960-2013

PERCENT IN POVERTY

60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 00 02 04 06 08 10 12

- U.S
- Inside Metropolitan
- Outside Metropolitan

Source: HAC Tabulations of U.S. Census Bureau Data; Income and Poverty in the United States: 2012 Current Population Reports. September 2014.

10.7 MILLION RURAL AMERICANS LIVE IN POVERTY

1/4 OF ALL RURAL CHILDREN LIVE IN POVERTY

The Majority of Rural People in Poverty are White, Not Hispanic

Rural Persons in Poverty by Race & Ethnicity

- White, Not Hispanic, 60.0
- Hispanic, 13.6
- African American, 15.4
- Native American, 3.4
- Asian, 0.8
- Other, 6.7
- Hawaiian, Pacific Islander, 0.1

Source: HAC Tabulations of U.S. Census Bureau 2008-2012 American Community Survey (ACS) Data

RURALITIES: The Changing Face of Rural America

Many rural communities are losing
population, especially younger, educated people.

Rural household incomes
have stagnated.

Counties with more than 25% of their population age 18-35

Age 18 - 35 Population, 2010
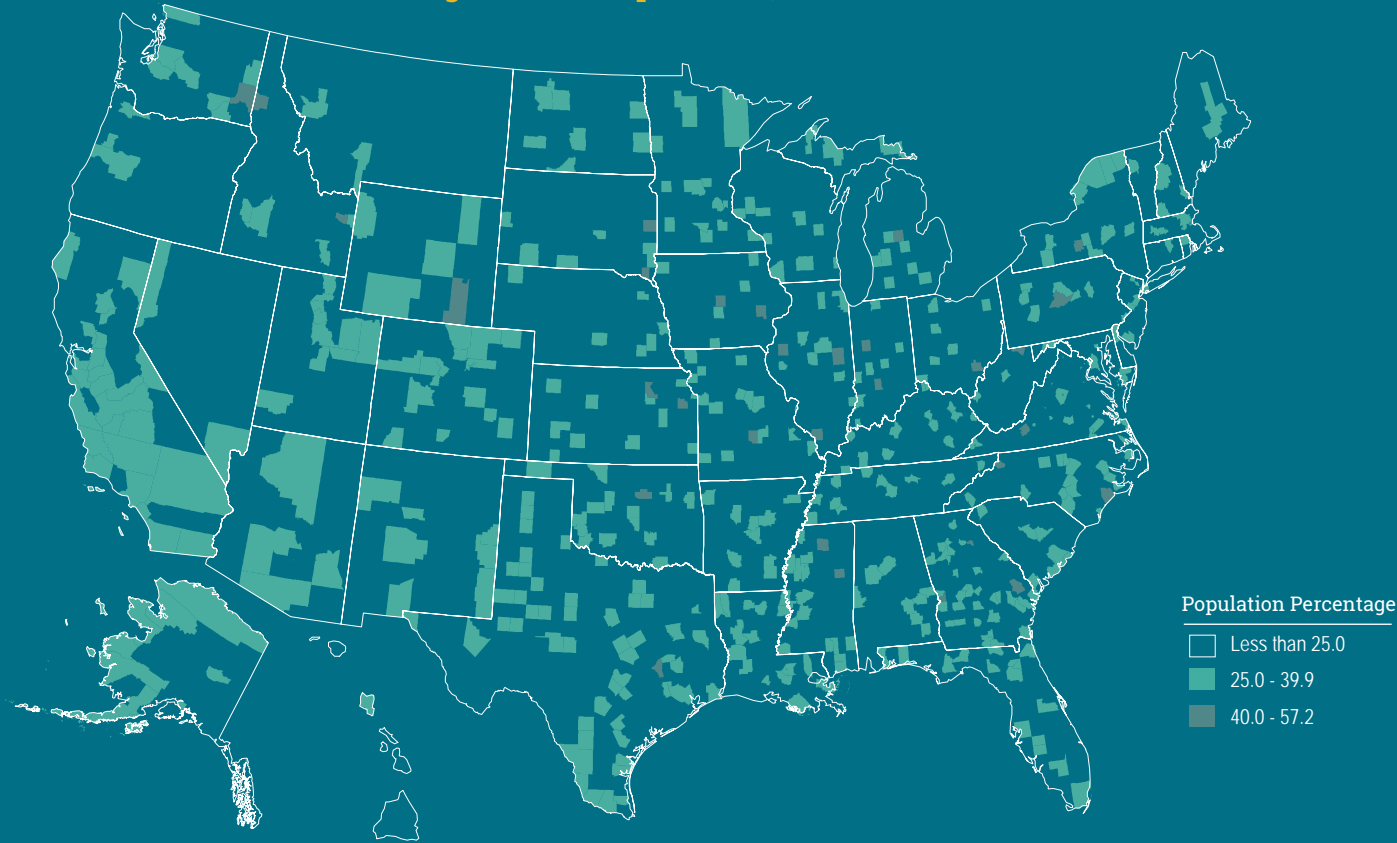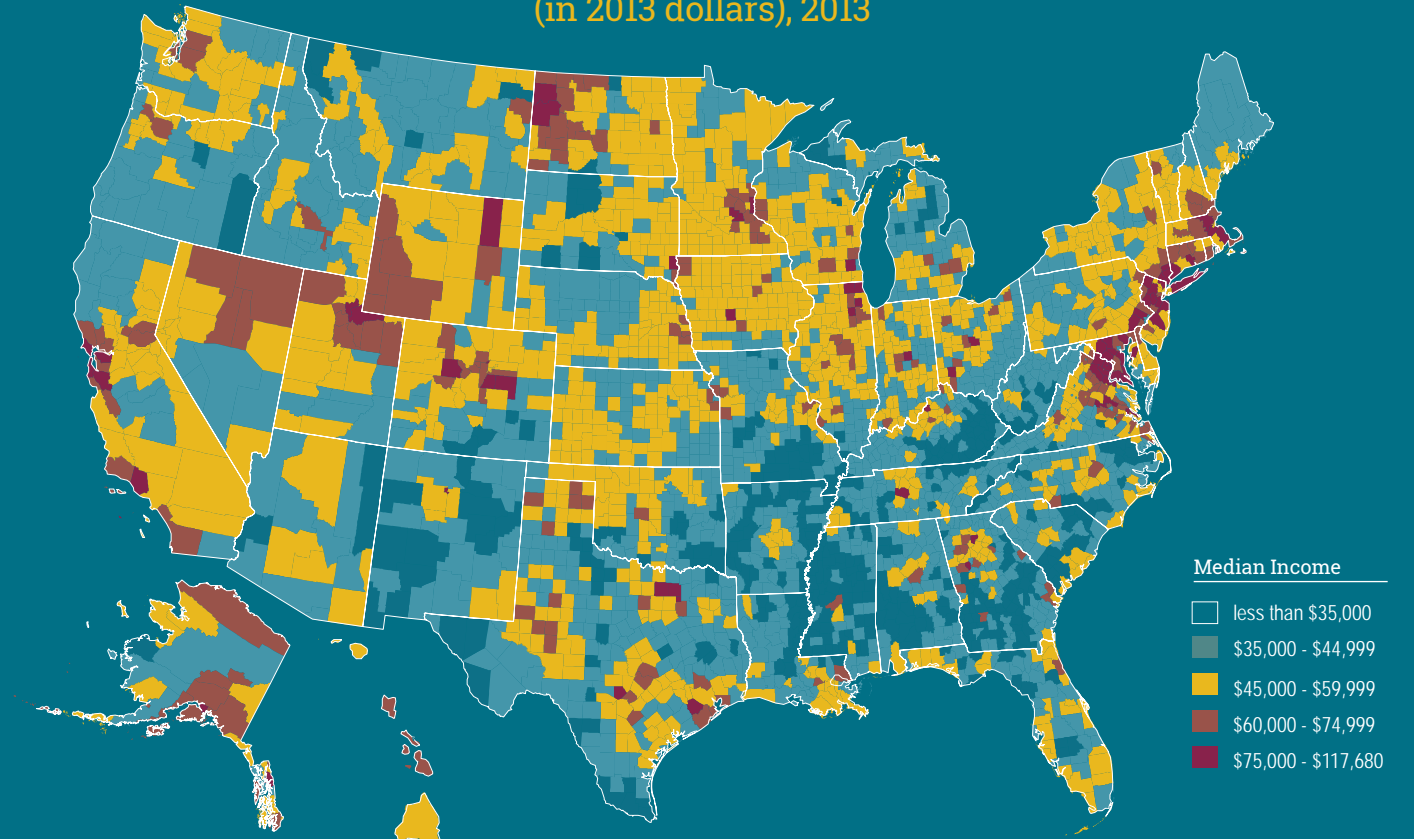
Population Percentage
- Less than 25.0
- 25.0 - 39.9
- 40.0 - 57.2

Median Household Income
(in 2013 dollars), 2013

Median Income
- less than $35,000
- $35,000 - $44,999
- $45,000 - $59,999
- $60,000 - $74,999
- $75,000 - $117,680

Age 18-35 Population, 1980

Population Percentage
- Less than 25.0
- 25.0 - 39.9
- 40.0 - 63.7

Age 18-35 Population, 1990

Population Percentage
- Less than 25.0
- 25.0 - 39.9
- 40.0 - 61.8
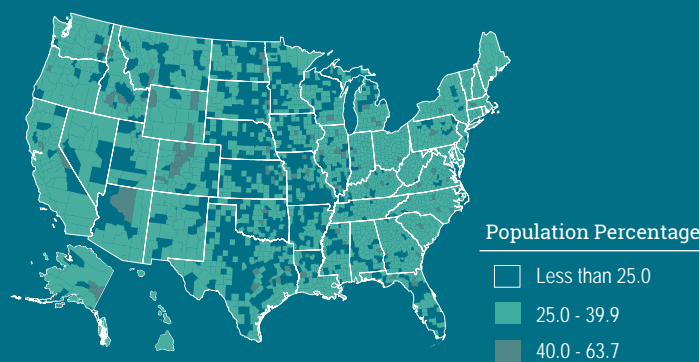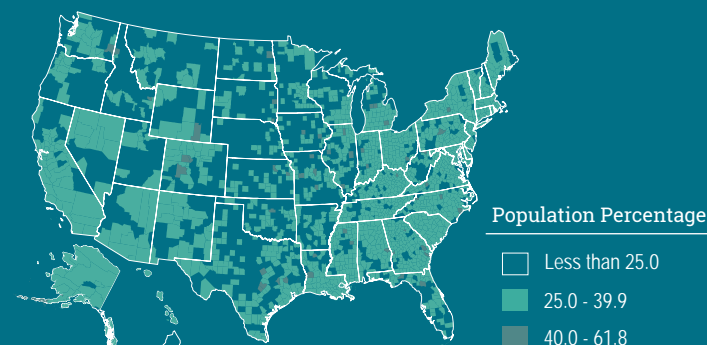
Median Household Income
(in 2013 dollars), 1993

Median Income
- less than $35,000
- $35,000 - $44,999
- $45,000 - $59,999
- $60,000 - $74,999
- $75,000 - $106,313

Median Household Income
(in 2013 dollars), 2003

Median Income
- less than $35,000
- $35,000 - $44,999
- $45,000 - $59,999
- $60,000 - $74,999
- $75,000 - $118,596
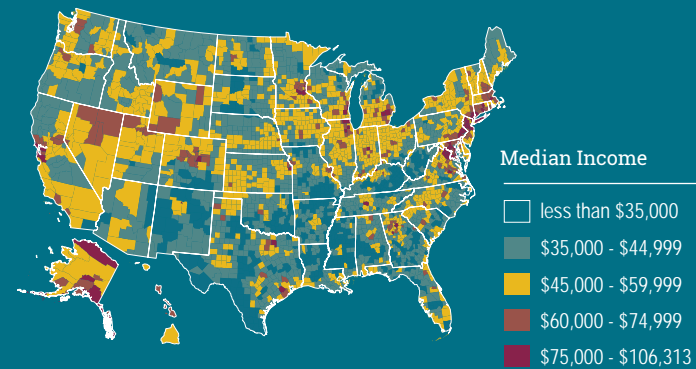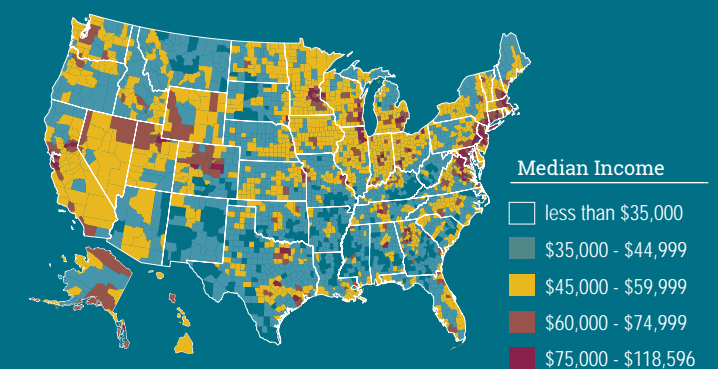
Source: HAC tabulations of 1980, 1990, and 2010 Census of Population and Housing.

Source: HAC tabulations of U.S. Census Bureau's Small Area Income and Poverty Estimates.

Housing quality has improved, but too many rural homes are still substandard.

Counties with more than 2.5% homes lacking adequate plumbing

Homes Lacking Plumbing, 2014

Percentage Lacking Plumbing
- Less than 2.5
- 2.5 - 4.9
- 5.0 - 9.9
- 10.0 - 29.9
- 30.0 - 39.1

Homes Lacking Plumbing, 1970

Percentage Lacking Plumbing
- Less than 2.5
- 2.5 - 4.9
- 5.0 - 9.9
- 10.0 - 29.9
- 30.0 - 98.4
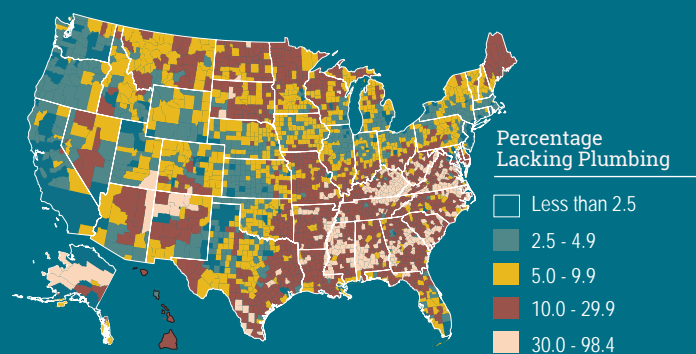
Homes Lacking Plumbing, 1990

Percentage Lacking Plumbing
- Less than 2.5
- 2.5 - 4.9
- 5.0 - 9.9
- 10.0 - 29.9
- 30.0 - 65.9
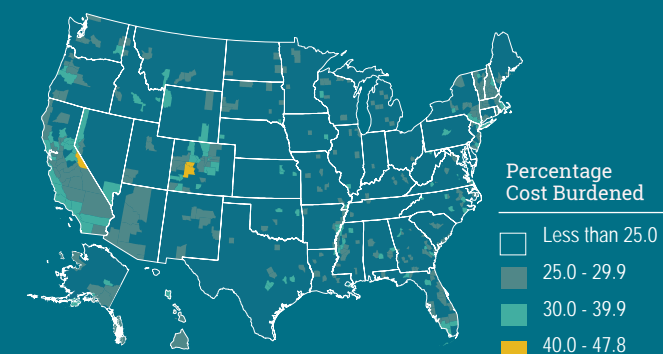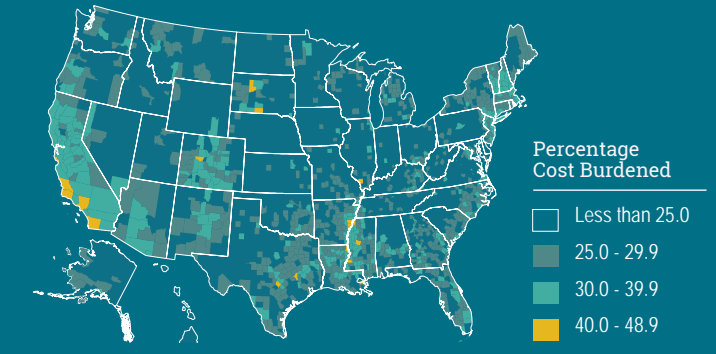
Source: HAC tabulations of 1970 and 1990 Census of Population and Housing and 2010-2014 American Community Survey.

Affordability has become the largest rural housing challenge.

Counties with more than 25% cost burdened* households

Housing Affordability, 2014

Percentage Cost Burdened
- Less than 25.0
- 25.0 - 29.9
- 30.0 - 39.9
- 40.0 - 56.7

Housing Affordability, 1980

Percentage Cost Burdened
- Less than 25.0
- 25.0 - 29.9
- 30.0 - 39.9
- 40.0 - 47.8

Housing Affordability, 1990

Percentage Cost Burdened
- Less than 25.0
- 25.0 - 29.9
- 30.0 - 39.9
- 40.0 - 48.9

Source: HAC tabulations of 1980 and 1990 Census of Population and Housing and 2010-2014 American Community Survey.

AIA Strategic Council – 2020
Rural Issues Incubator Group
Equity,, Diversity, Inclusion + Belonging

Introduction

The Rural Issues Incubator Group was established by the AIA Board of Directors to begin a study of rural America, the "countryside". The purpose of this incubator group was to determine if there is the need for further investigation, study, and recommendations to better inform AIA and practicing architects of significant future issues that will affect the architectural profession.

At the beginning of this initiative there were only general suppositions that this is an area of concern for the future of the AIA and the architectural profession. Our hypothesis is well stated by Rem Koolhaus.

> *"In 2020, two blatant tasks stand out. The inevitability of total urbanization must be questioned, and the countryside must be rediscovered as a place to resettle, to stay alive; enthusiastic human presence must reanimate it with new imagination."*
> *Countryside, A Report, Rem Koolhaas*

The challenges of a "New Rural Agenda" are derived from the same global standard for sustainable urban development, the "New Urban Agenda" created by the UN. The goals are the same but the responses are different.

Question 1:
What are the biggest challenges and opportunities related to Equity, Diversity, Inclusion and Belonging for the profession within the AIA?

In order to prioritize our work around EDI+B for the profession we begin with the rural communities themselves and how they are affected. The primary finding we have discovered so far is around the issue of *LACK OF ACCESS and ISOLATION.*

Isolation derives from remoteness and lower population density. Limited access is a corollary to isolation. These issues have taken on increased importance and become the subject of academic research over the past decade.

Rural communities and architects face equity concerns because of low and reduced **access** to:

- Information networks
    - Technology and broadband networks
    - Social networks and community institutions
- Healthcare
    - Healthcare professionals
    - Travel distance
- Food
    - Rural does not equal agricultural
    - Food deserts (10 mile drive) affecting older, poorer, less educated
- Educational resources
    - Higher education choices are fewer
    - Professional role models for K-12 are lacking
- Housing opportunities
    - Spatial concentration of America's rural poor
    - Gentrification in rural counties
    - Out-migration and depopulation
- Financial resources
    - Economic barriers and inequities
- Equal access to justice

From the above we have identified some specific things that affect architects in rural settings:

- Information networks
    - Technology and broadband networks
    - Social networks and community institutions
    - 'Stayers' vs. 'strayers'
    - Response action:
        - Compile Rural Organization resource (i.e. CIRD etc.)
        - Convene workshops and interviews with rural architects
        - Investigate research on these topics with sociologists
- Educational resources
    - Higher education choices are fewer
    - Professional role models for K-12 are lacking
    - Response action:
        - Engage AIA resources to consider new outreaches for K-12
        - Define the challenges that are different in rural settings
- Housing opportunities
    - Spatial concentration of America's rural poor
    - Gentrification and cultural shifts in rural counties
    - Out-migration and depopulation
    - Response action:
        - Engage directly with the Housing and Community Development KC

Question 2:
From the perspective of the Rural Issues workgroup, what can be done to increase opportunities from racially, ethnically and gender diverse backgrounds to enter and succeed along the pathway to leadership? How can the efforts increase equity and diversity with the senior ranks of the architectural profession?

We've discovered that children in rural settings are rarely if ever exposed to architects as role models or the profession in general. Rural communities lack resources to affect this needed change. Acknowledging this short coming grants us an opportunity to explore long term opportunities for new institute programs that reach communities, K-12 schools, community colleges and universities in ways we've may never have considered. Using EDI+B as a lens to guide this effort, this could change in one generation.

Young architects, who are increasingly diverse, in rural settings in particular need a different kind of mentoring that follows along the lines of creating stronger community engagement skills. Our workgroup is looking to identify these unique needs and opportunities for growth and leadership. Economically, rural social networks are increasingly important to enable architects to be involved earlier and continuously in the development of projects. We also discovered the need for rural architects to be much more engaged with the construction community at large in order to strengthen their social network.

Question 3:
Through the lens of our workgroup, what are the opportunities ahead for architects related to EDI+B and climate action within the built environment? What is the role of architects and designers?

Climate effects are showing up first in the countryside across the globe. Thus, our climate action reactions and adaptations must originate in our countryside, our rural areas. So, what does this mean to the practice of architecture in rural areas? This Rural Issues Incubator Group has legitimized this question and validated that more work is needed to develop a set of best practices to directly counteract the climate effects phenomenon. This will be a central focus within the creation of a New Rural Agenda to be applied in planning and architectural design.

With this awareness this is a crucial question to be explored. Throughout history, rural America has been the place for expansion, which will continue in the future. Urban areas will also continue to grow into these undeveloped places and continue to be enabled by the countryside resources. Thus, it is the place of great potential threat to the unbuilt environment and our natural resources. Importantly, it is a significant and primary place for creating and fostering renewable resources to combat climate change. These open areas are the places for farms, forestation, windmills, solar farms, etc. aid in our strategic work to be more sustainable and resilient. While our rural areas are not the places with the greatest population density to serve, they offer the resources that will serve urban areas with the greater densities.

Without an awareness of the potential future value of these rural areas and the conscious stewardship of our rural places, growth and development will go unchecked with the potential to further heighten issues of climate change rather than to mitigate the effects of climate change.

Findings: Research Cause and Effect

AIA and all practicing architects must accept the responsibility to be better informed and prepared to confront these challenges that will impact this valuable resource, the places in between our built environments – the rural countryside.

Based upon this research, dialogue, and workshops during 2020, a wide range of common challenges are recognized throughout rural America. The severity of these challenges is complex because it varies depending upon the geography, demographics, culture, and location within less populated areas throughout America.

These universal challenges include climate effects, housing, medical care, development practices and economics just to mention the most impacting issues. However, within all Rural America these challenges are generally rooted in the following most significant shared concerns for AIA to further study and address:

Advocacy, Funding and Technology.

Advocacy

Too often residents in these areas are voiceless or without the significant advocacy of more highly populated urban areas. This attributes to lesser representation with governmental authorities and decision-makers. In addition, there are other overlapping factors impairing advocacy for rural areas: a stewardship void, the loss of family farms and zoning practices.

- Stewardship Void

Since before the founding of this country the stewardship of open space/rural areas and less populated areas has been an accepted responsibility of those living in these areas. These individuals typically have had a common commitment to the stewardship and conservation of these areas of the country. There are factors already creating a void of this stewardship that has an impact throughout the country.

Increasingly this void of stewardship for these less populated places is due to a reduction in rural interest groups, particularly farmers, ranchers, and other agricultural related entities. In the past these interest groups have served as significant advocates for rural America. With a greater awareness of these challenges and the vulnerability of the countryside this advocacy for the rural landscape should grow to include residents and leadership from these more populated and urban areas of America.

- <u>Loss of Family Farms</u>

A significant population that owned and inhabited the land in the less populated areas were family farms. Over the past decades there have been alarming decreases in operating family farms that uphold this commitment of stewardship and conservation. Statistics will show that this is only going to increase in the future, therefore this advocacy loss for these ideals within rural America creates a widening void that will easily be filled by other interests that may not have the same priorities of conservation and stewardship of this unbuilt environment. A "New Rural Agenda" promoted by AIA will help fill this void.

- <u>Zoning</u>

Many of these areas are exempt from zoning. While zoning is often seen by ruralist as an unnecessary restriction in how land can be used, it opens these rural areas to uncontrolled development which threatens the preservation of the quality of these unbuilt environments in the future. A "New Rural Agenda" should provide the development parameters needed for the future.

Funding

Many non-urban, rural areas are often populated by lower income level residents without the financial means for sufficiently address many of these needs and issues. These include essential services such as affordable housing, healthcare, and emergency services. These are all needs that relate to the services provided by architects. With the proper guidance these services can include creative financial development assistance. A "New Rural Agenda" will bring an awareness of this deficiency with strategies that are needed to help provide the resources and guidance to address these concerns.

Technology

Throughout much of our less populated areas there exist a common deficiency which inhibits addressing many issues related to the built environment. This threat is due to the lack of consistent and reliable internet availability with sufficient capacity. This has resulted from the expected priority to provide internet technology to more populated areas leaving less populated, rural areas unserved or underserved. This limits access to knowledge and the educational means to raise awareness of these deficiencies and improve communication of the ideals to advance improvements. In the future there must be a priority for funding to assure that even our less populated, rural areas, are equitably provided access to the technology and bandwidth for adequate internet access just as rural areas came to have LAN and Cell telephone service as well as electrical services equitably provided. Such needs can be addressed within a "New Rural Agenda".

Vulnerability

The factors described above amplify that the countryside of rural America is vulnerable. Unchecked and without raised awareness and advocacy for appropriate development concepts and principles, an enormous threat exists. Architects will continue to work with governmental agencies, general contractors, and developers as we are certain to experience increased development within our current rural and less populated areas.

More recently, the effects of the COVID-19 pandemic have raised the potential of a greater migration from urban areas which was not previously predicted. Our profession must be ready to assist in determining these indicators and address the planning and design challenges this will present.

Therefore, it is essential that AIA and practicing architects create and adopt uniformly accepted ideals for development and design within these non-urban, less populated areas. This is a challenge for our profession that has not received its' due attention in the past that is now mandated for the future. With the continued changes in society and the ongoing effect of climate change, these threats have silently intensified and most recently amplified by the effect of the pandemic. AIA and practicing architects must address how we will respond in the future.

As a noted professor from one of the universities who has provided decades of educational opportunities in the realm of public design and architecture in rural areas shared:

>*"There is a professional imperative for architects to provide services to all of the public, and this includes rural America. It is irresponsible for a licensed profession to neglect this large part of our country and people. The disregard and inattention for this topic will be self-destructive to the greater good of our collective society.*

>*Bryan Bell, NCSU School of Architecture, Design Corps, SEED Network*

AIA Strategic Council - 2020

A Case for a
"New Rural Agenda" Workgroup

Rural Issues Incubator Group Studies, Research, and Conclusions

DRAFT: September 23, 2020

Introduction

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The Rural Issues Incubator Group has work diligently to provide the quantitative and qualitative information to address these questions. This information is contained in this report.

Why is this Important for the AIA and the future of Architecture?

Rural areas, or the Countryside, are less populated with low density which may initially dismiss relevance to normally recognized concerns by our profession for the built environment. With this perspective, the concerns may be considered to be more about the conservation of natural resources and certain issues of the rural society rather than related to the practice of architecture. While this may have been considered acceptable in the past the future presents a much different perspective with a more direct relevance to the future of architectural practice and the AIA.

> *"Are we really heading to the absurd outcome where the vast majority of mankind lives in only 2 percent of the earths over-populated surface and the remaining 98 percent would be inhabited by only one-fifth of humanity staying there to service them? Total urbanization requires that a large part of the countryside would be claimed as back of house for urban civilization, a residual, enabling domain where all the needs, demand, impositions of coincidence that since our fixation on total Urbanization crucial ecosystems have possibly slipped past the point of no return."*
> *Countryside, A Report*, Rem Koolhaas

With this awareness this is a crucial question to be explored. Throughout history, rural America has been the place for expansion, which will continue in the future. Urban areas will also continue to grow into these undeveloped places and continue to be enabled by the countryside resources. Thus, it is the place of great potential threat to the unbuilt environment and our natural resources. Importantly, it is a significant and primary place for creating and fostering renewable resources to combat climate change. These open areas are the places for farms, forestation, windmills, solar farms, etc. aid in our strategic work to be more sustainable and resilient.   While our rural areas are not the places with the greatest population density to serve, they offer the resources that will serve urban areas with the greater densities.

Without an awareness of the potential future value of these rural areas and the conscious stewardship of our rural places, growth and development will go unchecked with the potential to further heighten issues of climate change rather than to mitigate the effects of climate change.

Does this relate to the AIA Climate Action Plan?

Climate effects are showing up first in the countryside across the globe. Thus, our climate action reactions and adaptations must originate in our countryside, our rural areas. So, what does this mean to the practice of architecture in rural areas? This Rural Issues Incubator Group has legitimized this question and validated that more work is needed to develop a set of best practices to directly counteract the climate effects phenomenon. This will be a central focus within the creation of a New Rural Agenda to be applied in planning and architectural design.

Why a Rural Agenda?

Architects of the future will be called upon to provide services for the expansion and growth that is sure to occur within the rural landscape. Just as architects concern and attention led to the establishment of best practices for development and design in urban areas of our country, it is apparent that a similar imperative exists for development and design for our rural areas.

Many of the issues of the urban agenda will be familiar and relate to the concerns and issues for the rural areas:

- Embracing rural preservation like embracing urbanization,
- Integration of equity in development whether urban or rural,
- Fostering urban planning, planned city extension as development extends into rural landscape.
- Supporting relevant sustainable development goals.

These have been well defined for urban development, but what will be in the best interest and conservation of rural America?

AIA embraced the New Urban Agenda as an "opportunity for architects to impact the next 20 years of urban development." This imperative had been adopted and aggressively pursued to assure "smart growth" in more populated areas. As has been identified and verified by many architectural schools throughout the country, our less populated areas – the countryside – have not been given the same consideration.

This has not been as much of a concern in the past. As growth of urban areas are spilling over into the countryside it is time for similar embracing of the rural landscape to preserve, conserve and create the "smart growth" concepts for these less populated places, which may have some similarities with the New Urban Agenda but most certainly will be very different.

Architects will be called upon to plan and design in areas as they have in urban areas and as they have in rural areas of the past. However, with the current issues and threats that are forming for rural America there are few established best practices for architects to apply for the work they will be doing in these rural areas of the future. The AIA must accept this as another facet of responsibility for how architectural educators and future architectural practitioners will most effectively approach these future strategies for the betterment of our built environment and better serve this segment of our society.

As stated by one architectural educator during our research and information gathering of the work by our universities on this topic, "it is not only irresponsible for AIA to not actively address this need. Given the future of our environment it will be self-destructive if we do not."

Incubator Group Research

The research and data generated this year by this Incubator Group has led to specific conclusions and recommendations that there should be significant and growing concern for the unbuilt environment and the less populated areas of America as much or even more so than in the more densely populated built areas of America.

Rural Defined

Rural has many definitions and there are many perceptions and images of rural. It can be open farmland, new housing subdivisions on the outskirts of town, dense forests and wildernesses or open plains. By the USDA 's Economic Research Service provides many ways to measure and delineate rural communities. Hence it can become complex to define.

However, for the purpose of this initial research we used a definition of the U. S. Census Bureau that simply "defines rural as what is not urban - that is, after defining individual urban areas, rural is what is left." The diagram below illustrates this description.

Graphic Depiction of Urban/Rural Classification

Source: U.S. Census Bureau
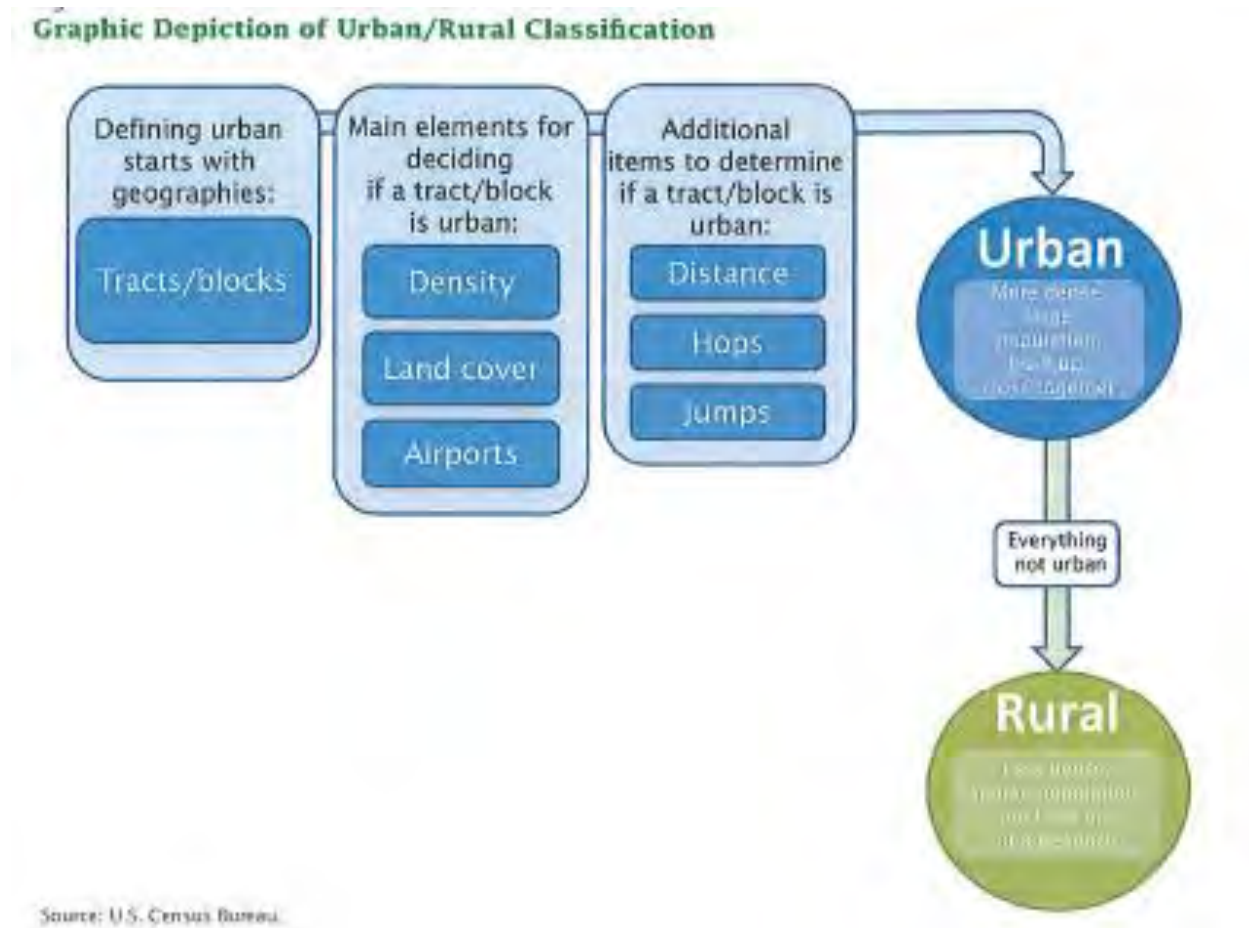
University Research

A survey was made of a cross section of more than 18 universities across the United States. This investigation included mostly land grant universities with architectural programs because as land grant universities they are most likely to have extension programs into rural places for several services. Thus, we assumed they would have architectural extension programs as well. We found that overwhelmingly these architectural schools have well established outreach and research into the less populated areas they serve. The issues of these less dense communities have been researched and served as architectural laboratories for years providing much relevant data and information to this question. These discussions were beneficial with many common patterns emerging as listed below.

Observations:

1. Almost all of Land Grant Universities contacted are engaged with programs, labs, studies focusing in non-urban/rural studies.
2. Non-Urban/Rural topics vary and are often specific to socio-economic needs of the study location.
3. Generally, study topics result in the discovery and confirmation that most issues within non-urban/rural areas are rooted in their financial needs and a disparity of services.
4. Universities are well ahead of AIA and architectural practices studying and addressing needs in these Rural/Non-urban places, including impacts of climate change.
5. Within the academic settings there is a strong sentiment that there is an imperative for addressing the need for a "Rural Agenda".
6. The most common issues being considered include the follows:

   - Rural Housing,
   - Medical Services,
   - Emergency Services,
   - Technology/Internet Services,
   - Disaster relief (flood, Fire, tornado, Hurricane)
   - Climate Effects

All of these are currently acknowledged concerns of our profession. Many issues are related to our Climate Action Plan.

Conclusions & Recommendation:

A subsequent work group is warranted to succeed this incubator group. This topic's relevance to our profession requires more focus and attention to better inform AIA, architectural education and architectural practices of best practices and solutions the future planning and development of Rural/Non-urban places throughout the US.

Workshops

Findings: Research Cause and Effect

AIA and all practicing architects must accept the responsibility to be better informed and prepared to confront these challenges that will impact this valuable resource, the places in between our built environments – the rural countryside.

Based upon this research, dialogue, and workshops during 2020, a wide range of common challenges are recognized throughout rural America. The severity of these challenges is complex because it varies depending upon the geography, demographics, culture, and location within less populated areas throughout America.

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Advocacy

Too often residents in these areas are voiceless or without the significant advocacy of more highly populated urban areas. This attributes to lesser representation with governmental authorities and decision-makers. In addition, there are other overlapping factors impairing advocacy for rural areas: a stewardship void, the loss of family farms and zoning practices.

- Stewardship Void

Since before the founding of this country the stewardship of open space/rural areas and less populated areas has been an accepted responsibility of those living in these areas. These individuals typically have had a common commitment to the stewardship and conservation of these areas of the country. There are factors already creating a void of this stewardship that has an impact throughout the country.

Increasingly this void of stewardship for these less populated places is due to a reduction in rural interest groups, particularly farmers, ranchers, and other agricultural related entities. In the past these interest groups have served as significant advocates for rural America. With a

greater awareness of these challenges and the vulnerability of the countryside this advocacy for the rural landscape should grow to include residents and leadership from these more populated and urban areas of America.

- Loss of Family Farms

A significant population that owned and inhabited the land in the less populated areas were family farms. Over the past decades there have been alarming decreases in operating family farms that uphold this commitment of stewardship and conservation. Statistics will show that this is only going to increase in the future, therefore this advocacy loss for these ideals within rural America creates a widening void that will easily be filled by other interests that may not have the same priorities of conservation and stewardship of this unbuilt environment. A "New Rural Agenda" promoted by AIA will help fill this void.

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Many of these areas are exempt from zoning. While zoning is often seen by ruralist as an unnecessary restriction in how land can be used, it opens these rural areas to uncontrolled development which threatens the preservation of the quality of these unbuilt environments in the future. A "New Rural Agenda" should provide the development parameters needed for the future.

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Technology

Throughout much of our less populated areas there exist a common deficiency which inhibits addressing many issues related to the built environment. This threat is due to the lack of consistent and reliable internet availability with sufficient capacity. This has resulted from the expected priority to provide internet technology to more populated areas leaving less populated, rural areas unserved or underserved. This limits access to knowledge and the educational means to raise awareness of these deficiencies and improve communication of the ideals to advance improvements. In the future there must be a priority for funding to assure that even our less populated, rural areas, are equitably provided access to the technology and bandwidth for adequate internet access just as rural areas came to have LAN and Cell telephone service as well as electrical services equitably provided. Such needs can be addressed within a "New Rural Agenda".

Vulnerability

The factors described above amplify that the countryside of rural America is vulnerable. Unchecked and without raised awareness and advocacy for appropriate development concepts and principles, an enormous threat exists. Architects will continue to work with governmental agencies, general contractors, and developers as we are certain to experience increased development within our current rural and less populated areas.

More recently, the effects of the COVID-19 pandemic have raised the potential of a greater migration from urban areas which was not previously predicted. Our profession must be ready to assist in determining these indicators and address the planning and design challenges this will present.

Therefore, it is essential that AIA and practicing architects create and adopt uniformly accepted ideals for development and design within these non-urban, less populated areas. This is a challenge for our profession that has not received its' due attention in the past that is now mandated for the future. With the continued changes in society and the ongoing effect of climate change, these threats have silently intensified and most recently amplified by the effect of the pandemic. AIA and practicing architects must address how we will respond in the future.

As a noted professor from one of the universities who has provided decades of educational opportunities in the realm of public design and architecture in rural areas shared:

> *"There is an imperative for AIA to address this topic. It is not just irresponsible for AIA and architects to ignore this topic, rather it is self-destructive to society if it does not receive proper attention".*
> ==*Credit will be provided. Awaiting permission from this person with this quote-*==

Our Call for Action

Our work is not complete. The Rural Issues Incubator Group highly recommends that the AIA Board of Directors authorize a full work group study on this topic during 2021 with a goal to formulate a "New Rural Agenda.

It is time for AIA to further investigate these future needs now, while we have time to adapt and develop best practices for the sake of "smart growth" within our rural countryside. For research, education, and our practices to be most consistently effective, it is time to thoughtfully and consciously create a "New Rural Agenda" that establishes principles of best practices for the future development and design. Such action will be effective for the conservation of better living standards for our rural and less populated places as well as for adequately and appropriately sustaining of urban areas.

ORANIZATIONS that support THE RURAL AGENDA (November 12, 2020)

National Intermediaries with rural focus or components (and ties to arts, placemaking, design):

- Housing Assistance Council (HAC)
- Rural LISC
- Neighborworks
- Enterprise Community Partners - Rural and Native American Program

National Entities with Rural Arts Focus:

- Art of the Rural
- Springboard for the Arts
- Appalshop; Center for Rural Strategies
- National Endowment for the Arts
  - Citizens Institute for Rural Design (CIRD) Program run by HAC
- Center for Rural Strategies

Thought Leaders in Rural Design:

- Dewey Thorbeck--Univ of Minnesota
- Ted Jojola - UMN School of Architecture and Planning
- Auburn's Rural Studio
- Joseph Kunkel and Sustainable Native Communities Studio of Mass Group

Funders of Design / Planning in Rural Communities

- National Endowment for the Arts
- National Endowment for the Humanities
- HUD - CDBG
- USDA

Additional Federal Programs that Support Arts and Cultural Programs

- US Department of Commerce Economic Development Administration
- US Treasury Community Development Financial Institution Fund (CDFI)
- NEA provides funds for planning and design
- USDOT's Federal Highway Administration program for multi-purpose centers
- USDA Rural development Program
- National Governors Association

State Programs for funding Design/Planning and economic development in Rural Communities

- Empire State Development (NYS)
- Appalshop (Kentucky and Appalachia)
- Arkansas Rural Development Commission
- Almost every state has either a state operated and/or USDA Rural Development Program

USDA

United States Department of Agriculture

National Institute of Food and Agriculture

NIFA LAND-GRANT COLLEGES AND UNIVERSITIES

Northwest Indian College

Blackfeet Community College

Aaniih Nakoda College

Turtle Mountain Community College

Cankdeska Cikana Comm. College

White Earth Tribal & Community College

Lac Courte Oreilles Ojibwa Community College

Keweenaw Bay Ojibwa Community College**

University of Vermont

University of Maine

Washington State University

Salish Kootenai College

Stone Child College

Fort Peck Community College

Fort Berthold Comm. College

Leech Lake Tribal College

Bay Mills Community College

University of Massachusetts

University of New Hampshire

Univ. of Idaho

Montana State University

Little Big Horn College

Chief Dull Knife College

United Tribes Technical College

North Dakota State Univ.

Sitting Bull Coll.

Fond du Lac Tribal & Comm. College

College of Menominee Nation

Saginaw Chippewa Tribal College

Cornell University

University of Rhode Island

Oregon State University

Sisseton Wahpeton College

University of Minnesota

University of Wisconsin

Michigan State University

University of Connecticut

Si Tanka/Huron Univ.

Ogisla Lakota College

South Dakota State University

Sinte Gleska Univ.

Pennsylvania State University

Rutgers University

University of Delaware

Utah State University

University of Wyoming

Nebraska Indian Community College

Iowa State University

Ohio State University

West Virginia University

Delaware State University

University of Maryland College Park

D-Q University

University of Nevada

Little Priest Tribal College

University of Nebraska

Purdue University

Central State University*

West Virginia State Univ.

University of Maryland Eastern Shore

University of the District of Columbia

Colorado State University

University of Illinois

University of California

Kansas State University

University of Missouri

Virginia Tech

Virginia State University

Haskell Indian Nations University

Lincoln University

University of Kentucky

Kentucky State University

University of Hawaii

Diné College

Navajo Technical College

Institute of American Indian and Alaska Native Culture and Arts Development

Oklahoma State University

University of Arkansas

University of Tennessee

North Carolina A&T State University

North Carolina State University

HAWAII

Southwestern Indian Polytech Institute

Langston University

College of the Muscogee Nation**

Tennessee State University

Clemson University

University of Arizona

New Mexico State University

University of Arkansas at Pine Bluff

Alabama A&M Univ.

University of Georgia

South Carolina State University

Tohono O'Odham Community College

Mississippi State University

Auburn University

Fort Valley State University

Tuskegee University

Louisiana State University

Texas A&M University

Alcorn State University

Florida A&M University

University of Florida

PACIFIC BASIN

NORTHERN MARIANAS

Northern Marianas College

Ilisagvik College

Prairie View A&M University

Southern University and A&M College

GUAM

University of Guam

College of Micronesia

FEDERAL STATES OF MICRONESIA

ALASKA

University of Alaska

AMERICAN SAMOA

American Samoa Community College

PUERTO RICO / U.S. VIRGIN ISLANDS

University of the Virgin Islands

University of Puerto Rico

● 1862
☆ 1890
■ 1994

* Central State University (CSU), in Ohio, has been designated as an 1890 LGU. Under the law, CSU will be eligible to receive certain capacity funds in October 2014 and others in fiscal year 2016.

** College of the Muscogee Nation and Keweenaw Bay Ojibwa Community College are designated as 1994 LGUs and will be eligible to receive capacity funds in October 2014.

AIA Strategic Council
Rural Incubator Group – University Architecture School Research

GOAL: The goal of this effort is to gauge if architectural programs are studying rural and remote areas as part of their curriculum. If the schools are addressing rural and remote, then to understand how they are framing the conversation and how they are addressing the subject.

	Universities & Contacts	Confirmation of Program, Studies, Lab	Identified Issues/Concerns	Other Comments
1.	NC State University David Hall Bryan Bell	1. Design Corp. 2. Costal Dynamics Lab 3. Numerous other Studios	1. Funding 2. Housing (Rural) 3. Climate/Resilience 4. Site specific needs	Long standing program with international notoriety
2.	UNC-Charlotte Nadia Anderson	1. Disaster relief Program 2. Study identifying rural issues in 32 surrounding counties 3. Community Design Labs	1. Sustainability 2. Disaster relief 3. Site specific projects	Additional dialogue needed, in particular related to rural issues study
3.	Iowa State University Kimberly Zarezar	1. Design studio on social/environmental issues	1. Undefined	Follow up needed
4.	Clemson University Kate Schwennsen	1. Design/Build Lab/studio – not rural community related 2. Acknowledge need for focus	1. None reported	No follow up required
5.	University of Minnesota Dewey Thorbeck (retired)	1. Center for rural architecture	1. Unidentified	Further follow up needed, multiple attempts without response as of yet.

6.	Washington State University Bob Krikas & Michael Sanchez	1. Design Initiative Studio	1. Community design center 2. Community engaged learning and scholarship mission	
7.	Montana State University Ralph Johnson	Community Design Center (4th Year Studio)	Connecting communities with non-profits and agencies to provide planning and design skills.	
7.	Kansas University			
8.	University of Arizona	1. Service-learning studios for rural communities	1. Rural Opportunity	Not a yearly studio and only happens when opportunities arise
9.	Cornell University			
10.	Syracuse University Julia Czerniak, Assoc. Dean Fei Wang, Professor	1. Rurban Commune VC Studio 2. Rural Reconstruction Projects Xiong'an, China	1. Sustainability 2. Urban Effects 3. Rural MP/ Reconstruction 4. Resilience /Regeneration	Need for rural design dialogue and curriculum nationally/internationally
11.	Auburn University			
12.	Mississippi State University			
13.	University of Arkansas Peter MacKeith, Dean John Folan, Professor Ken McCown, LA Professor	1. Multiple rural community studios 2. Adaptive Use Studio 3. FSA Housing Resettlement Studio 4. Research projects Ark Timberlands	1. Sustainability 2. Optimize Urban Linkages 3. Rural MP and Housing Resettlement Initiatives	School is currently developing a specific rural studio outreach program that extends the reach of

	Carl Matthews, ID Professor Marlon Blackwell, Dist. Professor	5. U of Ark Community Design Center(UACDC)	4. "Reslient Atlases (Water, Food, Energy Delivery)	the Community Design Center
14.	Kansas State University Timothy de Noble, Dean Todd Gabbard, Professor Michael Gibson, Professor David Dowell (Alum .. Architect)	1. Net Positive Studio 2. Design Make Studio 3. Small Town Studio	1. Rural Opportunity 2. Services Decay 3. Poverty 4. Health/Nutrition 5. Aging Infrastructure 6. Sustainability/Res.	Rural Kansas engagement KState Research/Extension Hansen Intern Program Huck Boyd Institute Chapman Rural Studies
15.	Virginia Tech			
16.	University of Idaho Randall Teal & Scott Lawrence	1. Studio working with regional native tribes. 2. Design build program with small towns and rural context. 3. Idaho Architecture Collaborative	The IDC is an outreach clearing house focused on rural communities	

Observations:
1. Majority of Land Grant Universities contacted are engaged with programs, labs, studies focusing in non-urban/rural topics.
2. Non-Urban/Rural topics vary and are often specific to socio-economic needs of the study location.
3. Generally, study topics result in to financial needs and disparity of study areas.
4. Our universities are well ahead of AIA and architectural practices in addressing needs in these Rural/Non-urban places.
5. Within the academic settings there is a strong sentiment that there is an imperative for addressing the need for a "Rural Agenda".
6. The most common issues or concerns noted are as follows: Rural Housing, Medical Services, Emergency Services, Technology/Internet Services, disaster relief (flood resilience)-all acknowledged concerns of your profession.

Conclusions & Recommendation: A subsequent work group is warranted to succeed this incubator study. This topic's relevance to our profession requires more focus and attention to better inform AIA, architectural education and architectural practices of best practices and solutions for Rural/Non-urban places throughout the US.

THE RURAL AGENDA | Digital Foresight Workshops

August 7th, 2020

Facilitated by 2020 AIA Strategic Council Rural Agenda Working Group

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OBJECTIVE

This year, the AIA Strategic Council has established an "Incubator" work group to focus on the future relation of our architectural profession and the rural areas of our county. The concern is that there are unique factors that the AIA must identify and understand to better align our design senses, principles and best practices to effectively engage with rural America just as we have responsibly done with urban areas.

Many of the issues are similar: environmental stewardship, equity, housing, appropriate planning, etc. but we know that there are significant differences regarding responsible development, funding resources, and understanding with how architecture can positively contribute to the community and built environment.

Our work group is tasked to synthesize information and draw insights into how the AIA might best address these concerns for the betterment of our profession, our AIA members, and our society.

As part of our discovery process we seek to understand the perspectives of primary stakeholders associated with this topic both within the profession [i.e. current students, emerging professionals, and seasoned practitioners inclusive of academicians] and beyond our profession [i.e. community members and leaders].

The insights we receive from these sessions will help inform our working group's continued exploration of this topic, and ultimately our recommendations to the AIA to guide its role in this effort.

DRAFT AGENDA

00:00 Arrive + Settle In
https://docs.google.com/spreadsheets/d/17YaWe5dT3jO91Lt8OI0_LljZ2NCyQ__ErY_ycnX6YSs/edit?usp=sharing

00:05 Introductions + Warm Up
State your name, your professional background and current title, and the job you'd do if you weren't in your current career (or the thing you'd study) – 30 seconds per person, max

Align on Objectives + Review Agenda
Share the SC's mission, objective for this session, and how we'll use what we learn
Review how this session will be run

00:15 Reflect
Conduct a brainstorm on (1) what it feels like when you are "empowered" (in practice or education), then (2) what it feels like when you are "challenged" (in practice or education)
5 minutes total

Now, consider actual moments within your continuum when you felt "empowered" by your skills in the rural setting (+) or "challenged" by skills that are missing in the rural setting (-); each participant takes a few minutes to write all that you can think of in the "Empowered and Challenged" Google Doc. Pick a row and remember to add your initials. Add as many as you can.
https://docs.google.com/spreadsheets/d/1ANXpzWTClS0Ru7-igC2Ut0ogLLny7MzaLkya_N5dAxQ/edit?usp=sharing

00:25 **Map + Share:**
Participants place their moments on the "Moment Map" Google Doc, either above the line (+) or below the line (-)
https://docs.google.com/spreadsheets/d/1toSQAwYlqVhml3BPNeknXFs3IQX--cRTNVdtSs7_e_c/edit?usp=sharing

Discuss as a full group the "why/where" of what lands on the map; facilitator will reflect back core themes, scribe will capture

00:40 **Discuss:**
Consider what it would take (i.e. specific skills, experiences, etc.) to close the gap between "challenged" and "empowered" in your thoughts.

Facilitation option to use the following questions, as appropriate, to prompt the discussion:
- *Where/how do you learn best?*
- *What are/were the experiences you found most valuable (and why)?*
- *What aspects of your education prepared you the best for professional practice in rural context (or which do you <u>anticipate</u> will prepare you best)?*
- *What didn't you see coming when you entered the rural practice environment (or, what gives you concern when you anticipate entering)?*
- *What have you learned in informal ways that has been valuable?*
- *What skills do you think are different between practice in the rural vs urban environment?*

Time permitting: begin to translate issues into opportunities by crafting "How might we…?" statements

01:10 **Advocacy of Issue Areas for the RA Group to Pursue**
Solicit thoughts on the most important themes/issues/topics/"how might we…." statements that are emerging. Ask "what solution spaces should our Working Group explore to inform its recommendations to the AIA?"

01:25   Wrap Up + Acknowledgements

01:30   Adjourn

MATERIALS:

- Compute/Internet/Web Cam/Audio
- Zoom
- Google Account/Access

Moment Map

Empowered section:

less formaity

connected to the landscape- growing up on a farm

grew up on an acreage outside of city limits, still attended school in the city

learn a strong work ethic

sense that humans are just another animal

service-based appreciation that began to acknowledge the minority

study abroad

developed close family

close knit studio

had extended family that farmed, they could built whatever, whenever. Necessity...

beauty of landscape

more responsibility at a younger age

Sought out an apprenticeship a small, local firm.

Was active in local AIA chapter due to my mentor

Small community meant the few resources available (scholarships, grants) were accessible

small state... allowed access to scholarships/r esources

spent a year in berlin and learned how architecture communicates social attitudes and issues

studied in various locations abroad.

Large arch program in smaller university meant more emphasis and empowerment of architecture students on campus

Retreat to rural as place of respite

only experience with rural building are custom homes

small firm experience meant many hats had to be worn

small firm... allowed opportunity to experience all sides of practice

Worked for school district, one of the largest organizations that built habitually...

Worked throughout high school/underg rad at various firms, small community...

6th year focused on aboriginal healthcare projects in Australia

sent year in Europe, traveling on a Grand tour as explicit intent of program

easier to see a project through from design to detail

teaching design to students at rural Piney Woods School in MS

stakeholders are much more approachable

gradually realized that environment is my passions and that I could use my degree to pursue it

confidence to directly apply skills and abilities to projects to impact community

small community and big impact

can afford to work and raise a family

smaller network was easier

can afford to work and raise a family

Design isn't frivolous

client groups have sense of ownership

sense that we are all in this together

opportunities to bedome familiar with small communities

mature enough to listen to communities - leave ego at door

sense of community within the profession

opportunities for ownership

opportunities for leadership

Career stages (center divider):

HIGH SCHOOL	COLLEGE	INTERNSHIP NO LICENSE	1-5 YEARS LICENSED	5-10 YEARS LICENSED	OVER-10 YEARS LICENSED

Challenged section:

Few role models

precedents were what you could experience in your community

commute to city for high school

Few design role models to look up to

big fish in small pond is a help and hurt

Large state university near city has less rural project types

studios focused more on urban projects

only experience with rural building are custom homes

few Native role models

unpaid internships were offered

isolation... no one else taking exams.

had to move to find jobs

had to leave small town to work on diff. project types

needed to go to a city to get to go the divesity of firm types I wanted to experience

struggled with qualifying your experience as a long term apprentice at a small firm vs. a large firm that has a different view on accuring experience...

difficult to attract staff

lack of racial diversity within the profession

felt disconnected

unaware of architects/wha t architects do

harmfully conservative atmosphere

lack of outside perspectives in classes

Limited access to other cities/commun ities different than my own.

Limited scholarships/i nternships

extended family lived in rural parts of the country, closeminded attitudes due to lack of diversity, travel, experiences in their lives

Having to recuse my self for public bids b/c everyone was related somehow.

few internship options

pigeonholed

dilemma of city owners building in rural community using urban approach

imagery of mobile homes on landscape

unclear path of access to study architecture

only taught to design buildings - no attention to landscape and nauture

taught to design for clients, rather than community or location

grew up on an acreage outside of city limits, still attended school in the city

rural as narrow-minded, behind the times, etc

No opportunities to work in rural place, moved to the city

lack of critical mass

lack of critical mass

lack of critical mass

lack of critical mass

TECHNOLOGY IMPACTING PRACTICE

FINAL SUMMARY OF WORKGROUP TOPIC
Our world is rapidly changing, technology is an equalizer and enabler, and at the same time can be a threat to our profession.

RESTATEMENT OF PROJECT GOALS AND POTENTIAL IMPACTS
We must make Architecture an accessible and equitable profession. We need to open our doors and welcome nontraditional specialists to advance our agenda- focused on climate change, social justice and equity, diversity, and inclusion. But most of all, we must change how we incorporate technology into our businesses, practices, AIA infrastructure and education.

ALIGNMENT WITH THE STRATEGIC PLAN, BIG MOVE AND OTHER INSTITUTE INITIATIVES
From the recent Strategic Plan: "Broaden the tent" and "Revolutionize research and technology"
Are we ready to broaden the tent to allow technology savvy individuals to be part of the profession and provide opportunities for these individuals to benefit from being contributors and engaged in the architecture profession? How do we leverage technology to address the three major challenges that confront architects and our profession today (climate change, social Justice, equity)?

SUMMARY OF FINDINGS

1.1 LEAD OR FOLLOW? – New Ways of Practice
This rapid transformation coupled by accelerated business transformations is an opportunity to embrace change and develop new ways of practice. This vision will no longer be limited by the technology adoption rather liberated by it.
- Focusing on the knowledge and life-cycle skills of our members
- Developing resources such as an interactive technology road map & digital transformation toolkit
- Dismantling institutional frameworks chronically allergic to risk

1.2 INNOVATE OR DIE? - New Ways of Delivery
As a profession we can leverage outreach to other industries affected by technology disruptions while on-boarding new talent.
- Develop a manual of digital practice
- Create a broader coalition of like-minded professionals outside our traditional borders
- Develop a stance and advocate for data privacy and for policy around building and people data
- Provide easier access to resources to support technology adoption
- Create open, accessible and affordable platforms for members use.

1.3 FOR RICHER OR FOR POORER? - New Ways of Monetization
The current digital technology market is fertile with new revenue streams opportunities. Influence technology driven solutions to shift member's digital ambivalence towards technology savvy professional services.
- Establish a department tasked with digital co-lab innovation research development, incubation, and investment
- Investigate ways to aggregate, visualize, and monetize building performance and spatial data sets through analytics.
- Provide access to tech-enabled business models applicable to architecture which capitalize on operational (bad) failures vs experimental (good) failures
- Utilize technology to enable architects to be involved throughout the entire life cycle of a project, beyond its inception and construction

RECOMMENDATIONS MOVING FORWARD
If we want to be lead agents, WE MUST TRANSFORM. After over a year worth of investigation, and tapping into over 20 leading experts in the AEC tech field, we believe the path towards change must include the following:
- Framework / policy for digital practice
- Department tasked with digital innovation & development
- Interactive technology road map & digital transformation toolkit
- Manual of Digital Practice
- Broadening our Institute to include non-traditional members and innovators

SC PROJECT CONVENERS & MEMBERS
Gregory Yager & Mindy Aust Co-conveners
Daniel LaPan, Douglas Teiger, Erin Conti, Brynnemarie Lancotti, Gail Kubik, Jessica Parmenter, Tom Liebel, Natasha Luthra, Randall Vaughn, Ricardo Rodriguez, Roderick Ashley, Ryan Johnson, Will Zambrano

TEAM (AIA STAFF, INSTITUTE, MEMBERSHIP)
Elizabeth Wolverton, Pam Day

TECHNOLOGY IMPACTING PRACTICE

LEAD OR FOLLOW? – **New Ways of Practice**

INNOVATE OR DIE? – New Ways of Delivery

FOR RICHER OR FOR POORER? – New Ways of Monetization

2020 Strategic Council Technology Impacting Practice Work Group

Co-Conveners: Gregory Yager, FAIA
                                              Mindy Aust, AIA

Work Group Members: Brynnemarie Lanciotti, AIA (Vice Moderator)
                                              Daniel LaPan, AIA
                                              Douglas Teiger, AIA
                                              Erin Conti, Assoc. AIA (AIAS President)
                                              Gail Kubik, Assoc. AIA (NAC)
                                              Jessica Parmenter, Assoc. AIA (NAC)
                                              Natasha Luthra, AIA (TAP 2018 Chair)
                                              Randall Vaughn, AIA
                                              Ricardo Rodriguez, Assoc. AIA
                                              Roderick Ashley, FAIA
                                              Ryan Johnson, AIA (TAP 2020 Chair)
                                              Tom Liebel, FAIA (Moderator)
                                              Willy Zambrano, AIA

Work Group Report
December 01, 2020

**The American
Institute
of Architects**

Table of Contents

1.0 Executive Summary

We must make ARCHITECTURE an accessible and equitable profession. We need to open our doors and welcome nontraditional specialists to advance our agenda – focused on Climate Change, Social Justice and Equity, Diversity and Inclusion. But most of all, we must change how we incorporate technology into our businesses, practices, AIA infrastructure and education.

1.0 EXECUTIVE SUMMARY

Our world is rapidly changing, technology is an equalizer and enabler, and at the same time can be a threat to our profession. We are at a most pivotal point in a century.

We must recognize that the challenges of Climate Change, Social Justice, and Racial/Gender Equity are interconnected and systemic. As a profession we have contributed to these problems, even if we did not know it at the time. These challenges are embedded in our past and our future, and we must change to promote change.

Imagine the year 2030:

Architects are finally valued worldwide as the stewards for climate change. AIA Members celebrate its first publicly traded architectural and design firm breaking into the Fortune 500 list. Billings and profits are up, and expenses down, as we look to turn the corner on climate change. Highly qualified talent is flocking in droves to our firms, largely due to the exceptional benefits firms are able to offer. Under the leadership of the first Native American AIA President, not a single justice, equity, diversity complaint has been filed against any of AIA's Honor Awardees.

The AIA's building performance and social spatial dataset becomes AEC Industry's most valued intellectual property, and members become stakeholders in creating new and innovative technologies. Likewise, the Institute's Small Firm Index, pushes forward into its second decade with positive growth and shows the number of office closures under 1%. With over 60% of new memberships, BIPOC members have generated an architectural renaissance amongst previously underrepresented communities.

The path to achieving meaningful progress in the fight against **climate change, diversity, inclusion and architectural education** is unattainable through our current channels and methods of engagement. The COVID-19 Pandemic has exacerbated digital transformation and is altering the paradigm of the AEC Industry at an alarming rate in which any innovative technology company could outperform member's AIA architectural services.

"The vast majority of human beings dislike and even actually dread all notions with which they are not familiar...Hence it comes about that at their first appearance innovators have generally been persecuted, and always derided as fools and madmen."
Aldous Huxley, Brave New World, 1932

"This vision is not about a future tech utopia, but rather about the immediate livelihood of our profession."
AIA Strategic Council
Technology Impacting Practice Work Group

So, we find ourselves at a few crossroads:

1.1 LEAD OR FOLLOW? – New Ways of Practice

This rapid transformation coupled by accelerated business transformations is an opportunity to embrace change and develop new ways of practice. This vision will no longer be limited by the technology adoption rather liberated by it.

- Focusing on the knowledge and life-cycle skills of our members
- Developing resources such as an interactive technology road map & digital transformation toolkit
- Dismantling institutional frameworks chronically allergic to risk

1.2 INNOVATE OR DIE? – New Ways of Delivery

As a profession we can leverage outreach to other industries affected by technology disruptions while on-boarding new talent.

- Develop a manual of digital practice
- Create a broader coalition of like-minded professionals outside our traditional borders
- Develop a stance and advocate for data privacy and for policy around building and people data
- Provide easier access to resources to support technology adoption
- Create open, accessible and affordable platforms for members use.

1.3 FOR RICHER OR FOR POORER? – New Ways of Monetization

The current digital technology market is fertile with new revenue streams and opportunities. Influence technology driven solutions to shift member's digital ambivalence towards technology savvy professional services.

- Establish a department tasked with digital co-lab innovation research, development, incubation, and investment
- Investigate ways to aggregate, visualize, and monetize building performance and spatial data sets through analytics.
- Provide access to tech-enabled business models applicable to architecture which capitalize on operational (bad) failures vs experimental (good) failures
- Utilize technology to enable architects to be involved throughout the entire life cycle of a project, beyond its inception and construction

1.4 CALL TO ACTION

If we want to be lead agents, WE MUST TRANSFORM.
After over a year worth of investigation, and tapping into over 20 leading experts in the AEC tech field, we believe the path towards change must include the following:

- **Framework / policy for digital practice**
- **Department tasked with digital innovation & development**
- **Interactive technology road map & digital transformation toolkit**
- **Manual of Digital Practice**
- **Broadening our Institute to include non-traditional members and innovators**

WE MUST ACT AS ONE 95,000 member force in all that we do. New architectural business models reflect how we bring value to clients and industry. We need the power of data collection and analytics to address these issues head on.

The recent 2021-2025 AIA Strategic Plan was written and approved to open doors for every one.

"Broaden the tent: Collaborate with design, construction, community leaders, and stakeholders. Organize and activate grassroots advocates."

"Revolutionize research and technology: Leverage emerging technologies to accelerate architecture's progression to a knowledge-driven discipline and evidence-based, transformative solutions. Harness an intra/entrepreneurial start-up mentality to foster rapid innovation."

Is AIA ready to broaden the tent to allow technology savvy individuals to be part of the profession and provide opportunities for these individuals to benefit from being Contributors and engaged in the architecture profession?

How do we leverage technology to address the three major challenges that confront architects and our profession today (climate change, Social Justice, Equity)?

2.0 New Ways of Delivery

2.0 NEW WAYS OF DELIVERY

INNOVATE OR DIE – New Ways of Delivery

As a profession we have the opportunity to reach outside our industry to see how other fields are rapidly changing with the advent of new disruptions in technology. Looking ahead we must shift how we practice architecture to remain relevant. The global pandemic has sent some clear warning shots across the bow of our profession and to ignore them is at our peril.

In order to assure our relevance and livelihoods, we must bridge the gap in knowledge, skills, competence, and service needs of our clients and communities. For this, it is of paramount importance to tap into the overlooked and unheard point of views that we've systematically excluded in the past. This "brain drain" has been accelerated now by two recessions, lack of market-competent employment models, and limited career growth in a traditional practice setting. Should we wish to tip the balance, our profession needs to develop contemporary ways of on boarding new talent. An integral part of this re-haul strategy must also be to provide barrier-free access to talent, resources, education, and tools, to maximize its reach and effectiveness.

Still, technology itself is but a tool, not a silver bullet, nor can it replace policies grounded in human rights, social justice, equity, and environmental stewardship. The arts, humanities and social science backbone of our profession will be important components in the fight against techno-utopian discourses of data determinism. Unfortunately, the profession has already fallen prey to these tendencies and capitulated control over our means of production, and how we practice, by allowing it to be arrested by third parties. As data ownership, privacy and transparency concerns are integral ethical discussions being faced by the tech community, is it just a matter of time until we are also confronted with these same sorts of issues with BIM, building, user, and product data. To tackle these inherent challenges we propose the following:

- Develop a manual of digital practice

- Create a broader coalition of like-minded professionals outside our traditional borders

- Develop a stance and advocate for data privacy and for policy around building and people data

- Provide easier access to resources to support technology adoption

3.0 New Ways of Practice

3.0 NEW WAYS OF PRACTICE

LEAD OR FOLLOW? – New Ways of Practice

The need for technology development in the A/E industry has accelerated over the past two decades, but substantial progress has only been achieved over the past five years. This rapid transformation, coupled by accelerated business transformations is an opportunity to embrace change and develop new ways of practice. While these discussions might be uncomfortable to have, they are on a critical-path in order to survive.

As we chart new methods for practicing the business of architecture, this vision will no longer be limited by the technology adoption rather freed by it. For a stagnant industry such as ours, deciding on an overarching vision, or how to innovate by meticulously drafting strategic plans limits the success of the process in turn all but assuring failure by bureaucracy. This, along with the dogmatic lack of transparency prevalent in our practices, has to be forcefully opposed. If anything, we have ample evidence on how our current practice models are inefficient at operating productive businesses.

There's a revolution/transition underway between digital realities and digital representation of spatial experiences, where we will start seeing physical manifestation of bits and bytes. As we get closer to making the tech "disappear", it would allow us to spend more time on value, rather than on production, by:

- Focusing on the knowledge and skills life-cycle of our members

- Developing resources such as an interactive technology road map & digital transformation toolkit

- Dismantling institutional frameworks chronically allergic to risk

- Demonstrating the benefits of creating a seamless workflow and supply chain from inception to development and construction of our ideas in both virtual and physical environments.

Technology has and will enable new ways architecture firms and businesses are organized. It is vital that architecture firms go through a digital transformation to stay relevant. Work to make technology a part of the equity solution, not something that exacerbates the issue. And avoid our contentious predisposition to reinvent the wheel.

4.0 New Ways of Monetization

4.0 NEW WAYS OF MONETIZATION

FOR RICHER OR FOR POORER – New Ways of Monetization

The current market is fertile with opportunities to create new revenue streams by being an early adopter of emerging technology and services. The intersection of emerging technology would empower architects to have more influence over nearly all phases of a project's life-cycle. We have a limited window to take charge and get ahead of the curve as a profession. As an organization this is precisely the time to support our membership by providing new means and resources to assist them in providing greater value to their businesses. The AIA Contract Documents & MasterSpec intellectual properties are great precedents to consider. However, we must explore future digital properties that will yield significant impact and returns for the profession and the Institute.

The historical ambivalence towards the digital fields have snowballed into a large problem: tech illiteracy, which at present pace, will have most architecture firms being operationally obsolete within the next decade. Contemporary practice, in order to be competitive, should be flexible to the opportunities provided by automation. There's a paradigm shift which will fundamentally affect our current methodologies, and further accelerate our commoditization. This shift would allow our professionals to find new ways of valuing work, identify new interactions/engagements with their clients, streamline their expertise, and offer more tailored services.

A shift to value pricing versus selling time, would realign financial incentives by "imagining" a project's design less, while "knowing" it more. Making design intent a tangible and highly specialized matter, rather than opinion, would allow AEC professionals to accurately articulate the value of the knowledge and skills that they bring to the table. In this approach, the AIA should leverage its resources and contacts by becoming transparent in its goal towards technology development. To achieve this we recommend the following:

- Establish a department tasked with digital innovation research, development, incubation, and investment

- Investigate ways to aggregate, visualize, and monetize building data through analytics.

- Provide access to tech-enabled business models applicable to architecture which capitalize on operational (bad) failures vs experimental (good) failures

- Utilize technology to enable architects to be involved throughout the creative and operational life of a project.

We have a limited window to take charge and get ahead of the curve as a profession. The architectural profession needs to understand how the value of our services continues to evolve because of technology or we will continue to fall behind..

5.0 Collaboration with AIA and Knowledge Communities

5.0 COLLABORATION WITH AIA AND KNOWLEDGE COMMUNITIES

On August 3 - 5 the Strategic Council virtually met with the leaders of the AIA Knowledge Communities for the second annual Knowledge Leadership Assembly to work in tandem and exchange ideas elevating the resources of the Institute for its members. Dr. Christopher Luebkeman, ETH in Zurich and Renee Cheng, Dean of the University of Washington College of Built Environments focused on the future and equity.

AIA KNOWLEDGE COMMUNITIES (KCs)

The following AIA KCs are relevant to the Technology Impacting Practice findings and cross pollination. This year we have been fortunate to have Ryan Johnson (2020 Chair) and Natasha Luthra (2018 Chair) of the Technology In Architectural Practice Knowledge Community join our Work Group, and participate and contribute to our various discussions and findings.

Building Performance (BPKC)
The mission of the Building Performance Knowledge Community (BPKC) is to increase building performance related to occupant comfort and health, and to the function, durability, sustainability, and resilience of buildings. This Mission will be accomplished by increasing dissemination of knowledge and resources and increasing engagement of all stakeholders in the design and construction community with an emphasis on integration of building systems and a special focus on the Exterior Building Enclosure.

Corporate Architects and Facility Management (CAFM)
Consists of architects working within and for businesses and corporations. Our mission is to share expertise in the strategic, tactical, and operational activities of real property and facilities management in order to deliver value to the owners we represent.

Project Delivery (PD) 09/10
The AIA Project Delivery Knowledge Community promotes the architect's leadership role in all project delivery methods by assembling and distributing knowledge and best practices for a variety of project delivery methods, e.g. design-build (DB), integrated project deliveries (IPD), and public-private partnerships (P3)

• On September 10th, the Project Delivery Knowledge Community (PDKC) intersected with the Technology in Practice (TIP) group to collaborate on technology impact and how technology is shaping the future in Architecture. The convergence recognized how the pandemic is accelerating the digital transformation. Prioritizing technology and data-driven design for project delivery and practice decisions swiftly became the core of the conversation.

• Project delivery is about problem solving. The 60-minute virtual rendezvous cited climate change as one of the problems as it is increasingly pressurizing the industry to reduce carbon emissions. Amid the stimulating discussion on digitalization of products and processes, Grace Lin, AIA - chair of PDKC, evinced digital technology as an enabler of better collaboration to advance more data-driven decision making. To demonstrate the integration of a digital tool into the

project delivery system, she introduced a new PDKC member Patrick Chopson, AIA – co-founder of "cove.tool". Patrick presented how "cove.tool" performs to achieve carbon neutrality and featured other innovative products that will continue to shape our technology future in Architecture.

Practice Management (PMKC) 08/05
The Practice Management Knowledge Community identifies and develops information on the business of architecture for use by the profession to maintain and improve the quality of the professional and business environment. The PMKC initiates programs, provides content and serves as a resource to other knowledge communities, and acts as experts on AIA Institute programs and policies that pertain to a wide variety of business practices and trends.

Technology in Architectural Practice Knowledge Community (TAP)
The AIA Technology in Architectural Practice Knowledge Community (TAP) serves as a resource for AIA members, the profession, and the public in the deployment of computer technology in the practice of architecture. TAP leaders monitor the development of computer technology and its impact on architecture practice and the entire building life cycle, including design, construction, facility management, and retirement or reuse.

TAP supports the AIA and its members in 3 main ways:
   • Hosts the Building Connections Congress. Each year TAP leadership selects a topic for the conference revolving around technology that warrants Investigation and discussion. Recent topics have ranged from digital fabrication, leveraging data, to artificial intelligence. The conference Is structured so that around 100 firm leaders, technology directors, clients, and media can learn and discuss how these technologies are changing practice. This year the presentations were recorded, and several have been posted on AIAU for sharing the knowledge.

   • Hosts the Innovation Awards, It's annual awards. The awards focus on how technology is being used to change how projects are designed, how projects are being delivered, and how its changing the design process. Previous award winners have ranged from buildings, processes, tools, fabrication methods, and research projects. All the past award winners have been cataloged on the awards portion of the AIAs website as a resource for AIA members.

   • Supports other AIA Knowledge communities, the strategic council, and board. This year TAP has spoken at the Project Delivery Summit, been Involved in the COVID-19 Task force, and Involved in the TIP strategic council work group.

AMERICAN INSTITUTE OF ARCHITECTS STUDENTS (AIAS)
The AIAS Design & Technology Task Force teamed up with the Young Architects Forum to test the limits of virtual collaboration. Through trial and error participants from both groups worked through exercises together on Zoom and tested different virtual platforms over the course of four weeks, discussing what it takes to innovate in the digital realm. It was the intention of this collaboration to bring together students and professionals to provide a wide range of perspectives on what innovation in the digital realm looks like on different levels within education and in practice. During the four weeks we tested Jamboard, Mural, Concept Board, and Miro. Based on survey results the favored platform that was used was Miro. Overall, the workshops were very successful in testing the limits of each platform and starting engaging conversations between students and professionals.

AIA NATIONAL ASSOCIATES COMMITTEE (NAC)

The Forecast Knowledge Work Group created and distributed the Professional Development for Emerging Professionals Survey to representatives from all the AIA Regions through the National Associates Committee and the Young Architects Forum. This presentation includes data collected from Emerging Professionals – including AIA Associate Members and Young Architects (architects licensed under 10 years) – during the pandemic, wherein we asked respondents to share the most impactful change their firms have undergone during this time.

As you can imagine, many respondents commented on how technology enabled firms and employees to be resilient in the face of abrupt and massive change. Reflecting on the overwhelmingly positive response, we can't help but acknowledge the fact that this technology pre-existed COVID-19; yet COVID-19 was the catalyst for change. Which, reduced simplistically, means that it takes a powerful force for change to happen in the Architecture community.

Even when the (technology) tools are right in front of us, we choose to not embrace them. That fact is worth investigating further, in my humble opinion. We firmly believe that the pandemic – the swift transition to embracing technology for remote work – has had some incredibly positive impacts on the Architecture community. The AIA and its membership should choose this moment to assess what "going back to normal" actually means once the pandemic is over. Does it mean technology will be abandoned? Does it mean that flexibility for work life balance will be written out of office manuals? Does it mean that professional growth will come to a halt (because "virtual webinars" will become a thing of the past)?

Or, might we consider how to leverage the positive outcomes by embracing technological advancement for the betterment of the profession? It is said that it takes anywhere between 6-8 months for habits to form. As we move into the 9th month of the COVID-19 pandemic, especially during a resurgence of reported cases, it's time to consider longer-lasting change to our industry. It's time to consider what GOOD habits were formed in tough times. It's time to consider that going "back to normal" is a step backwards. The National Associates Committee is committed to being actively involved in encouraging the profession to continue embracing technology, and is committed to joining forces with the AIA Strategic Council and the AIA Board of Directors to assist in any way possible.

AIA STAFF

Luke Diorio – Business Development Director 07/09
Our discussion with Luke entailed how AIA engages with strategic partners and how Master Spec and Contract Documents have been the enablers and drivers in the AEC industry. He gave us a prelude lens to a possible partnership with an equitable firm which has morphed into the Contract Document program with True Wind Capital that was just announced a few weeks back.

Matthew Welker – Director of Sustainability Metric and Operations 07/29
Discussion with Matthew revolved around the latest beta version of the updated DDx 2030 and how it integrates to the Framework for Design Excellence for S, M, and L size firm engagement. We also emphasized the need to install a framework of tracking and tracing embodied carbon material and integrating to Tally's Life Cycle Analysis framework also.

AIA NATIONAL ASSOCIATES COMMITTEE (NAC)
FORECAST KNOWLEDGE WORK GROUP
PROFESSIONAL DEVELOPMENT FOR EMERGING PROFESSIONALS SURVEY

JESSICA PARMENTER, AT-LARGE DIRECTOR
GAIL KUBIK, NEW ENGLAND RAD
VALERIE MICHALEK, CENTRAL STATES RAD
JUSTIN PATTERSON, SOUTH ATLANTIC RAD
TRE YANCY, GULF STATES RAD

WE ASKED:
WHAT SKILLS DO EMERGING PROFESSIONALS NEED?

WE ALSO ASKED WHAT GAPS IN KNOWLEDGE & SKILLS ARE RECOGNIZABLE IN EMERGING PROFESSIONALS TODAY. THE SAME SKILLS LISTED AS NECESSARY WERE ALSO LISTED AS GAPS.

FUTURE OF PROFESSIONAL DEVELOPMENT
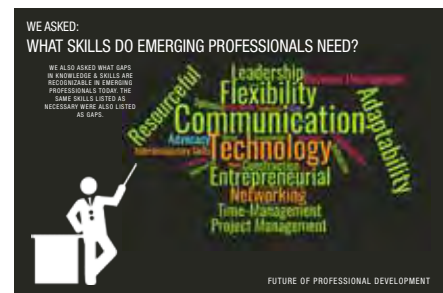
John Crosby – **Managing Director, Corporate Partnerships (email 10/20/20)**

AIA views "relationships" with technology companies – or any other organizations – in some different ways. For example, Strategic Alliances usually fosters relationships with organizations to advance mutually beneficial priorities. Usually, there's no financial tie, though Autodesk does have a tie-in to DDx and pays for the privilege.

From the perspective of an AIA Corporate Partnership our view of partnerships is that we are working together to establish marketing and sales engagements between the partner and our members OR we are helping the partner better understand the architecture profession so it can serve our members more effectively. They are paying for the privilege.

There is also the notion if loosely defining a "partnership" with a technology company to jointly develop a product or service, or to provide services to AIA to deliver its own products or services. Of course, in those situations, either AIA is jointly investing in an initiative or paying for the product or service. But this is the last way I would describe an actual partnership.

Corporate Partnerships provided a list of technology related companies who they have relationships with:
- Deltek
- ConstructConnect
- Madcad
- BQE Core
- Autodesk
- Anguleris Technologies (owns BIMSmith and Swatchbox)

See www.aia.org/partners for a list of all corporate partners.

AIA TOOLS AND RESOURCES

2030 DDx (Design Data Exchange)
The DDx 2030 platform can be more than just an energy performance tracking platform, it can take a holistic approach to track, trace, analyze and synthesize embodied carbon construction material and plugins for other data sets of solutions like geospatial, market driven and demographics.

BRIK (Building Research Information Knowledgebase)
A collaborative effort of the American Institute of Architects and the National Institute of Building Sciences, the Building Research Information Knowledgebase (BRIK) is an interactive portal offering on-line access to peer-reviewed research projects and case studies in all facets of building, from predesign, design, and construction through occupancy and reuse.
BRIK offers a user-friendly approach to those involved in creating the built environment—from researchers to clients to builders to designers to occupants—to help them find the building research, information, and knowledge they need to design, build, own, and operate high-performance buildings.

AIA Equity Partnership Announcement & Mission
https://www.aia.org/articles/6343565-aia-makes-strategic-move-to-investin-cont

6.0 Brief History of Technology in Architectural Practice

6.0 BRIEF HISTORY OF TECHNOLOGY IN ARCHITECTURAL PRACTICE

Architectural technology is a discipline that spans architecture, building science and engineering. It is informed by both practical constraints, and building regulations, as well as standards relating to safety, environmental performance, fire resistance, etc. It is practiced by architects, architectural technologists, structural engineers, architectural/building engineers and others who develop the design/concept into a buildable reality. Specialist manufacturers who develop products used to construct buildings, are also involved in the discipline.

In practice, architectural technology is developed, understood and integrated into a building by producing architectural drawings and schedules. Computer technology is now used on all but the simplest building types. During the twentieth century, the use of computer aided design (CAD) became mainstream, allowing for highly accurate drawings that can be shared electronically, so that for example the architectural plans can be used as the basis for designing electrical and air handling services. As the design develops, that information can be shared with the whole design team. That process is currently taken to a logical conclusion with the widespread use of Building Information Modeling (BIM), which uses a three-dimensional model of the building, created with input from all the disciplines to build up an integrated design.

Most of the major advances have occurred in the last 60 years out of 4609 years since the Egyptians. This represents 1/10th of 1 % in this timeline. In the last 60 years the growth from the beginning of CAD (1957) to 2D drafting 1982 to the beginning of BIM in 1987 to the commercial implementation of VR in 2012 is reflecting how quickly Technology for Architectural Practice is advancing. Or on a 24 hour clock we are currently. Everything from the first computers invented at 23:45PM to midnight , happened in the last 15 minutes based on the example of one day.

The events of the current day have illustrated that change is happening at a rapid pace, one only needs to look at Moores Law to realize that technology evolves and compounds at a rapid rate, thus we as architects and designers need to realize we do not remain diligent and become early adapters of technology, we will lose our position in serving society, our industries and making Architecture a desirable profession.

We must make Architecture a compelling profession, we must make Architecture an equitable profession, we need to open our doors and welcome nontraditional specialists to advance our agenda, particularly around Climate Change, but most of all we must change how we incorporate technology into our business, practices, AIA infrastructure and Education.

We must use technology to make architecture a more robust and rewarding profession, and we must use technology to allow AIA to have the resources and financial position to represent our interests for the common good.

We must broaden our understanding of these technologies, Big Data, AI, Block Chain and VR all have both an implementation aspect and a benefit aspect but the most important element that ties all these forces to gather is the data that we hold in our daily work; energy, materials, populations, density, transportation, and water consumption, all elements are vital to our craft as architects as well as businesses, civic groups and engineering disciplines. Without a forward view and a road map for the future, we as architects will fall further behind our related industries in how we can shape the future.

The graphic timeline below and on the following page reflects the method for delivering construction documents remained almost unchanged from the time of the pyramids to the 1960's. The red lines on the graphic below represent major advances in technology, and what reads as a red block indicates advancement over the last 38 years...

2020	*Convergence of AI-BIG DATA-Blockchain*
2018	*Hypar/Test Fit*
2015	*OpenAI is launched; Generative Design*
2014	*The AIA launches the DDx*
	Digital Projects Catia Frank Ghery
2012	*VR Hits Mainstream The Oculus Kickstarter*
2008	*Blockchain and Cryptocurrency started*
2006	*Construction Drones*
2002	*Autodesk buys Revit*
2000	*Revit*
1995	*International Foundation Class (IFC) file format*
1987	*BIM ArchiCAD*
1985	*Vectorworks*
1982	*2D CAD*
1977	*Graphical Language for Interactive Design (GLIDE)*
1975	*Building Description System (BDS)*
1963	*Sketchpad, CAD with graphical user interface*
1957	*Pronto, first commercial computer-aided machining (CAM) software*
1955	*Designed by Newell and Simon in 1955 it may be considered the first AI program. The person who finally coined the term artificial intelligence and is regarded as the father of AI is John McCarthy.*
1930	*Rapidograph: drawing apparatus and Rapidograph-drawing pens appeared, improving the line quality and, especially, producing consistent line width. A primary drawing tool still in the early 1970s*
1901	*The drafting machine was invented by Charles H. Little (U.S. Patent No. 1,081,758), and he founded the Universal Drafting Machine Company in Cleveland, Ohio, to manufacture and sell the instrument*
1887	*Parallel Rule Patent*
1853	*Industrial production of technical drawing instruments started when Englishman William Stanley (1829–1909) founded a technical manufacturing company in London Even then, however, most tools were still made by hand.*
1709	*Nicolas Bion (about 1652–1733) made and sold mathematical instruments in Paris in his own shop and as royal maker for Louis XIV. He prepared a famous 1709 manual on the construction and use of mathematical instruments.*
79 AD	*Excavations in Pompeii have found a bronze tool kit used by the Romans, which contained triangle rulers, compasses and a ruler to use with a pen*
238 BC	*Ancient Nuragic people in Sardinia used compasses made of bronze*
2589 BC	*The ancient Egyptians are known to have used wooden corner rulers*
500BC+/-	*In ancient Greece, evidence has been found of the use of stylus and metal chisels, scale rulers and triangle rulers*

2589 BC — 2589 BC The ancient Egyptians are known to have used wooden corner rulers.

500 BC — 500 BC In ancient Greece, evidence has been found of the use of styli and metal chisels, scale rulers and triangle rulers.

238 BC — 238 BC Ancient Nuragic people in Sardinia used compasses made of bronze

15 BC — 15 BC Vitruvius is recognized as the first architect of the century

79 AD — 79 AD Excavations in Pompeii have found a bronze tool kit used by the Romans, which contained triangle rulers, compasses and a ruler to use with a pen

1709 — 1709 Nicolas Bion (about 1652–1733) made and sold mathematical instruments in Paris in his own shop and as royal maker for Louis XIV. He prepared a famous 1709 manual on the construction and use of mathematical instruments

1853 — 1853 Industrial production of technical drawing instruments started in 1853, when Englishman William Stanley (1829–1909) founded a technical manufacturing company in London. Even then, however, most tools were still made by hand

1857 — 1857 Parallel Rule Patent

1857 AIA is established by 13 architects in NYC

1888 AIA published the Uniform Contracts

1901 — 1901 The drafting machine was invented by Charles H. Little in 1901 (U.S. Patent No. 1,081,758), and he founded the Universal Drafting Machine Company in Cleveland, Ohio, to manufacture and sell the instrument

1911 AIA published the 1st set of Standard Documents of the AIA

1915 AIA published the 2nd set of the Standard Documents of the AIA

1930 — 1930 Rapidograph Introduced

1957 Pronto, first commercial computer-aided machining (CAM) software

1963 Sketchpad, CAD with graphical user interface

1969 AIA Established MasterSpec – technical specifications for Contract Documents

1975 Building Description System (BDS)

1982 — 1982 2D CAD

1985 Vectorworks

1977 Graphical Language for Interactive Design (GLIDE)

1987 BIM ArchiCAD

1995 International Foundation Class (IFC) file format

2007 AIA published the 15th set of the Standard Documents of the AIA

2000 — 2000 Revit

2002 Autodesk buys Revit

2006 Construction Drones

2008 Blockchain and Cryptocurrency started

2014 The AIA launches the DDx

2012 VR Hits Mainstream The Oculus Kickstarter

2014 Digitial Projects Catia Frank Gehry

2015 OpenAI is launched: Generative Design

2020 — 2020 Convergence of AI-BIG DATA-Blockchain

2018 Hypar / Test Fit

2030 — AIA 2030 AIA becomes the leading agent of change in the built environment by expanding DDx 2030 technology platform to include tracing, tracking, and certifying embodied carbon material and GIS spatial data sets to empower social justice and equitable communities.

7.0 Presentations to the Study Group

7.0 PRESENTATIONS TO THE STUDY GROUP

SPACE SYNTAX - Tim Stonor 09/08

Tim Stonor is a practicing architect and urban planner in the United Kingdom, who has been utilizing data analytics in his practice for over 30 years. His portfolio of work extends from buildings to urban districts to large scale regional planning efforts. He has used data to inform his design process and is currently working with a number of prominent architects and planners globally. Our discussion primarily focused on how we as architects can address our three most pressing challenges.

Climate change, Equity and diversity and how we can tap into available data to inform our decision making and document whether or not our solutions are reducing the negative impacts or improving the positive results on these challenges. Tim's commentary and advice included the need for architects and designers to become a more inclusive practice that allows for data science to become part of the practice and design process. He commented that his practice has evolved from the utilization of off the shelf models to the creation of their own software and methodology to harness the urban data that informs their design process. When asked about how architects can monetize this data, his response was that by incorporating data scientists into his practice, it allows his practice to create apps and software that is commercially viable for use by other architects. Thus increasing income streams for his practice that underwrites his investment in the research and data science necessary to perform this critical work.

The key takeaway was that we as architects and designers must use data to inform our work, this is the only way we can reduce the negative impacts of our challenges, and that we as the AIA must broaden our tent and invite other disciplines into our group in order to become a more inclusive and transform our body to become more effective to address the challenges that confront our profession.

VIMAEC - Arol Wolford & Kenneth Rhee 08/25

Our team met with Arol Wolford and Ken Rhee of VIM AEC. Their Company is developing an open foundation for BIM that can hopefully become a subscription platform for developers, architects and related industries. They are developing digital twin technologies that allow the users to develop their projects with a high degree of detail, without the data heavy components that are part of the BIM products on the market today. Arol and his team demonstrated this product by comparing the opening and navigation of two projects, the Minnesota Vikings stadium in a traditional BIM product and a high rise development in the Kingdom of Saudi Arabia by Foster and partners.

The VIM team was able to focus on the various elements of the mechanical systems including the screws (and threads) that connect the mechanical components together while the BIM model of the stadium was loading. This side by side demonstration illustrated the ease of use of the Digital Twin model. The benefit of the digital twin is that it allows the architect, developer or related clients to be able to observe and manage their design or property asset in a simple, open and efficient manner while allowing the project to evolve and change as the design progresses.

The VIM AEC platform can become a platform for members of the AIA to create and store their projects in a subscription manner at a cost that could allow entry
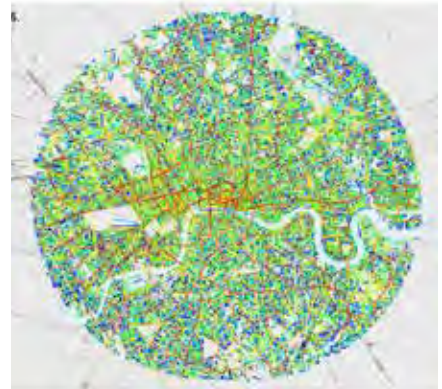
into the BIM that is less costly than the BIM programs that are available today. This also allows the architect to view and interface their projects, monitor the design or operational status and illustrate their portfolio for their clients. While maintaining this system it is possible for the architect or client to monitor their building and review its performance in terms of energy, carbon sequestration, water consumption thus addressing the urgent impact on climate change that is part of AIA initiatives.

The digital twin model can become an important aspect of our practices as it allows architects to build their projects in an interactive and data enabled environment will allow for this critical information to be compiled to allow the user and architect to view if they meet the design and operational goals of meeting the climate change challenge.

GOOGLE MAPS /HALCYON - Derek Luiz 09/28
Halcyon is a spin off of Google maps. They provide the geospatial data to Google Maps. Our discussion revolved around the need for member firms and architects to be able to have readily accessible access to data that will allow them to successfully use this data to inform their work. As indicated in other meetings, the need to be able to review and test performance of our work and to measure our impact on addressing our EDI goals is critical.

The discussion centered on the need for an organization like AIA to perhaps become a clearinghouse for this data and to perhaps create a partnership with a group like Halcyon build a platform of critical data sets that allow AIA members and perhaps subscribers to access this data from halcyon sources. We are continuing this discussion with Halcyon to determine if this strategy can be part of our next steps of investigation.

Our key takeaway from these sessions is that Data and access to data by members of AIA is critical and that while larger firms may have the resources to underwrite this investment, many of our small practices and members do not possess the financial ability to underwrite this cost. It is essential that AIA begin to look at possible partnerships to allow for services to be offered to our membership in terms of data, software and the research and development necessary to allow members to be able to use these tools to address the urgency of our AIA EDI initiatives.

COVE.TOOL - Patrick Chopson, Co-founder COVE.TOOL
Cove tool is Building Performance software platform primarily focused around evaluating holistic energy performance, daylight performance, cost, glare, radiation studies, water, COVID occupancy. It's a fully automated software allowing team members to work in shared digital workspace, utilizing building 3D building designs in pre-construction teams, design teams, consultants, and construction teams, etc. Cove tool is being utilized world-wide and among some of the leaders in the AE industry.
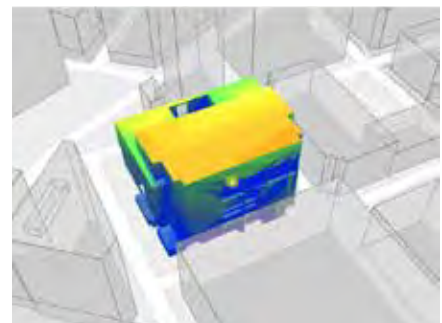
Cove tool is able to utilize 3D design models to run various energy simulations and evaluate representative construction costs depending on the various building components, such as glazing, wall insulation, building envelopes, orientation. Through automation cove tool allows design teams to establish base-lines and select alternative assemblies to optimize energy usage and the ability to compute the amount of embodied carbon based on selected building components.

8.0 Interviews by the Study Group

8.0 INTERVIEWS BY THE STUDY GROUP

Looking at both inside and outside our immediate profession we might be able to ascertain what changes might be coming next. However, it is inevitable that technology as we know it, and what is yet to be available to us, will play an extremely important role in how and why we work the way we do.

The following persons were interviewed regarding their thoughts about technological changes and advancements that have influenced how they work and what opportunities technology has provided them. One thing is for certain - there is no going back!

Steve Burrows, CBE – Cameron MacAllister

Steve has been recognized as one of the outstanding structural engineers in the world and has worked on designing a variety of world renowned iconic structures, including the Birds Nest at the 2008 Olympic Games in Beijing, China. In addition to his structural engineering prowess, he has presented *Engineering the Impossible* and *Time Scanners* to TV viewers and *Dream Big*, a 3D IMAX movie.

- *"A big area of change right now is robotics and soon we're going to see more machines involved in everyday projects.*
- *New materials are also coming–materials that will allow buildings to not only be more responsive to people, but also more sustainable and healthier.*
- *We're also going to see more clever integrations of buildings and data–where a building might tell us where it's experiencing stress or starting to crumble long before it becomes a problem.*
- *Buildings are going to have brains, ... and that will be a big leap forward."*

Passionate about the future of fabrication and modular structures, Steve commented that we are already in the midst of building buildings this way. If you were to remove the skins from most hight rise buildings in major cities, it may be difficult to identify those structures by name. Many of the building systems are already fabricated off-site and structural systems are typically modular themselves.

Steve concludes in an article written for STRUCTURE Magazine with:
- Change your mindset and be open to the possibilities.
- Consider the future, not as a destination but a place of disruption.
- Prepare yourself for a range of scenarios; stay current and relevant.
- Invest in your people, your processes, and your future.

Craig Curtis, FAIA – Katerra

Craig was one of four partners at the early days of The Miller Hull Partnership in Seattle, WA, and after an inspiring career left to become Chief Architect at Katerra, an international design-build firm aspiring to build affordable housing faster and less expensive through pre-fabricated construction. Craig was one of the original 40 company members in 2016 and watched the company grow to over 8,000 persons in 2020. Very recently Craig left Katerra to join Mithun as a Partner and Director of Emerging Building Technologies. One notable project while at Miller Hull was the Bullitt Center in Seattle, the first commercial Living Building.
TIP's conversation was with Craig while he was still at Katerra.

"The reason I am here is to try to make a difference in providing affordable high-quality workforce housing. Also a means to use mass timber more effectively and promote that as a way to make a difference in climate change."

Katerra is becoming one the largest general contractors in the country. Their interest was originally in designing and constructing pre-fabricated multi-family and affordable housing – for less cost and shorter construction schedules. Since then they have branched out in several directions looking to improve quality in project delivery, and lesson costs and construction time in the building industry.

- Founded and organized around a vertical supply chain – in control of everything
- Has now developed their own product lines to assist in their goal of prefab and lower costs
- Construction of the largest Cross Laminated Timber (CLT) production plant in North America has recently been constructed located in the Pacific Northwest
- Strategic in acquisition of other firms – not to grow larger but to gain talent, quality and geographical representation
- Developing software to enable control from due diligence through occupancy
- Cost control is critical to avoid changes in the future of a project
- "Focus on designing and building platforms"

Eric Karsh – Equilibrium & Katerra

Eric is recognized as one of the premier structural engineers designing wood structures. His work has been recognized throughout North America and has been on the forefront of new construction techniques and using technology in designing buildings. One of the founders of Equilibrium (structural engineering firm) in Vancouver, BC, Canada, he is now also working as an engineer directly with Katerra.

- Software allowing analytical and computational has allowed for faster and analysis and complicated systems.
- Important to recognize when engineering solutions generated from technology may not be correct due to either improper input or not enough data – those who have been around longer are better at understanding improper answers
- Tighter tolerances in prefabricated systems, advanced adhesives, and newer materials allow for advancement in construction of projects both faster and of a higher quality
- Looks at designing and building with wood as an excellent solution in addressing climate change

Nels Long – RotoLab

Co-Founding Director of RotoLab communication and interaction, RotoLab is a sister company of RoTo Architects and is a "solution engine" working outside the traditional practice of architecture. From their website, RotoLab is "an innovation studio for cross sector innovation in Architecture & Real Estate."

Nels was first heard on the *Practice Disrupted* webinar entitled *Technology & Change*. With Michael Rotondi, Nels is teaching Second Studio, "an open source collaboration software for architects and designers looking for an immersive VR solution for creating free form models using intuitive virtual tools."

- The Gig Economy is growing quickly, offering opportunity to a larger demographic, promoting working with more diverse collaboration – and is here to stay
- Technology is making it very easy to partner with others – included globally
- The need to understand the impact of technology upon society and culture
- Learning "how to fail and fail fast"

Wilson Smith – Nike

Trained as an architect and briefly working in the office of Skidmore Owings and Merrill, he began work at Nike as a space planner and eventually moved into product design partnering on the design of the Jordan Air shoes. At present he is assisting the DNA (Department of Nike Archives) and also
In 2018, Wilson received the Lawrence Medal, the University of Oregon's College of Design's highest honor. Wilson is also a professor of Product Design at the University of Oregon.

- Development and advancement of new materials open the opportunity for more creative product design
- Design software programs allow faster and more precise modeling of potential products
- Research and development has taken on a very new meaning

Paddy Tillett, FAIA – ZGF Architects Principal

Paddy is a Principal in the international firm ZGF with approximately 600 employees. ZGF now identifies itself as a "sustainable architecture and interior design firm." As a planner, Paddy has had years of involvement in the planning and urban design projects for numerous venues. He is also the author of *"Shaping Portland – Anatomy of a Healthy City"* and also participated in a moderated discussion on *"The Evolution of Urban Design and the Healthy City Concepts"*

- net zero energy, carbon neutral and *s*equestered carbon conversation begins at the programming phase.
- clientele looking for more climate responsible buildings are looking to ZGF for guidance in that arena
- video conferencing has allowed younger members of project teams attend decision making meetings that they would not have been able to attend in the past
- technology has allowed up–front and rapid analysis that would have slowed project advancement in the past

9.0 Tools – Digital Solutions Impact on Big Data

9.0 TOOLS - DIGITAL SOLUTIONS - IMPACT OF BIG DATA

Everywhere we turn, technology is developing faster than we can adapt to it. It is critical that as members of the community very much responsible for the built environment, we become familiar with and understand that the time is now here to become involved in the transformation of project delivery. The following platforms are available now and are just a few that offer insight to where this work is heading.

APOLLO

The need to provide software that allows beginning to end coordination is in the process of development by Katerra. In an effort to streamline efforts and improve communication, all members of the design, engineering and construction team have one place to report and check in progress, decisions, scheduling and costing. With a firm belief that both technology and fabrication is the future of the construction industry, Katerra has invited allied members of the industry to help develop what they believe will help revolutionize project development and delivery. From site selection due diligence through move-in punch list, projects will be tracked carefully, with data all in one location.
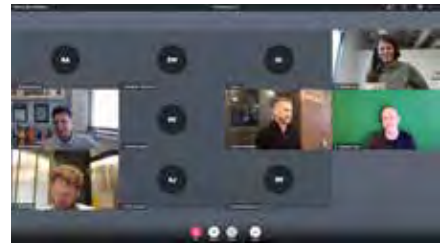
BLOCKCHAIN

This can be used as a means of authenticating IP across the board, for contracts, submittals, and drawings. A way to authenticate images on the digital landscape. Versus a digital signature or docusign. Using authentication to validate approvals for permit approval, purchasing, procurement, installation, compliance, inspections, field reports, safety records, deferred submittals, shop drawing and approvals. Creating one ecosystem of data and authenticating handshakes as approvals. How does the legal system incorporate this hand off of BLOCKCHAIN approvals? There is a hand off to the Building Department, the contractor, the owner, sub's, suppliers, vendors, etc.

COVE TOOL

Powered by machine learning, cove.tool is an easy-to-use platform that helps architects, engineers and contractors optimize sustainability and energy efficiency while saving on project costs. By automating the tedious task of energy modeling, cove.tool eliminates the need for manual labor, cutting what once took consultants 150 hours to do manually into just 30 minutes. For instance, cove.tool helps builders achieve energy, daylight, glare, radiation, water and embodied carbon targets for new and existing buildings and also offers the ability to compare different options, such as finding the cheapest way to meet a building's energy targets. Since the onset of the COVID-19 pandemic, we have also added a COVID occupancy tool to its platform.

By maintaining a common AI engine behind the scenes simplifies and streamlines the software development effort by giving users one core application that manages everything and then each participant in the process views an interface that is customized to their skill set and expertise. The machine will learn about the particular capabilities and workflow and reveals more or less information depending on the person using it. Watching thousands of participants work will help us identify trends and alert teams to bottlenecks in their workflow. The machine managing everything behind the scenes allows each professional to

check out the building model, do their work, and merge their changes back into the main design without fear of causing coordination errors similar to a Git. Checking out branches parallelizes the work allowing projects to be completed in a few weeks rather than months or years saving owners and design teams millions of dollars in construction and business costs.

Automation, connecting participants, big data processing, and training AI to manage the complexity of the design process is just the beginning of the journey for our dynamic and data driven team.

FLUR.EE – **Brian Paltz, Co-Founder**
Flur.ee is a semantic graph database that guarantees data integrity, facilitates secure data sharing, and powers connected data insights in one scalable stack. Flur.ee enables a "Data-as-a-service" framework, where multiple stakeholders can leverage and collaborate around shared sets of data for their own end-user applications.

Data is a critical and competitive asset in today's economy. Data can unlock opportunities and innovations but must be organized and managed in a way that is inter-operable, secure, and useful. Enterprises must simultaneously innovate to capture the value of information while also accounting for security and compliance. New questions are arising around data management, such as: how can data be trusted? Where did the data come from? Does the data represent the real world? Who owns the data?

Brian spoke about the importance of verifying data's original source and tracking data manipulation using cryptography (blockchain). Injecting this security and trust directly into data allows for new "master data platforms" that provide efficient and agile data consumption - where stakeholders both contribute to and leverage trusted sets of shared data. Flur.ee enables a "Data-as-a-service" framework, where multiple stakeholders can leverage and collaborate around shared sets of data for their own end-user applications.

Building Ecosystems of data-driven interoperability - In this many-to-many business digital ecosystem, blockchain technology and a data-centric mindset will provide the foundation for trusted and efficient collaboration across industry stakeholders and will allow for a democratization of industry information.

10.0 AIA NEW YORK STATE WEBINAR

10.0 AIA NEW YORK STATE WEBINAR

RE-IMAGINING DIGITAL TECHNOLOGY FOR
THE ARCHITECTURE PROFESSION

As a member of the Technology Discussion Group at AIANYS Chapter, Willy Zambrano led the charge on creating a 3-part Series Webinar titled Re-imagining Digital Technology for the Architecture Profession. The seminar focused on digital tools of the trades, how its has impacted the way we practice and how experts utilizing those tools are changing the dynamics of workflow and project delivery in the built environment as well as how silo-ed digital technologies are helping industries to gather, track, trace and analyze data sets and generative design to influence urban design at a micro and macro scale.

PART 1
- Design Morphine – Alejandra Rojas, Mat Sokol
- Rhino and Grasshopper – Scott Davidson
- Graphisoft – Alex Hughes, Zolton Toft
- Kurv Architecture – Alexander Loyer Hughes, AIA
- EvolveLab – Ben Guler

Presentation of the wide variety of software tools and how these are being used to change the delivery of projects.

PART 2
- Ingenious IO – Nick Caravella
- Flur.ee – Jay Wall
- Design Morphine – Alejandra Rojas, Mat Sokol
- Sidewalk Labs – Violet Whitney
- Hassell – Daniel Davis

A deep dive onto how experts are utilizing convergence of technology to generate workflows for design solutions to greater speed and accuracy. It also gave provided a lens as to how these tools are changing our workflows to generate thousands of design solutions through generative design and multiple plugins. Blockchain technology was also part of the discussion and how this technology is enabling convergence of analytical data through streams of APIs to track and trace authenticity through a life cycle supply chain.

PART 3
- The Living, an Autodesk Research Studio – Lorenzo Villaggi
- Topos, Inc. – Carlo Bailey

Discussion of how generative design, data set and algorithms are helping industries to create design solutions to track trends in geospatial solutions methodologies, retail, housing market and demographics.

- Using machine learning tool to categorize data sets, retail data by using geospatial data to understand COVID-19 within concentrated population densities demographic areas
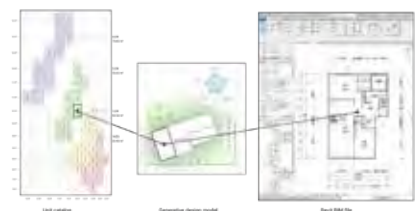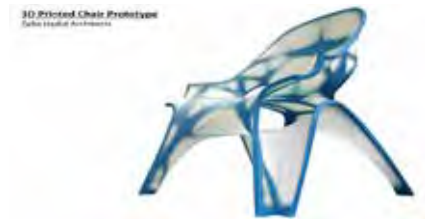
- Predicting COVID Cases with tax data tax matrix related to COVID cases where you have much more child tax credit you see higher cases of COVID, where you have higher capital gains you'll see much lower COVID cases.

- Identifying that poor communities tend to have the highest rate of cases. These types of data sets can help EDI methodologies. However how can data sets be unbiased and reliable?

- Emerging data driven methodology is "Generative design" enriching space design driven solutions utilizing algorithms to create space, structures, urban developments, etc.

- Generative design – larger ecosystem of tools and methods, integrating qualitative assessment of the solutions to virtual reality but that it can also be self-learning to optimize outcomes. High performance solutions rental spatial design.

"In the Future every company will be a software company"
Marc Andersen, 2011 – WeWork, Uber, Air BnB

"Today every software company will have a physical presence"
Carlo Bailey, 2020

Generative Design for Architecture

11.0 Governance Week Presentation

11.0 GOVERNANCE WEEK PRESENTATION -

On December 7 at the Strategic Council Assembly, the TIP Work Group presents the Technology Impacting Practice Work Group Discussion with members of the technology community, looking at how technology is and will be, influencing our practice and life in general.

Broken into three groups mirroring our initial call to action headings, the following individuals will address their perception of where we have been and where we might be heading.
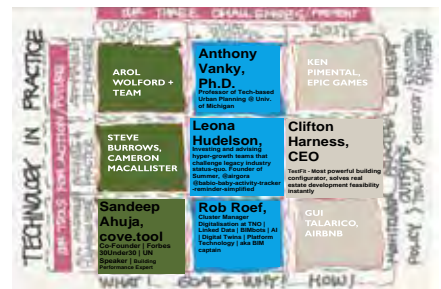

New Ways of Delivery

Ian Keogh – Hypar
Rob Roef – TNO
David Weir–McCall and Kenneth Pimentel – Epic Games

Questions & Answers moderated by:

Ricardo J Rodríguez, MBCC Group
Gail Kubik, The Massachusetts Architects & Engineers Emergency Response
         Task Force
Randall Vaughn, Gray Construction
Natasha Luthra, Jacobs

New Ways of Practice

Ekaterina "Kat" Dovjenko – Consultant to Google
Arol Wolford & Joel Pennington – VIM
Anthony Vanky, Ph.D. – University of Michigan Taubman College

Questions & Answers moderated by:

Gregory Yager, GW Design Consultant Group
Jessica Parmenter, BDE Architecture
Daniel LaPan,
R.C. Hendrick Construction

New Ways of Monetization

Clifton Harness – TestFit
Patrick Chopson &n Sandeep Ahuja – covetool
Craig Curtis, FAIA – Mithun

Questions & Answers moderated by:

Willy Zanbrano, Zambrano Architects
Roderick Ashley, Roderick Ashley Architect
Douglas Teiger, Teiger Consulting

12.0 Glossary

12.0 GLOSSARY

TERM	DEFINITION
2D	*Focuses on project documentation*
3D	*Refers to three-dimensional geometry modeling*
4D	*Simulation, logistics, sequencing, and scheduling model usage*
5D	*Usage focusing on cost estimation*
6D	*Project life cycle information (O&M information), sustainability and other performance criteria modeling*
7D	*Facility management and maintenance model*
8D	*Safety criteria modeling*

A A/E — *Architect/Engineer*

AEC — *Architecture/Engineering/Construction or Architect/Engineer/Contractor*

AECDOO — *Architecture/Engineering/Construction/Distributor/Owner/Operator*

AECOO — *Architect/Engineer/Contractor/Owner/Operator*

Artificial Intelligence (AI) — *The theory and development of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages*

Algorithm — *A set of instructions designed to perform a specific task. n computer programming, algorithms are often created as functions. These functions serve as small programs that can be referenced by a larger program.*

Application Programming Interface (API) *An application programming interface is a computing interface that defines interactions between multiple software intermediaries. It defines the kinds of calls or requests that can be made, how to make them, the data formats that should be used, the conventions to follow, etc*

Asset Information Model (AIM) — *A model that compiles the data and information necessary to support asset management*

Asset Information Requirements (AIR) — *Define the information required for an Asset Information Model*

Assembly — *An assembly is the combination of the component sub-elements that comprise a single installed product. A physical aggregation of components*

Attribute — *Unit of information within an entity, defined by a particular type or reference to a particular entity. A piece of data that describes a characteristic an object or entity*

Augmented Reality (AR) — *An interactive experience of a real-world environment where the objects that reside in the real world are enhanced by computer-generated perceptual information, sometimes across multiple sensory*

B Best Management Practice (BMP) — *Methodology that consistently achieves reliable results, superior to those achieved with other means, and that is used as a benchmark. In addition, a "best" practice can evolve to become better as improvements are discovered.*

BIM execution plan (BEP) — *A BEP is a document that describes how BIM will be implemented on a project, the BIM applications within the project, and all stakeholder responsibilities.*

BIM manual — *A BIM manual is a document derived from a project's BIM execution plan that includes the results of final model commissioning and serves as a 'user manual' for the record BIM. It contains the most updated information about the BIM uses that were accomplished on the project, documents decisions that affected the structure of the record BIM, includes information about the tools and processes used to export from the native model to IFC, and includes the mapping file that shows how native model elements are mapped to IFC elements. It should explain the areas and building elements added or modified under the project scope.*

Building information management — *BIM is a comprehensive strategy for collecting, managing, and sharing required data / information to accurately support facility life cycle from early planning to building disposal. A collection of defined model uses, workflows, and modeling methodology used to achieve specific, repeatable, and reliable information results derived from the Model(s) for coordination, communication and collaborations through specific exchanges. Modeling methods affect the quality of the information generated from the BIM(s).*

Building information model — *A BIM is digital representation of physical and functional characteristics of a facility, usually consisting of a three-dimensional model integrated with a database about materials, products, components, systems, and their properties and performance. An object-based digital representation of the physical and functional characteristics of a building or facility. The Building Information Model(s) or Models serve as a shared knowledge resource (database) for information (meta data) about a building or facility, forming a reliable basis for analysis during the functional life cycle.*

BIM Collaboration Format (BCF) — *An open file format based on XML that allows the addition of comments to an Industry Foundation Classes BIM model*

	BIM Levels	BIM works on different levels from Level 0 to level 3 where Level 0 means making use of 2D CAD drafting with no collaboration. BIM levels can be said to be distinct milestones that take the modeling process to greater collaboration.
	BIM maturity levels	The levels of complexity and collaboration that building information modeling can take
	BIM protocol	A supplementary legal agreement that can be incorporated into professional services appointments, construction contracts, subcontracts and innovation agreements
	Blockchain	A growing list of records, called blocks, that are linked using cryptography. Each block contains a cryptographic hash of the previous block,a timestamp, and transaction data. By design, a blockchain is resistant to modification of its data. This is because once recorded, the data in any given block cannot be altered retroactively without alteration of all subsequent blocks.
	buildingSMART	formerly the International Alliance for Interoperability, is an international organization which aims to improve the exchange of information between software applications used in the construction industry
	BuildingSMART Data Dictionary (bSDD)	A catalogue of what objects are called (the 'vocabulary')
C	Common Data Environment (CDE)	The single source of information for the project, used to collect, manage and disseminate documentation, the graphical model and non-graphical data for the whole project team
	Chatbot	A chatbot is a software application used to conduct an on-line chat conversation via text or text-to-speech, in lieu of providing direct contact with a live human agent. A virtual-assistant designed to convincingly simulate the way a human would behave as a conversational partner.
	CIC BIM Protocol	The Construction Industry Council Building Information Modeling Protocol: Standard protocol for use in projects using Building Information Models. A standard legal agreement prepared for construction and contractor clients outlining additional rights and duties of the employer and contracted parties for promoting collaborative working without diluting ownership and control over intellectual property.
	Clash Rendition (CR)	A rendition of a building information model specifically to avoid clashes in spatial co-ordination
	Cloud Computing	The on-demand availability of computer system resources, especially data storage and computing power, without direct active management by the user. The term is generally used to describe data centers available to many users over the Internet.
	Computer Aided Drafting/Design (CAD)	A geometric/symbol based computer drawing system that replicated hand drawing techniques. The production of CAD documents are to be completely derived from the BIM model(s).
	Computer-Aided Facilities Management (CAFM)	Includes the creation and utilization of Information Technology (IT)-based systems in the built environment. A typical CAFM system is defined as a combination of Computer-Aided Design (CAD) and/or relational database software with specific abilities for Facilities Management.
	Computerized Maintenance Management Systems (CMMS)	A software package that maintains a computer database of information about an organization's maintenance operations, enabling the facility manager to track the status of maintenance work on their assets and the associated costs and manpower related to that work.
	Component	A physical item or feature. A unique instance of an element type.
	Construction Operations Building Information Exchange (COBie)	COBie is an open standard that provides a structure to help capture building asset information necessary for successful maintenance, operation, and management of facilities. Information exchange standard/protocol for BIM projects - generally spreadsheet based progressively developed through construction process passed to building operator. The model and facility data for the commission, operations, and maintenance of the project expected from BIM for facility handover in formats suitable for integration into current and future CAFM systems. Construction
	Contracting Entity	Is the party or company who enters into a binding agreement with the owner as the primary responsible entity that is awarded the contract.
	Cross-Discipline/Trade	Involving two or more different domains of expertise or skills; such as, architects/consulting engineer or fabrication/product design, etc.
	Customer relationship management (CRM) system	A system focused on the process of managing interactions with existing as well as past and potential customers. It is one of many different approaches that allow a company to manage and analyze its own interactions with its past, current and potential customers

D Data — *Information that has not been interpreted*

   Data drops — *Information of a format and level of detail issued to the client at pre-defined stages of a project. Also known as information exchange*

   Data manager — *A procedural gatekeeper who sets up and manages an asset information model*

   Data set — *In computer programming, algorithms are often created as functions. These functions serve as small programs that can be referenced by a larger program.*

   Data taxonomy — *the classification of data into categories and sub-categories. It provides a unified view of the data in an organization and introduces common terminologies and semantics across multiple systems.*

   Design intent model — *The initial version of the project information model (PIM)*

   Design Team — *A group of design professionals working together for a common goal or purpose. It is made up of different individuals with different skills or talents. It may consist of architects, engineers, artists etc.*

   Design/Construction Team — *The term use when both the Design Team and Construction Team is referenced.*

E Employer's Information Requirements (EIR) — *Set out the information required by the employer aligned to key decision points or project stages, enabling suppliers to produce an initial BIM execution plan from which their proposed approach, capability and capacity can be evaluated*

   Employer's requirements — *Provide a description of all the client's requirements for a built asset, in response to which contractors prepare contractor's proposals*

   Employer's decision point — *Project gateway aligned to key stages at which information is provided to answer the employer's plain language questions and a decision is taken about whether to proceed*

   Existing Conditions Modeling — *The information stored in the CFR that represents the facility at present. This can include any combination of CAD, BIM, or other documentation (e.g. PDF, DOC, XLS files) and other documentation that describe the facility geometry, contents, or engineering information for use in facility management or asset management.*

F Fabrication — *The act or process of manufacturing, to make, build, or construct in reference to building systems or components. Usually means off site fabrication done within a controlled environment resulting in improved accuracy and efficiencies.*

   Federated model — *A model comprised of multiple independent, linked component models, drawings, or other data sources based on shared-coordinates*

H Haptic Interfaces — *Devices that enable manual interaction with virtual environments (VEs) or teleoperated remote systems. They are employed for tasks that are usually performed using hands in the real world, such as manual exploration and manipulation of objects.*

I IFC element — *Any model element that is represented in the IFC specification.*

   IFC specification — *A data standard maintained by buildingSMART International that includes all the definitions, schemas, and libraries of IFC.*

   Industry Foundation Classes (IFC) — *IFC is a neutral data format to describe, exchange, and share information typically used within the building and facility management industry sector.*

   Information delivery manual (IDM) — *An IDM is a standard methodology to capture and specify processes and information flow during the life cycle of a facility.*

   International Framework for Dictionaries (IFD) — *A standard for terminology libraries or ontologies.*

   Integrated Project Delivery (IPD) — *Contractual form relevant to the BIM design and construction process.*

   ISO (International Organization for Standardization) — *an independent, non-governmental, international organization that develops standards to ensure the quality, safety, and efficiency of products, services, and systems*

G Generative Design — *an iterative design process that involves a program that will generate a certain number of outputs that meet certain constraints, and a designer that will fine tune the feasible region by changing minimal and maximal values of an interval in which a variable of the program meets the set of constraints, in order to reduce or augment the number of outputs to choose from.*

   GIS — *Geographic Information System*

Government Soft Landings (GSL)	The process of aligning the interests of those who design and construct an asset with the interests

I iBIM Integrated Building Information Model, or Level 3 BIM
   ICT Information and communications technology
   IFC2x Industry Foundation Class version 2x

L Layer Attribute that allows control over the visibility of entities within CAD files
   Level of Development/Detail (LOD) Scales applied to provide a common understanding of information requirements at different stages of a project or how much detail is included in the model element.
   Level 0 BIM Unmanaged computer aided design (CAD) including 2D drawings, and text with paper-based or electronic exchange of information but without common standards and processes
   Level 1 BIM Managed CAD, with the increasing introduction of spatial coordination, standardized structures and formats as it moves towards Level 2 BIM
   Level 2 BIM Managed 3D environment with data attached, but created in separate discipline-based models
   Level 3 BIM A single collaborative, on-line, project model with construction sequencing (4D), cost (5D) and project life-cycle information (6D). This is sometimes referred to as 'iBIM' (integrated BIM)
   Life-cycle Assessment (LCA) Life-cycle assessment or life cycle analysis is the process of determining the environmental impact of any project – all its assets in terms of materials consumed, energy expended and waste/pollutants released during its entire life-cycle. Fundamentally, LCA is done to check an environmental load of an asset using a standard methodology defined in ISO 14040.

M Machine Learning (ML) Machine learning is the study of computer algorithms that improve automatically through experience. It is seen as a subset of artificial intelligence (AI).
   Master data management (MDM) Master data management is a technology-enabled discipline in which business and Information Technology work together to ensure the uniformity, accuracy, stewardship, semantic consistency and accountability of the enterprise's official shared master data assets.
   Master Information Delivery Plan (MIDP) The primary plan for the preparation of the project information required by the Employers Information Requirements, setting out program, responsibility, protocols and procedures
   Mixed Reality (MR) The merging of real and virtual worlds to produce new environments and visualizations, where physical and digital objects co-exist and interact in real time. Mixed reality does not exclusively take place in either the physical or virtual world, but is a hybrid of reality and virtual reality.
   Model General term used to refer to the computer file or files that may contain BIM data.
   Model element A unique object within a model that has specific geometry and properties. Model elements can be tangible (e.g. a piece of equipment) or intangible (e.g. a space). Model elements can also range from simple (e.g. fire extinguisher) to complex (e.g. a multi-component wall system).
   Model view definition (MVD) An MVD defines a subset of the IFC schema that is needed to satisfy one or many Exchange Requirements of the AEC industry.

N Natural Language Processing (NLP) A subfield of linguistics, computer science, and artificial intelligence concerned with the interactions between computers and human language, in particular how to program computers to process and analyze large amounts of natural language data.

O Ontology In computer science and information science, an ontology encompasses a representation, formal naming and definition of the categories, properties and relations between the concepts, data and entities that substantiate one, many, or all domains of discourse.
   Open BIM Open BIM is an open-source version of a collaborative design, development and building operations using open standards and frameworks. Build using the SMART data model, open BIM incorporates data to ISO 16739, processes to ISO 29381-1 and terms to ISO 12006-3.
   Operations & Maintenance (O&M) Operations & Maintenance -- Encompasses a broad spectrum of services required to assure that the built environment will perform the functions for which a facility was designed and constructed.

Organizational Information Requirements (OIR)	*The information required at an organizational level (rather than asset level) to achieve the business objectives of the organization*
Origin	*The setting-out point for a project*

P Parametric modeling — *The generation of a model based on a series of pre-programmed rules or algorithms.*

Property	*Unit of information that is dynamically defined as a particular entity instance.*
Property Occurrence	*Unit of information providing a value for a property identified by name.*
Project implementation plan (PIP)	*A statement relating to the suppliers' IT and human resources capability to deliver the Employer's Information Requirements submitted as part of the pre-contract BIM Execution Plan by each organization bidding for a project*
Program for Design (PFD)	*The development of a comprehensive and purposeful system or plan to achieve a specific goal.*

R RACI Matrix — *Identifies authorities of participants in relation to specific project activities. Responsible, Authorize (Approver), Contribute (Consulted), Informed*

Record BIM	*A coordinated model, or set of models, submitted by a contractor (or subcontractor at any tier) to show the construction of a structure or work as actually completed under the contract. See BIM Guide 01 for more information.*

S System — *A system is a collection of model elements and assemblies that are linked to one another based on physical characteristics (for example, multiple panels that comprise a single curtain wall system) or functional characteristics (for example, pipe and distribution equipment that are all associated with domestic cold water).*

SQL	*SQL is a domain-specific language used in programming and designed for managing data held in a relational database management system, or for stream processing in a relational data stream management system.*
Standard Method and Procedure (SMP)	*Defines how Information is named, expressed and referenced*
Supplier information technology	*Establishes the capability and IT resources of a supplier for exchanging information in a collaborative assessment form environment*

T Thermal zone — *A single space or group of indoor spaces that has uniform thermal load profiles and conditioning.*

U Uniclass — *Uniclass is a standard classification system used in the United Kingdom which allows grouping of objects into numerical headers. This facilitates a streamlined arrangement of information as per type or class and is used for categorization within BIM models.*

V Virtual construction model — *Development of the design intent project information model*

Virtual Reality (VR)	*A simulated experience that can be similar to or completely different from the real world. Applications of virtual reality can include entertainment (i.e. video games) and educational purposes (i.e. medical or military training). Other, distinct types of VR style technology include augmented reality and mixed reality, sometimes referred to as extended reality or XR.*

X xBIM (eXtensible Building Information Modeling) — *An open-source software development tool that allows developers to read, create and view BIM in the IFC format*

XML	*Extensible Mark-up Language, for encoding data in a format that is human-readable and machine-readable*
XR (Extended Reality)	*Mixed reality environment that comes from the fusion (union) of ubiquitous sensor/actuator networks and shared on-line virtual worlds. It encompasses a wide spectrum of hardware and software, including sensory interfaces, applications, and infrastructures, that enable content creation for virtual reality (VR), mixed reality (MR), cinematic reality (CR).*

Z Zone — *A set of locations with a shared attribute*

A.0 Appendix

TECHNOLOGY'S IMPACT ON PRACTICE

THE CHALLENGE

Technology has significantly transformed the way we practice architecture in the last 20 years. It continues to do so. We must research, understand and recommend actions that future technologies will have on our profession, practices and the Institute. As we are faced with future challenges of climate change, equity, economic transition, digital transformation and future staff and resource education and needs, we must develop strategies that allow architects and related professions to lead this important transformative period.

Describe the need or challenge faced by the architecture profession that we are trying to address.

What evidence exists to confirm this challenge?

THE PROJECT GOAL & ANTICIPATED IMPACT -

Our goal is to create a vision of how technology has and will continue to impact our profession. The objective is to identify opportunities and threats to the profession due to technology such as BIM, Big Data, AI, VR and others known and unknown. We will explore how our business practices, contracts, intellectual property rights, workflows, monetization of services and training needs will be transformed in the next 20 years due to technology.

Describe the high-level project objective or goal – what will we produce that addresses the stated challenge?

ALIGNMENT WITH THE BIG MOVE

To address the impact of climate change, Architects will require the tools and processes to illustrate and measure how our efforts reduce the negative impact of climate change. This effort will also require that we broaden the size of our tent to include non-traditional specialists to engage our practices to bring new insights and methods into our time established methods of working in our natural and man-made environments.

Highlight the Strategic Objectives that this project will address.

SCOPE OF ACTIVITIES AND KEY MILESTONE DATES

Monthly conference calls and in-person meetings.
Information gathering within the AIA: Staff, Knowledge Communities, Regional Gatherings, Firms
Information gathering outside the AIA: Technology Companies, Business Consultants, Related Professions
Milestone 1– draft of whitepaper, team review (A'20)
Milestone 2– revised draft of whitepaper, SC review (Knowledge Leadership Assembly)
Milestone 3– final whitepaper, Board review (End of Year)

Describe the general scope of the project in terms of key activities, outputs, and anticipated dates.

SC PROJECT CONVENER & MEMBERS

Gregory Yager & Mindy Aust Co-conveners
Roderick Ashley
Erin Conti
Daniel La Pan
Douglas Teiger
Randal Vaughn
Ricardo Rodriguez
Willy Zambrano

TEAM (AIA STAFF, INSTITUTE, MEMBERSHIP)

(Calibri Font, regular, 9 point) – Replace instructional text as you type

Identify who will be accountable for overseeing project progress and providing status reports.

2020 STRATEGIC COUNCIL STUDY AREA ISSUE BRIEF v6 (UPDATED 1.24.20)

TECHNOLOGIES IMPACT ON PRACTICE

REFINEMENT OF TOPIC

To investigate, Analyze and make recommendations to AIA Strategic Council and Board on the current and future impacts that technology will have on the practice and business of architecture and the role that AIA should play in this transformative period.

What has your initial research discovered that has informed your research topic. What additional input have you received?

UPDATED PROJECT GOALS & POTENTIAL IMPACTS

To serve as a clearinghouse for technological change and its impact upon the profession of architecture including impact our profession including architectural education, business practices, design and construction methods, BIM, AI, Big Data and Computational Design.

How have the high-level project objectives or goals evolved – what will we produce that addresses the stated challenge?

ALIGNMENT WITH THE BIG MOVE

AIA's impact on the Big Move will only be evident if we are able to demonstrate meaningful change on this global challenge, In order to accomplish this we must have the necessary data tools and processes to allow us to measure, monitor and engage that we as architects and designers are reducing the impact that Carbon reduction will have on all aspects of our work and processes

Highlight the Strategic Objectives that this project will address.

UPDATE TO SCOPE OF ACTIVITIES AND KEY MILESTONE DATES

Our next steps include,

1. Identification of areas of investigation with distribution of topics to the members of the team,

2. Investigate and prepare outline for white paper prior to A20, June 2020,

3. Prepare first draft of committee's White Paper for KLA, August 2020,

4 Prepare for Governance Week Strategic Council Assembly to be held at Governance week in December of 2020.

In order to accomplish the goals outlined above we will investigate these four critical areas,

1. Do we as Architects valuing our services correctly now and in the future? What services would we offer to broaden our tent and to increase our role in the design and construction industries.

2. Should AIA become the technology clearing house for our members and profession?

3. Identify relevant industries and technologies that enhance AIA's mission to address climate change through the Big Move,

4. What impact will these technologies have on our profession and industry in the near and long term future.

We will be breaking our team down into workgroups to address these four topics and use this to prepare our research and the writing of our White Paper.

Describe the updated scope of the project in terms of key activities, outputs, and anticipated dates.

SC PROJECT CONVENER & MEMBERS
Mindy Aust, Greg Yager, Willy Zambrano, Douglas Teiger, Erin Conti, Rod Ashley, Ricardo Rodriguez, Dan LaPan, Randall Vaughn

*WE WOULD LIKE TO INCLUDE RYAN JOHNSON 2020 TAP CHAIR TO OUR WORKING GROUP

TEAM (AIA STAFF, INSTITUTE, MEMBERSHIP)
Elizabeth Wolverton, Pam Day, SC Moderator and Vice Moderator- Tom Liebel & Brynnemarie Lancotti

Identify who will be accountable for overseeing project progress and providing status reports.

TECHNOLOGIES IMPACT ON PRACTICE

REFINEMENT OF TOPIC

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What has your initial research discovered that has informed your research topic. What additional input have you received?

UPDATED PROJECT GOALS & POTENTIAL IMPACTS

We must make architecture a compelling and equitable profession by changing how we incorporate technology into our practices and operations, AIA infrastructure and architectural education system.

How have the high-level project objectives or goals evolved – what will we produce that addresses the stated challenge?

ALIGNMENT WITH THE BIG MOVE

We must shift to view technology as an enabler to do bigger and better things in the areas of climate change and equity.

Highlight the Strategic Objectives that this project will address.

UPDATE TO SCOPE OF ACTIVITIES AND KEY MILESTONE DATES

DRAFT CALL TO ACTION

NEW WAYS OF PRACTICE

Develop governance framework/policy about technology- "Technology Toolkit."

It is vital that architecture firms go through a digital transformation to stay relevant.

Technology has and will enable new ways architecture businesses are organized.

Work to make technology a part of the social equity solution.

NEW WAYS OF DELIVERY

Utilize technology to enable architects to be involved throughout the life of a project.

Bridge the gap of technology being developed by people not familiar with the built environment.

Our services and practice models continue to change as our tools change.

Create a broader coalition of like-minded professionals under the AIA banner to accelerate a digital transformation through strategic partnerships and engagements.

NEW WAYS OF MONETIZATION

The AIA should leverage/become active in technology.

Investigate ways to collect and monetize data.

Understand how the value of our services continues to evolve because of technology.

Our next steps include:

1. Continue interviews and information gathering.
2. Organize panel discussion around the inspirational topic of *"Technology as an Enabler to do Bigger and Better Things."*
3. Compile research and findings centered around our Call to Action into our "End of Year Report".

Describe the updated scope of the project in terms of key activities, outputs, and anticipated dates.

SC PROJECT CONVENERS & MEMBERS
Mindy Aust, Greg Yager, Willy Zambrano, Douglas Teiger, Erin Conti, Rod Ashley, Ricardo Rodriguez, Dan LaPan, Randall Vaughn

RYAN JOHNSON (TAP), NATASHA LUTHRA (TAP), JESSICA PARMENTER (NAC), GAIL KUBIK (NAC)

TEAM (AIA STAFF, INSTITUTE, MEMBERSHIP)
Elizabeth Wolverton, Pam Day, SC Moderator and Vice Moderator- Tom Liebel & Brynnemarie Lancotti

Identify who will be accountable for overseeing project progress and providing status reports.

2020 STRATEGIC COUNCIL STUDY AREA SPRING UPDATE v1.0 (UPDATED 2020-03-01)

Panel 1

ENVIRONMENT
EQUITY EQUALITY

A CALL TO ACTION.

WE WANT TO IMPROVE THE QUALITY OF OUR ENVIRONMENT

+

WE WANT TO INCREASE THE EQUITY OF OUR PROFESSION TO PROVIDE OPPORTUNITIES FOR ALL

WE WANT TO HARNESS THE POWER OF OUR PROFESSION AND ELICIT CHANGE IN THE EQUALITY OF OUR SOCIAL SOCIETY.

OUR SOCIETY IS CHANGING AT A RAPID PACE. THIS CHANGE IMPACTS "EVERYTHING" WE AS ARCHITECTS ADDRESS IN OUR LIVES, OUR PROJECTS AND OUR PRACTICES

①

Panel 2

PROFESSION
PRACTICE
PEOPLE (CLUBS) PROJECTS
CULTURE ENVIRONMENT

WE MUST FIND EQUILIBRIUM TO BE RELEVENT

MOORES LAW - COMPLEXITY IN TECHNOLOGY WILL GROW EXPONENTIALLY LEADING TO MORE ADVANCED DEVICES, IN A SMALLER PACKAGE AT A LOWER PRICE.

OF TRANSISTOR

TIME

②

Panel 3

THE AIA WAS FOUNDED TO COUNTER THE FORCES OF DESIGN AND CONSTRUCTION IN THE 19TH CENTURY TO COUNTER THE LEADERSHIP ROLE CONTRACTORS AND ENGINEERS IN THE INFLUENCE IN OUR BUILDING PROCESSES.

ARCHITECTS INSERTED THEM SELVES INTO THE MIX.

OUR CALL TO ACTION IS NOT JUST AN ADOPTION OF TEECHNOLOGY BUT MUST LOOK AT HOW WE AS "ARCHITECTS" TAKE A LEADERSHIP ROLE IN THE FUTURE OF OUR ENVIRONMENT, OUR PRACTICES AND OUR PROFESSION

③

Panel 4

AS WITH MOORES LAW WE CAN LOOK AT HOW WE AS ARCHITECTS HAVE PROGRESSED IN HOW WE DESIGN AND PRODUCE OUR PROJECTS AND VISIONS...

VR
BIM
PAPER PANEL COMPUTER AUTOCAD
TIME

THE HISTORY OF OUR TOOLS.

IT WOULD BE INTERESTING TO COMPARE

* FEES GENERATED PER SF

* STAFF REQUIRED TO DELIVER THE WORK

* TIME REQUIRED TO DELIVER PROJECK.

* INVESTMENT REQUIRED TO ADOPT TECH.

④

Panel 5

TODAY WE FACE A TREMENDOUS CHALLENGE.

VR
AI
BIM
BLOCK CHAIN

THESE ARE THE NEW TOOLS OF OUR FUTURE, IT WILL EXTEND OUR INDUSTRIES "MOORES LAW".

⑤

Panel 6

PROPERTY INDUSTRIES ULI

CONTRACTORS/SUPPLIERS.

QUANTITY SURVEYORS RICS

ARCHITECTS USGBC / AIA / SIDEWALK LABS

IT

ENGINEERS ASHRAE

FINANCIAL INSTITUTIONS

THESE ARE THE RELATED INDUSTRIES IN OUR "WORK SPPCE"

Panel 7

HOWEVER OTHER INDUSTRIES PROVIDE OPPORTUNITIES FOR ARCHITECTURE TRAINED SKILLS AND ABILITIES. (THEY DRAW TALENT FROM OUR CORE.

MEDIA / MOVIE INDUSTRIES

AERO SPACE / TECHNOLOGY

AUTOMOTIVE / TRANSPORTATION
GAMING
CONSULTING

THESE GROUPS (AND TECHNIQUES ARE SILOED AND NOT TALKING TOGETHER.

Panel 8

HOW OR DO WE AS ARCHITECTS LEAD IN THIS TRANSFORMATION (IF WE DON'T WE WILL FOLLOW)

A SIDE BAR.... AT RTKL WE USED AND CREATE A VERY ROBUST VISION / ORACLE PLATFORM FOR PRACTICE MANAGEMENT... WE CREATED A TOOL BY ARCHITECTS FOR ARCHITECTS IT WAS VERY PROGRESSIVE... AROCADS (ENGINEERS) WANTED TO INTEGRATE RTKL INTO THIER SYSTEM SAP WHICH IS MORE ABOUT MAKING WIDGETS THAN PROVIDING SERVICES.

Panel 9

WE NEED TO BROADEN OUR TENT. WE MUST MAKE ARCHITECTURE A MORE INCLUSIVE PROFESSION WITH OPPORTUNITIES FOR NON TRADITIONAL ROLES IN ADVANCING OOR FUTURE AND PROFESSION.

(MORE TO FOLLOW)

Equity, Diversity, Inclusion and Belonging
Driving Questions for Consideration by the AIA Strategic Council

1. One of the essential hallmarks of the architectural and design profession is the ability to solve complex issues and problems. And, yet, over many decades, only modest increases in the racial, ethnic, and gender diversity of the profession and within AIA leadership remain. Is EDI in the profession a problem to be solved or is it an opportunity? How can design thinking be employed by leveraging EDI from an asset-based perspective to foster inclusion in the profession?

With these considerations in mind, what are the biggest challenges and opportunities related to Equity, Diversity, Inclusion and Belonging for the profession and within the AIA?

For Consideration:

• Realizing we cannot address everything at once, as a workgroup, can you prioritize your specific group's work on addressing the challenges and opportunities related to Equity, Diversity, Inclusion and Belonging for the profession and within the AIA?

Identifying digital technologies that map real estate data sets and regenerative designs showing communities that thrive with having an inclusive and diverse demographic community. Quantifying equity not only on the economic growth of the community but among the people living in the area (AMI). Look at sidewalk labs –
Delve – merging urban design innovation and technology could help
Urban 3- based in Ashville, doing consulting for Lexington. Using population, environmental, and social metrics.

• An essential next step of your work is to identify partners needed who will buy-into the prioritized work. For example, if we were to imagine a set of concentric circles beginning with an internal focus, what can we do together to increase buy-in and collaboration of your workgroup's identified priorities? What are the structural or cultural barriers impacting buy-in and action? [see figure 1]

1. SC - Be the change;
2. SC Work groups - Include outside experts that are diverse;
Have brought in experts that have left/been away from the profession and now embracing their expertise.
    When considering our panel for December TIP considered many factors of diversity "by design".
    We, as a profession, need to continue to embrace these diverse professionals
3. AIA Volunteer; leadership Academy – needs to be inclusive and diversified
4. Pathway into the profession - Involvement with impoverish communities with K-12, engage with post-graduate schools, academia, clients, community-based organizations
5. Firm and studio culture – promote Guides for Equitable Practice
6. Intersection of equitable communities and climate action – get involved with local communities and drive the message forward
Cultural barriers: Not enough local community based business resources and supportive network for impoverished communities
We have seen good design models of supportive network

• Now that your workgroup has identified the priorities and how to get buy-in (and potential barriers), how we will hold ourselves accountable to the identified priorities that will potentially impact the profession and the AIA?

Marketing campaigns, social media is not enough, great article in the New York Times regarding MBL

• Finally, if your workgroup were to develop a plan for implementation and evaluation, what is the projected timeline and what are the key milestones? What are the desired outcomes to show progress indicators/success?

AIA already has some type analytical platform is time to implement other technologies that can harness data sets for architects to use.

2. As demonstrated in the demographic presentation from AIA staff, the pathway to leadership within the profession is growing modestly with respect to gender, racial and ethnic diversity. The upper echelons of the profession are traditionally White and male.

Promote Guides for Equitable Practice to all – not many people know this exists

From your workgroup's perspective, what can be done to increase opportunities for people from racially, ethnically and gender diverse backgrounds to enter and succeed along the pathway to leadership? How can these efforts increase equity and diversity with the senior ranks of the
architectural profession?

AIA's Leadership Academy would be a good start and any other types of grassroots engagement programs

3. Through the lens of your workgroup, what are the opportunities ahead for architects to related to Equity, Diversity, Inclusion and Belonging and climate action within the Built Environment?

The merging of urban design innovation and technology can achieve
greater frontiers on these 4 topics

What is the role of architects and designers?

For Consideration:

• What are your thoughts on participating in projects that some critics would deem as contributors to inequity in communities?

We need to change our client relationship culture to educate them that profit developments can also be achieved with a more inclusive and diverse community.

I. For example, redlining, restrictive covenants, justice design, and projects that may shift the demographic composition of a community such as commercial development that will result in what some critics describe as "gentrification."

We need to introduce more affordable units into the mix so that everyone has equal opportunities. Reduce the AMI to stabilize inequitable income levels, use generative design to achieve data sets

II. EDI and Belonging in the built environment will likely require many voices and
decision makers to be engaged. Can you identify networks, groups, or people relevant to
your workgroup priorities that can be advocates or allies for EDI and Belonging in the
built environment?
Examples:
a. Planners
b. Policymakers
c. Advisory Boards
d. Developers
e. Community Members, Community Groups, and Community Leaders
f. Contractors
g. Others

Empathy is the root for all-inclusiveness and belonging we need to increase the messaging. Transparency- open BIM, access to data, open source, etc.

Strategic Council Presentation

The American
Institute
of Architects