

DAAP on Aging

The Collaboration Network
Big Quarterly Meeting
January 17, 2019

Dr. Christopher Auffrey, Urban Planning/Urban Studies (not present)
Dr. Pravin Bhiwapurkar, Architecture
Dr. Claudia Rebola, Industrial Design
Matthew Wizinsky, Communication Design

DAAP on Aging

Design Dr. Claudia Rebola, Matthew Wizinsky

Architecture Dr. Pravin Bhiwapurkar

Art —

Planning Dr. Christopher Auffrey

Products

Buildings

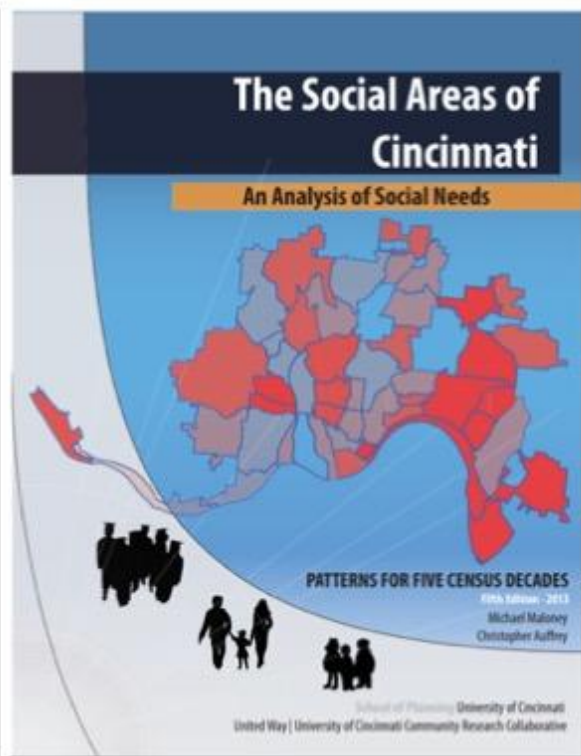
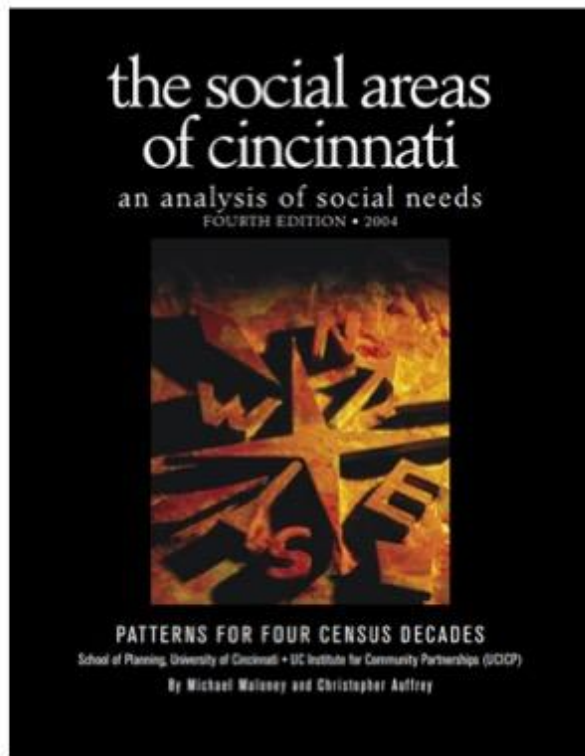
City



Aging Related Research in the School of Planning

Professor Chris Auffrey has co-authored the fourth (2004) and fifth (2013) editions of the *Social Areas of Cincinnati* (with Michael Malone), containing a chapter in each devoted to detailing the changing relative demographic status of “The Elderly and Children” across Cincinnati neighborhoods and the Greater Cincinnati metropolitan area from 1970 to 2009.

Plans are underway for the publication of the sixth edition in 2022 or 2023.

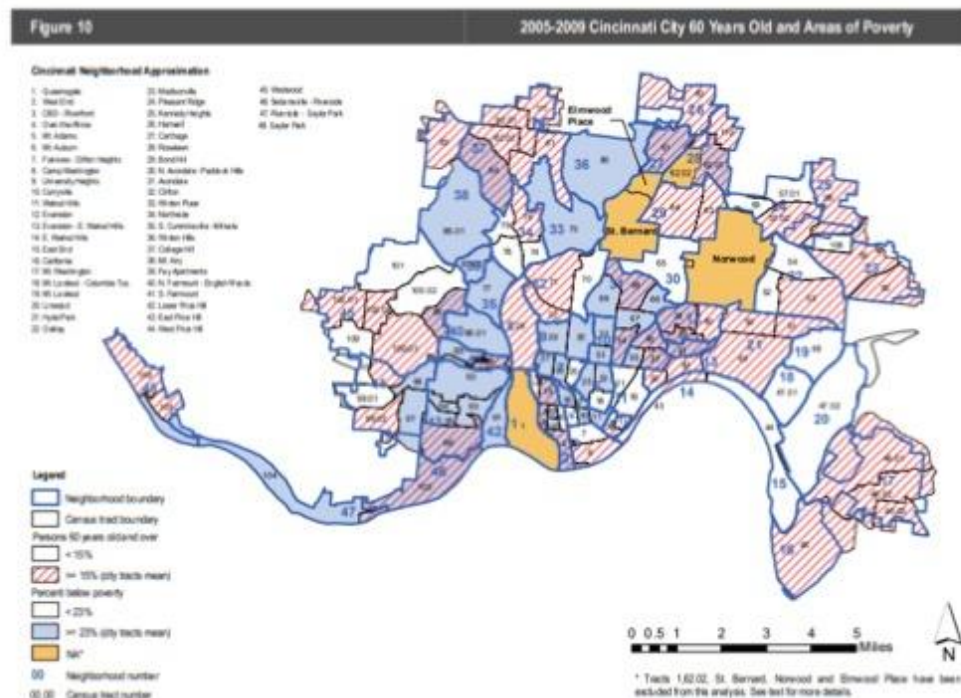


Aging Related Research in the School of Planning (cont.)

The *Social Areas of Cincinnati* documents growing aging populations in parts of Cincinnati, especially in neighborhoods with lower relative socioeconomic status.

As a guide for planning aging-related services and infrastructure, the finding provide specific census tract-level detail about the locations, numbers and trends of aging in Cincinnati and the region.

This work, in part, also has supported completed dissertation research by Jongwoong Kim titled *Creating Aging-Friendly Cities and Communities in the U.S.: A Case Study of Cincinnati and Its Suburban Multifamily Communities* (2017).



Architecture: Dr. Pravin Bhiwapurkar

Areas of expertise

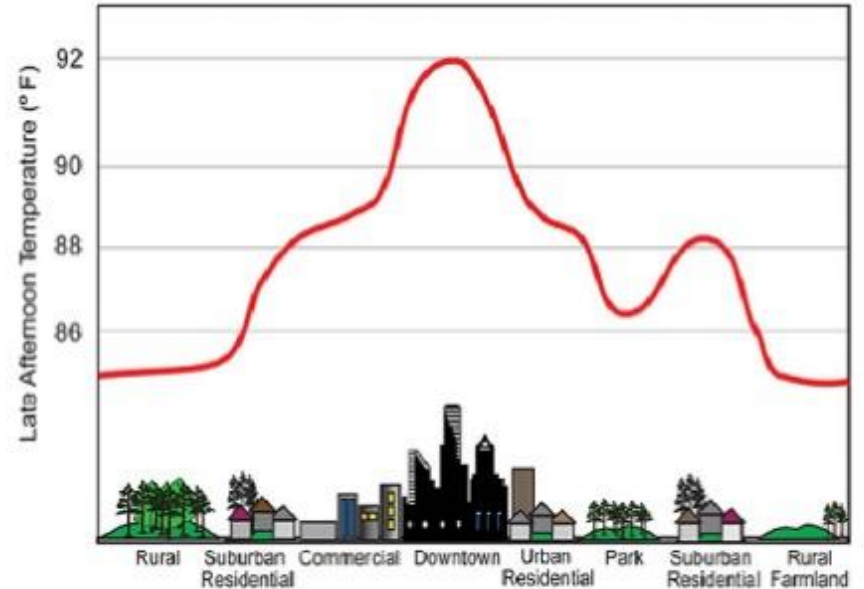
- Thermal comfort in indoor and outdoor environments
- Overheating and health
- Building energy efficiency
- Systems approach
- Design and health

Relevance

- there is a strong co-relation between overheating and aging population, especially during extreme heat events



Applications

- Design of smart environments
- Retrofitting existing housing (with elderly)



Review

Smart Homes for Elderly Healthcare—Recent Advances and Research Challenges

Sumit Majumder ¹ , Emad Aghayi ², Moein Noferesti ², Hamidreza Memarzadeh-Tehran ², Tapas Mondal ³, Zhibo Pang ⁴  and M. Jamal Deen ^{1,5,*}

Abstract: Advancements in medical science and technology, medicine and public health coupled with increased consciousness about nutrition and environmental and personal hygiene have paved the way for the dramatic increase in life expectancy globally in the past several decades. However, increased life expectancy has given rise to an increasing aging population, thus jeopardizing the socio-economic structure of many countries in terms of costs associated with elderly healthcare and wellbeing. In order to cope with the growing need for elderly healthcare services, it is essential to develop affordable, unobtrusive and easy-to-use healthcare solutions. Smart homes, which incorporate environmental and wearable medical sensors, actuators, and modern communication and information technologies, can enable continuous and remote monitoring of elderly health and wellbeing at a low cost. Smart homes may allow the elderly to stay in their comfortable home environments instead of expensive and limited healthcare facilities. Healthcare personnel can also keep track of the overall health condition of the elderly in real-time and provide feedback and support from distant facilities. In this paper, we have presented a comprehensive review on the state-of-the-art research and development in smart home based remote healthcare technologies.

Keywords: smart home; telemedicine; telehealth; health monitoring; aged people; smart care; gerontechnology



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Monitors Your
Activity Level

Design: Dr. Claudia Rebola

My work brings together design, science, and technology to experiment, design and prototype **innovative interactive products** in the realm of health

My main research is on **design for aging** with focused areas on disability, health, technologies and robotics

I apply **universal design, social innovation and participatory/co-design methods** in designing products, from wearables to user experiences, tailored to the older adult population

My work is **highly multidisciplinary** and **community-based** advancing design thinking, methods and processes for conceptualization, fabrication and deployment of graphic, interface and product designs



**Next Generation Robotic Intelligence that Provides
Psycho-Social Support for Older Adults**

Role: Co-PI

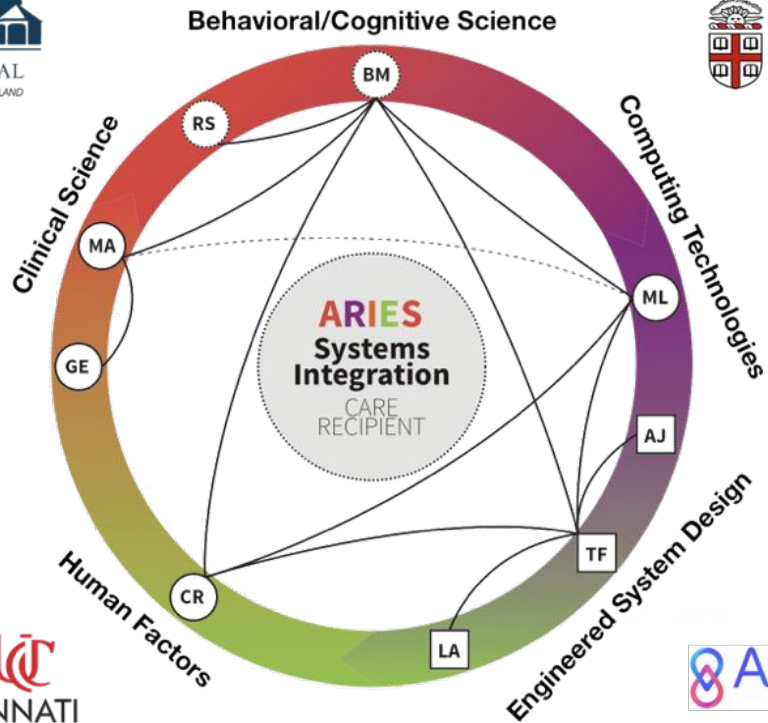
Amount Funded: \$999,803

Sponsor: NSF

Dates: 08/2017-07/2020

Description: Partnership with Brown U. Hasbro, Butler Hospital and UC to “redesign” the robotic cat companion “joy for all” to give higher (more meaningful) health care support.

what is the next-generation robotic
intelligence that provides psycho-social
support for older adults?



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Rehabilitation Engineering Research Center on Supportive Technologies for Successful Aging with Disability

Role: Director of T3 component (PI: Sanford, J.)

Amount Funded: \$4.6 million

Sponsor: National Institute on Disability and Rehabilitation Research

Dates: 10/2013-9/2018

Description: Responsible for Universal Design training and competitions.

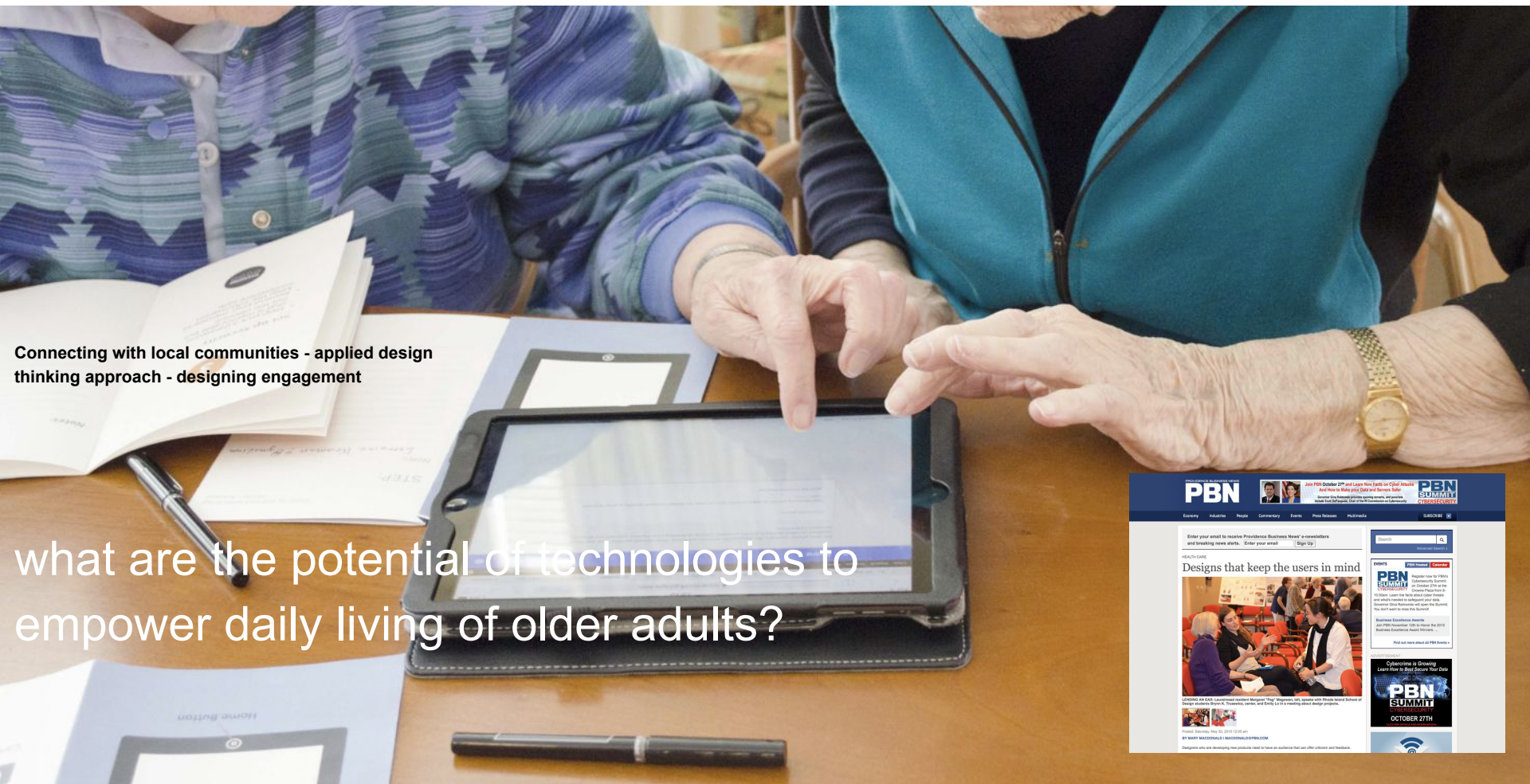
How can we train the next generation of designers to better design technologies for older adults?

[emerging trends]

TECHNOLOGIES TO SUPPORT PEOPLE “Aging with Disability”

Imagine a woman who has been blind since childhood. Despite her inability to see, she overcame challenges with everyday activities and lived independently by relying on sound to compensate for the loss of sight. Through the use of adaptive strategies (e.g., asking for directions), environmental modifications (e.g., a chirping pedestrian crosswalk signal), and assistive technologies (AT), such as screen reading software and a white cane to provide critical information through sound-based cues, she was able to carry out daily activities in her own home and community.

Now think about this same woman as an older adult who is experiencing hearing loss. What new



Connecting with local communities - applied design thinking approach - designing engagement

what are the potential of technologies to empower daily living of older adults?

www.pbnsummit.com

PBN PROVIDENCE BUSINESS NEWS

Join PBN October 27th and Learn How Tech is Changing Attitudes and How to Make it Work for Older Adults

Register now for PBN's 10th Anniversary Summit on October 27th at the Crowne Plaza Hotel in Providence, Rhode Island. It's a day of networking, learning, and ideas to help you succeed in today's business. You don't want to miss this Summit!

PBN SUMMIT PROVIDENCE BUSINESS NEWS

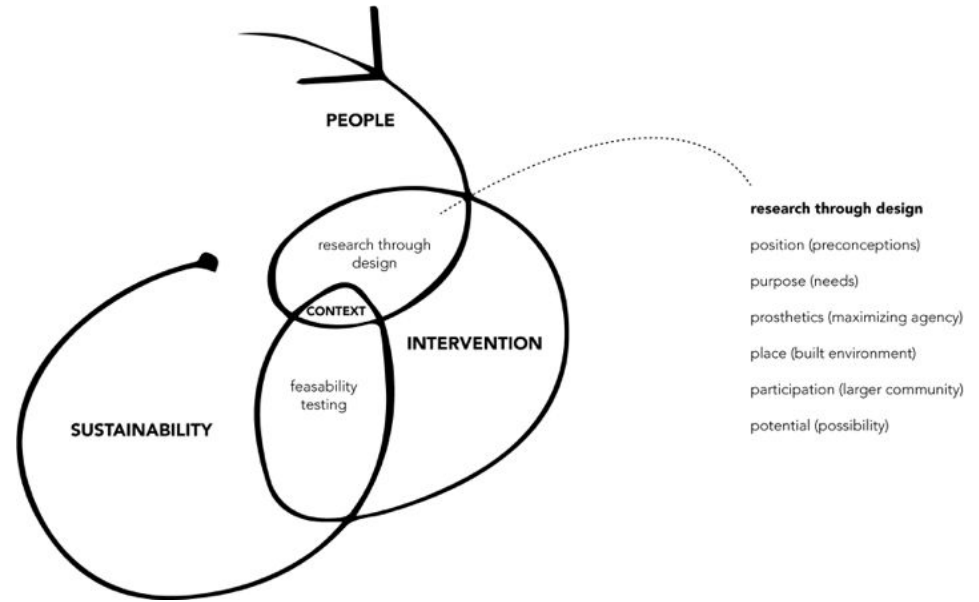
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Cybercrime is Growing
Learn How to Protect Your Data


PBN SUMMIT
OCTOBER 27TH

BY MARY WATSON @ NATIONALPBN.COM

Connecting with local communities - applied design
thinking approach - designing engagement



what are the potential of technologies to
empower daily living of older adults?



Connecting with local communities - applied design
thinking approach - designing engagement

How can we design data collection tools to
better understand older adults?



Development of Non-Stigmatizing Hip Protection for
Prevention of Fall-Related Injuries

Role: Design Researcher

Amount Funded: \$225,000

Sponsor: NIH

Dates: 08/2017-07/2018

Description: Grant to clinically test, design and evaluate hip protectors with a proprietary design cushioning for older adults.

How to design a utilitarian, embracing,
integrated, attractive and comfortable hip
protector as a tool for fall prevention?

Smart Environmental Prosthetics (NSF SCH)

A suite of personal and domestic design products to improve the quality of life for aging populations. (Rebola, Kubley, Wizinsky)

Human Scale (wearables)

Domestic Scale (products/furniture)

Small Urban Scale (social connectivity)

Fashion/Textile Design

+ Industrial/Product Design

+ Communication/Interaction Design

+ Architecture (?)

NSF Smart + Connected Health (SCH)

Due: Dec 2019. Support up to \$300k / 4 years

DAAP + 1819: Research, Design, Test, Showcase

Other Collaborators:

Gerontology, Nursing, Community Medicine ... ?

Technology + Manufacturing partners ... ?