DEMOGRAPHIC TRANSFORMATIONS: CATALYST FOR CHANGE

Sarasota Design Conference 2018: Designing for Change

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Shimberg Center for Housing Studies, College of Design, Construction & Planning
University of Florida
ROADMAP

- Demographic Transformation and Aging
- Building Performance for Occupant Health
- Expanding Housing Options
WE ARE NEAR GROUND ZERO

- Sarasota County
- Sumter County
- Housing Florida's Older Adults: By the Numbers
By 2030, more than 70 million Americans – and 960 million people worldwide – will be 65 years or older.
An Aging Nation
Projected Number of Children and Older Adults

For the First Time in U.S. History Older Adults Are Projected to Outnumber Children by 2035

Projected percentage of population
- Adults 65+: 22.8% (2016), 23.5% (2060)
- Children under 18: 15.2% (2016), 19.8% (2060)

Projected number (millions)
- 2016: 49.2 (49.2 million), 73.6 (73.6 million)
- 2060: 94.7 (94.7 million), 79.8 (79.8 million)

Note: 2016 data are estimates not projections.

Source: National Population Projections, 2017
U.S. Department of Commerce
Economics and Statistics Administration
U.S. CENSUS BUREAU
census.gov
www.census.gov/programs-surveys/popproj.html
Fig. 3.1. Proportion of population aged 60 years or older, by country, 2015

Fig. 3.2. Proportion of population aged 60 years or older, by country, 2050 projections
Proportion of People 65 and Older in a Country’s Population, Estimates for 2010 and 2050


Pew Research Center
At What Age Does the Average Person Become Old?

Mean age shown

Age of respondents

- 18-29
- 30-49
- 50-64
- 65+

Age of becoming old

- 60
- 69
- 72
- 74

Note: Asked of all 2,969 adults in the survey.

PewResearchCenter
<table>
<thead>
<tr>
<th>Marker</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turns 85</td>
<td>79%</td>
</tr>
<tr>
<td>Can’t live independently</td>
<td>76%</td>
</tr>
<tr>
<td>Can’t drive a car</td>
<td>66%</td>
</tr>
<tr>
<td>Turns 75</td>
<td>62%</td>
</tr>
<tr>
<td>Frequently forgets familiar names</td>
<td>51%</td>
</tr>
<tr>
<td>Finds his/her health is failing</td>
<td>47%</td>
</tr>
<tr>
<td>Has trouble walking up stairs</td>
<td>45%</td>
</tr>
<tr>
<td>Has bladder control problems</td>
<td>42%</td>
</tr>
<tr>
<td>Is no longer sexually active</td>
<td>33%</td>
</tr>
<tr>
<td>Turns 65</td>
<td>32%</td>
</tr>
<tr>
<td>Retires from work</td>
<td>23%</td>
</tr>
<tr>
<td>Has grandchildren</td>
<td>15%</td>
</tr>
<tr>
<td>Has gray hair</td>
<td>13%</td>
</tr>
</tbody>
</table>

Note: Asked of all 2,969 adults in the survey.
As the boomers reach 65, then 75, then 85, the population in each age bracket will swell; the age mix of the old will shift upward.
Figure 1a: Projected Households with Householder 65 Years and Older in Florida, 2015 – 2040

Source: Shimberg Center for Housing Studies, Affordable Housing Needs Assessment (AHNA)
Aging Brings Increasing Risks of Disability, Isolation, and Financial Stress

Share Facing Difficulty by Age Group (Percent)

Type of Difficulty

Cognitive  Self-Care  Independent Living  Mobility  Live Alone  Housing Cost Burden

50–64  65–79  80 and Over

Notes: A cognitive disability is defined as serious difficulty remembering, concentrating, or making decisions; self-care disability as difficulty bathing or dressing; independent living disability as difficulty doing errands alone; and mobility disability as serious difficulty walking or climbing stairs. Housing cost burden is defined as paying more than 30 percent of income for housing costs.

Source: JCHS tabulations of US Census Bureau, 2012 American Community Survey.
Even at Advanced Ages, the Vast Majority of Older Adults Lives in Private Homes

Share of Population by Age Group (Percent)

Notes: Mobile home occupants include owners and renters living in trailers, boats, RVs, vans, and other structures. Group quarters residents may live in either institutional or non-institutional facilities.

Source: JCHS tabulations of US Census Bureau, 2012 American Community Survey.
Large declines in the share of older Americans ages 85 and older living in nursing homes or other group quarters since 1990

**% among women ages 65 to 84**

- 1990: 7, 6, 9
- 2000: 10, 12, 13
- 2014: 41, 43, 46

**% among men ages 65 to 84**

- 1990: 5, 5, 7
- 2000: 76, 72, 69
- 2014: 8, 4, 7

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**% among women ages 85 and older**

- 1990: 27, 25, 13
- 2000: 7, 6, 23
- 2014: 16, 12, 49

**% among men ages 85 and older**

- 1990: 17, 14, 8
- 2000: 10, 9, 47
- 2014: 7, 6, 49

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*Note: Older adults who are living with a spouse may also be living with children or other relatives or non-relatives. Unmarried adults include those who are separated, divorced, widowed, have never been married or married, but the spouse is absent from the household. Older adults living alone is based on the total population ages 65 and older.*

*Source: Pew Research Center analysis of 1990-2000 decennial censuses and the 2014 American Community Survey (ACS)*

Pew Research Center
Most Children with Grandparent Caregiver Also Live with a Parent

% among children with grandparent caregiver in 2011

- No parents in household: 40%
- One parent in household: 52%
- Two parents in household: 8%

Notes: Children with a grandparent caregiver are those whose co-resident grandparent reports being currently responsible for most of the basic needs of a co-resident grandchild.

Source: Pew Research Center analysis of American Community Survey (IPUMS)

PEW RESEARCH CENTER

Grandchildren Living with and Cared for Primarily by Grandparents Rises then Levels Off

Number of children, in thousands

Notes: The shaded area represents the Great Recession. Those "Cared for by grandparent" include those whose co-resident grandparent reports being currently responsible for most of the basic needs of a co-resident grandchild.


PEW RESEARCH CENTER
Counties With the Largest, Smallest Shares of Seniors

% of county population ages 65+

Source: U.S. Census Bureau 2014 population estimates
PEW RESEARCH CENTER
## The Grayest Counties in the U.S.

### Counties with largest % of population ages 65+

<table>
<thead>
<tr>
<th>County</th>
<th>State</th>
<th>Total Population</th>
<th>% ages 65+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sumter</td>
<td>Fla.</td>
<td>114,350</td>
<td>52.9%</td>
</tr>
<tr>
<td>Charlotte</td>
<td>Fla.</td>
<td>168,474</td>
<td>37.7%</td>
</tr>
<tr>
<td>La Paz</td>
<td>Ariz.</td>
<td>20,231</td>
<td>36.1%</td>
</tr>
<tr>
<td>Citrus</td>
<td>Fla.</td>
<td>139,377</td>
<td>35.2%</td>
</tr>
<tr>
<td>Lancaster</td>
<td>Va.</td>
<td>11,044</td>
<td>35.2%</td>
</tr>
<tr>
<td>Catron</td>
<td>N.M.</td>
<td>3,556</td>
<td>35.0%</td>
</tr>
<tr>
<td>Alcona</td>
<td>Mich.</td>
<td>10,454</td>
<td>34.8%</td>
</tr>
<tr>
<td>Northumberland</td>
<td>Va.</td>
<td>12,251</td>
<td>34.3%</td>
</tr>
<tr>
<td>Sierra</td>
<td>N.M.</td>
<td>11,325</td>
<td>34.0%</td>
</tr>
<tr>
<td>Sarasota</td>
<td>Fla.</td>
<td>398,962</td>
<td>33.9%</td>
</tr>
<tr>
<td>Llano</td>
<td>Texas</td>
<td>19,510</td>
<td>33.9%</td>
</tr>
</tbody>
</table>

Source: U.S. Census Bureau 2014 population estimates

PEW RESEARCH CENTER
Rural counties as a whole have a higher share of older Americans than cities or suburbs

% of total population in each county type

Note: County categories based on the National Center for Health Statistics Urban-Rural Classification Scheme for Counties. Source: Pew Research Center analysis of 2012-2016 American Community Survey data. “What Unites and Divides Urban, Suburban and Rural Communities”

PEW RESEARCH CENTER
Most Older Adults Live in Suburban Communities

Distribution of Households Aged 50 and Over (Percent)

Suburban counties are graying more rapidly than other types

% change in age group since 2000 by county type

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Urban</th>
<th>Suburban</th>
<th>Rural</th>
</tr>
</thead>
<tbody>
<tr>
<td>Younger than 18</td>
<td>1</td>
<td>6</td>
<td>-9</td>
</tr>
<tr>
<td>Ages 18-64</td>
<td>15</td>
<td>16</td>
<td>3</td>
</tr>
<tr>
<td>65+</td>
<td>26</td>
<td>39</td>
<td>22</td>
</tr>
</tbody>
</table>

Note: County categories based on the National Center for Health Statistics Urban-Rural Classification Scheme for Counties.
Source: Pew Research Center analysis of 2000 decennial census SF3 data and 2012-2016 American Community Survey data.
“What Unites and Divides Urban, Suburban and Rural Communities”

PEW RESEARCH CENTER
HOW HEALTHY & ABLE?
Per capita health care spending skyrockets with age.

Per capita health care spending, by age group and source of payment, 2004

0-18: $2,650
19-64: $4,511
65+: $14,797

$25,691

Medicare
Medicaid
Other public
Other private
Pvt health ins
Out of pocket

Note: Other public: e.g. workers compensation. Other private: e.g. philanthropy.
Source: Centers for Medicare and Medicaid Services, 2009.
10 Common Chronic Conditions for Adults 65+

- **Quick Facts**
  - 80% have at least 1 chronic condition
  - 68% have 2 or more chronic conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension (High Blood Pressure)</td>
<td>58%</td>
</tr>
<tr>
<td>High Cholesterol</td>
<td>47%</td>
</tr>
<tr>
<td>Arthritis</td>
<td>31%</td>
</tr>
<tr>
<td>Ischemic Heart Disease (or Coronary Heart Disease)</td>
<td>29%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>27%</td>
</tr>
<tr>
<td>Chronic Kidney Disease</td>
<td>18%</td>
</tr>
<tr>
<td>Heart Failure</td>
<td>14%</td>
</tr>
<tr>
<td>Depression</td>
<td>14%</td>
</tr>
<tr>
<td>Alzheimer’s Disease and Dementia</td>
<td>11%</td>
</tr>
<tr>
<td>Chronic Obstructive Pulmonary Disease</td>
<td>11%</td>
</tr>
</tbody>
</table>

Source: Centers for Medicare & Medicaid Services, Chronic Conditions Prevalence State/County Table: All Fee-for-Service Beneficiaries, 2015
BOOMERS’ HEALTH Of people 55 to 64 years old:

- about 25% smoke
- more than 39% are obese
- more than 55% don’t exercise enough
- about 37% don’t get enough sleep
- about 75% don’t eat enough fruits and vegetables

Data from the Sightlines Project, Stanford Center on Longevity, 2016
How Common are Specific Disabilities?

- Difficulty walking/climbing stairs: 30.6 million
- Require assistance of others with everyday tasks: 12.0 million
- Vision difficulty (partial or total): 8.1 million
- Hearing difficulty: 7.6 million
- Using a wheelchair: 3.6 million
- Alzheimer's, senility or dementia: 2.4 million

Source: Americans with Disabilities, 2010, from Survey of Income and Program Participation
Most Older Adults with Disabilities Live in the Community, Many on Their Own

Share of Population with Disabilities by Age Group [Percent]

Housing Situation
- Live Alone
- Live with Spouse/Partner Only
- Live with Others
- Live in Group Quarters

Notes: Disabilities include hearing, vision, cognitive, mobility, self-care, and independent living difficulties. Other household members may be anyone other than, or in addition to, a spouse or partner. Group quarters include institutional and non-institutional settings.

Source: JCHS tabulations of US Census Bureau, 2012 American Community Survey.
### Original Accessibility Features in Homes

<table>
<thead>
<tr>
<th>Feature</th>
<th>Percent of All Housing Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Bathroom on Entry Level</td>
<td>87.7%</td>
</tr>
<tr>
<td>Bedroom on Entry Level</td>
<td>76.3%</td>
</tr>
<tr>
<td>No Steps Between Rooms</td>
<td>65.5%</td>
</tr>
<tr>
<td>Wheelchair Accessible Electrical Switches</td>
<td>64.2%</td>
</tr>
<tr>
<td>Wheelchair Accessible Electrical Outlets</td>
<td>62.9%</td>
</tr>
<tr>
<td>Wheelchair Accessible Countertops</td>
<td>51.0%</td>
</tr>
<tr>
<td>Wheelchair Accessible Climate Controls</td>
<td>47.0%</td>
</tr>
<tr>
<td>Can Enter Unit Without Steps</td>
<td>42.0%</td>
</tr>
<tr>
<td>Wheelchair Accessible Bathroom</td>
<td>39.3%</td>
</tr>
<tr>
<td>Wheelchair Accessible Other Kitchen Features</td>
<td>29.9%</td>
</tr>
<tr>
<td>Hand Rails/ Grab Bars in Homes</td>
<td>25.9%</td>
</tr>
<tr>
<td>Kitchen Trays/ Lazy Susans</td>
<td>18.5%</td>
</tr>
<tr>
<td>Hand Rails/ Grab Bars in Bathrooms</td>
<td>17.8%</td>
</tr>
<tr>
<td>Wheelchair Accessible Kitchen Cabinets</td>
<td>15.8%</td>
</tr>
<tr>
<td>Door Handles Instead of Knobs</td>
<td>11.0%</td>
</tr>
<tr>
<td>Built-In Shower Seats</td>
<td>8.3%</td>
</tr>
<tr>
<td>Extra-Wide Doors/ Hallways</td>
<td>7.9%</td>
</tr>
<tr>
<td>Raised Toilets</td>
<td>6.7%</td>
</tr>
<tr>
<td>Hand Rails/ Grab Bars in Other Areas</td>
<td>2.5%</td>
</tr>
<tr>
<td>Ramps in Home</td>
<td>1.0%</td>
</tr>
<tr>
<td>Elevators in Homes</td>
<td>0.4%</td>
</tr>
<tr>
<td></td>
<td>Level 1: Potentially Modifiable</td>
</tr>
<tr>
<td>----------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>All HUs</td>
<td>(33.34%) 148,837</td>
</tr>
</tbody>
</table>

**Level 1:** Units have entrance accessible without steps/stairs, bathroom on entry level OR elevator; bedroom on entry level OR elevator

**Level 2:** L1 +: accessible bathroom with grab bars; no steps between rooms or rails/grab bars along all steps

**Level 3:** L2 +: extra-wide doors or hallways, no steps between rooms; door handles instead of knobs; sink handles/levels; wheelchair accessible switches, kitchen features, and other features
Summing up…….

- By 2032: more older adults than children and youth
- Many living in suburbs and older homes
- Diversity in health, income/assets, lifestyle
- Living longer while healthcare costs and chronic illnesses skyrocket
- Advances in technology but also in climate change
- Boomers’ expectations and experiences
- Ripple effect on all generations
BUILDING PERFORMANCE FOR OCCUPANT HEALTH
Demographic Change

Healthcare

Climate Change
CLIMATE CHANGE IS A HEALTH PROBLEM.
RANGE OF DESIGN + BUILDING FACTORS AFFECTING ENVIRONMENTAL SUSTAINABILITY
RANGE OF DESIGN + BUILDING FACTORS AFFECTING OCCUPANT HEALTH
KEY HEALTH BEHAVIORS WHERE DESIGN CAN MAKE A DIFFERENCE

- Sleep
- Sedentary Behavior
- Stress
- Safety and Access
- Social Connectivity
TWO EXAMPLES
IS GREEN HOUSING HEALTHY HOUSING FOR OLDER ADULTS?
KEY RENOVATIONS

- Insulation and improvement in building roof
- PTAC system upgrades
- Energy Star exhaust fans, appliances
- New bedroom ceiling fan with pull-cords
- Double-pane, low-E sliding balcony door and window
- Low-flow plumbing fixtures
- Complete kitchen and bathroom remodel with low-VOC materials
- Low-VOC flooring, paint, adhesives

- $1.7M renovation from ARRA Green Retrofit Program
- 3-story, 116-unit, each unit 619 SF
FINDING:
REDUCE # OF HOMES WITH EXTREME INDOOR TEMPERATURES

Count = # of times of 448 data points that indoor temperature exceeded 81°
Reductions in indoor temperatures over 81°F resulted in:

- *improved* quality of health/life
- *increased* hours of sleep
- *reduced* emotional distress

<table>
<thead>
<tr>
<th>Panel 1</th>
<th>Panel 3</th>
<th>Fixed-Effects Regression</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>t-value</td>
</tr>
<tr>
<td>3.179</td>
<td>2.150</td>
<td>&lt; 0.01</td>
</tr>
<tr>
<td>-2.085</td>
<td></td>
<td>&lt; 0.05</td>
</tr>
</tbody>
</table>

*Green Renovation*  
*Intervention*  

**FINDING:**  
REDUCTION IN TEMPERATURE “PEAKS” RELATED TO SELF-REPORT HEALTH OUTCOMES OF...

**QUALITY OF LIFE/HEALTH**

**SLEEP**

**EMOTIONAL DISTRESS**
SWEETWATER SPECTRUM: HOUSING FOR ADULTS WITH AUTISM

- Located in Sonoma CA
- Leddy Maytum Stacy Architects, San Francisco
Sensory Experiences, Miguel Jiron for InteractingWithAutism
SURVEYS show most older adults want to age in their current home or community

For some, doing so entails extensive remodeling or costly in-home personal/household care

First age-restricted retirement community opened in 1954 in Arizona

The Villages is the largest active-adult retirement community in the country

Over 4,800 CCRCs, generating $27.6B in revenue (Census, 2012)

Very rare are planned affordable retirement communities
THE MIDDLE LANDSCAPE: CO-LIVING

• Live in self-contained private homes or en-suites

• Share common living space, amenities, or home services in a residential complex or neighborhood
UNIVERSITY-BASED
CCRC

Oak Hammock
at the University of Florida
University-Based CCRC

- 100 UBRC (2009), including...
- Penn State University
- The Forest at Duke
- Oak Hammock at UF
- Kendal at Ithaca
- Longhorn Village (UT)
- Kendal at Oberlin
- Kendal at Hanover (Darmouth)
- Vi at Palo Alto (Sanford)
- University of Michigan
VILLAGE MOVEMENT & NORCS

- Grassroots (Village) and government-supported (many NORCs)
- Naturally Occurring Retirement Communities (NORCs) and NORC-SSPs
- Village-to-Village Network: 230 Villages in urban, suburban and rural settings
- Beacon Hill Village Clip
CO-LIVING COMPLEXES: MILLENNIALS + MORE(?)

- Type of Shared Housing
- Grassroots and For-Profit Firms
  - Common
  - Ollie
  - OpenDoor
  - Properties Management Group
  - WeLive
COHOUSING

- European origins
- In U.S. since late 1980s
- ~160 cohousing communities in US (built and in process)
- Multigenerational and Senior Cohousing
DEFINING FEATURES

- Generally 13-35 private homes
- Built around a common house
- Common house includes community-scale kitchen and eating area; other spaces, as desired
- Residents collaboratively plan and manage community, activities
- Shared activities and some resources
- Legal structure typically a HOA
- First senior-only cohousing in US completed in 2005
Durham Central Park Coho
Weinstein Friedlein Architects
MULTIGEN & SENIOR COHOUSING

[Map with various locations such as Upslope Brewing Company, Bookcliff Vineyards Tasting Room, Lee Hill Peat, Hartmann Inline Rink, and Wild Sage Cohousing Community highlighted.]
COHOUSING IN ADAPTIVE MULTI-USE

Swan’s Market
Oakland CA
RETROFIT COHOUSING: SUBURBAN

N Street Cohousing
Davis CA
ACCESSORY DWELLING UNITS

- Traced back to 1830s
- AKA Granny Flats, In-Law Units
- Restricted in most communities
SANTA CRUZ, CA

- Provides technical assistance
- Design suggestions/prototypes developed by architects
- Integrative ADU program
- Received planning and environmental awards
**Some potential features**

- **A “virtual companion”** that would relay health-related messages ("It’s time to take your medication") and play music, movies, and games.
- **A video system** that would monitor the floor at ankle level, so the patient would have privacy but a caregiver would know if there was a problem.
- **Pressurized ventilation** that can keep airborne pathogens in (if the patient is quarantined) or keep outdoor air out (if a patient has a compromised immune system).
- **A lift,** attached to a built-in track in the ceiling, that would move a patient from bed to bathroom so the caregiver could avoid heavy lifting.
- **In addition to regular ambient light,** lighting at knee height would line the walls, illuminating the floor. Tripping over objects on the floor is the most common cause of falls.

**Kitchen:** Would contain a small refrigerator, a microwave and a combined washer-dryer, along with such features as a timed medication dispenser.

**Materials:** The floor is a single, molded piece of a concrete-like composite that includes a shower drain. Metal studs attach to the floor. The exterior is vinyl siding.

**Bedroom:** The cottage can house only one person legally, but an additional bed can accommodate a visiting caregiver.

**Bathroom:** Many “smart” devices can be installed, including a toilet that measures a person’s weight, temperature, and urine content.

**Dimensions**

**GRANNY POD or MEDCOTTAGE**

N2Care LLC
Fairfax County VA

**Others in Modular Construction:**
FabCab (Seattle-based)
The Home Store (Northeast)
The comfortable, well-lit interior provides ample communication and entertainment options.
MOVING FORWARD

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34 NOAH

35 World Health Organization

36 Institute of Medicine, National Academies of Sciences. World Health Organization

37

38

39

40 AIA.org

41 Istockphoto.com (purchase). All others: University of Florida

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43


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50 Interactingwithautism.com


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54 Roche + Roche Landscape Architecture: http://www.rocheandroche.com
PHOTO + IMAGE CREDITS (cont)

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57 Windsong Cohousing: http://windsong.bc.ca
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59 Kendal at Oberlin: https://kao.kendal.org
60 Beacon Hill Village: http://www.beaconhillvillage.org
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64 Weinstein Friedlein Architects: http://www.wfarchitecure.com
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69 N Street Cohousing: http://nstreetcohousing.org
70 N Street Cohousing, Ibid
71 Radworld (creative commons)
73 David Baker Architects, https://www.dbarchitect.com
74 N2Care LLC: http://www.medcottage.com/media-.html
75 N2Care, Ibid
76 Istockphoto (purchase)