missing values. Participants were first embedded as nodes in the graph with edges derived by their similarities based on demographic information, activities of daily living, etc. Then, questionnaire scores with missing values were regarded as a function on the nodes, and they were estimated based on spectral analysis of the graph with a smoothness constraint. The proposed approach was evaluated using data from our pilot study of dementia subjects (N=15) with 15% data missing. Result: A few complete variables (binary or ordinal) were available for all participants. For each variable, we randomly removed 5 scores to mimic missing values. With our approach, we could recover all missing values with 90% accuracy on average. We were also able to impute the actual missing values in the dataset within reasonable ranges. Conclusion: Our proposed approach imputes missing values with high accuracy despite the small sample size. The proposed approach will significantly boost statistical power of various small-scale studies with missing data.

MISSING VALUE IMPUTATION VIA GRAPH COMPLETION IN QUESTIONNAIRE SCORES FROM PERSONS WITH DEMENTIA
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Background: Questionnaires are widely used to evaluate cognitive functions, depression, and loneliness of persons with dementia (PWDs). Successful assessment and treatment of dementia hinge on effective analysis of PWDs’ answers. However, many studies, especially pilot ones, are with small sample sizes. Further, most of them contain missing data as PWDs skip some study sessions due to their clinical conditions. Conventional imputation strategies are not well-suited as bias will be introduced because of insufficient samples. Method: A novel machine learning framework was developed based on harmonic analysis on graphs to robustly handle missing values. Participants were first embedded as nodes in the graph with edges derived by their

PHYSICAL THERAPY STUDENTS’ ATTITUDES TOWARDS WORKING WITH PEOPLE WITH DEMENTIA AFTER VARIOUS LEARNING EXPERIENCES
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Working with people with dementia (PWD) can be challenging even for the most seasoned health professionals. Hence, teaching health professional students how to effectively work with this patient population is of importance. Two cohorts (n=43; aged 23-36 years) of Graduate Physical Therapy students participated in multi-modal learning experiences geared towards working with PWD within a geriatrics course. Modules included: 1) online lectures and readings followed by a team based learning activity, 2) 3 hours of ‘positive approaches to care’ along with a simulated experience of performing Activities of Daily living and Instrumental Activities of Daily Living of PWD, and 3) one-on-one interactions during both lunch and dinnertime with at least three PWD residing in a state veteran’s home. The Dementia Attitudes Scale (DAS) was used to measure attitudes of students at baseline and following each activity. Repeated measures analysis of variance revealed a significant increase in positive attitudes of students working with PWD across each activity (98.2 +/- 10.5 baseline) with the most positive attitudes noted after interactions with PWD in a state veteran’s home (111.2 +/- 15.0), [F (2, 83.8) = 19.4, p < .01, partial eta^2 = .32]. However, this difference was not significant when controlling for students who had previous experience interacting with PWD. In conclusion, Doctor of Physical Therapy students’ attitudes towards PWD improve with different learning experiences, with the greatest improvements after one on one interactions with PWD if the student did not have prior experience interacting with PWD.

SOCIAL RELATIONS AND FRAILTY TRAJECTORY IN LATER ADULTHOOD: EVIDENCE FROM HEALTH AND RETIREMENT STUDY
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Frailty is a state of heightened vulnerability due to the cumulative declines across multiple physiological systems. Growing attention is given to identifying social environmental factors associated with the risk of frailty. It is not yet known how different aspects of social relationships (structure and quality) are linked to frailty, and whether the strength and directions of links may differ by relationship types. Current study aims to 1) to identify sub-populations that follows distinctive trajectory of frailty and 2) to examine the multidimensional social relationship predictors of frailty trajectory. Data came from six waves of the Health and Retirement Study (2006-2016); Sample was older adults aged over 65 (n = 8,892; Mage = 74, SD = 6.96). Frailty index was created using 32 items each wave. Network size, frequency of contact, support, and strain with each relationship type (spouse, children, family, friends) was measured at baseline. Growth mixture model identified three distinctive subpopulations of older adults who share similar frailty trajectory, namely the average, high, and steep increase frailty group. Multinomial logistic regression results showed that frequent contact with friends were associated with lesser frailty. Perceived strain with the spouse, children, and family members all had additive influence on the membership to the higher or steep increase frailty group, compared to the average frailty group. Total network size or perceived support from ties were not significant factors for frailty progression. Interventions can target friendships and stress with kin members as modifiable factors to reduce the risk of frailty progression.

SYSTEMS BIOLOGY OF HUMAN AGING - NETWORK MODEL 2019
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This network schema is presented to aid in conceptualizing the many processes of aging, the causal chains of events, and the interactions among them, including feedback and vicious cycles. Contemplation of this network suggests promising intervention points for therapy development. This diagram is maintained on the Web as a reference for researchers and students. Content is updated as new information comes to light. www.LegendaryPharma.com/chartbg.html At first glance the network looks like a complicated web. However, as a conceptual summary, in one view, we can see how the many biogerontological processes relate to each other. Importantly, examination of these relationships allows us to pick out reasonably plausible causal chains of events. Within these chains, we can see age-related changes or accumulations that appear to be promising targets for future therapy development. Especially harmful is damage to the body's regeneration and repair systems, because they normally repair damage to other structures and systems. The many observable signs of human senescence have been hypothesized by various researchers to result from several primary causes. Inspection of the biochemical and physiological pathways associated with age-related changes and with the hypothesized causes reveals several parallel cascades of events that involve several important interactions and feedback loops. This network model includes both intracellular and extracellular processes. It ranges in scale from the molecular to the whole-body level. Effects due to externalities, lifestyle, environment, and proposed interventions are highlighted around the margins of the network.

BUILDING H.O.U.S.E. (HEALTHY OUTCOMES USING A SUPPORTIVE ENVIRONMENT) FOR LGBTQ OLDER ADULTS
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Lesbian, gay, bisexual, transgender, and queer (LGBTQ) older adults face unique challenges in finding affordable, inclusive, and supportive housing. These challenges may be due to discrimination, income disparities, and higher rates of health problems compared to cisgender heterosexual seniors. To our knowledge, this is the first longitudinal study of the health and wellbeing of older adults who move into LGBTQ-welcoming, affordable senior housing. Participants completed a brief baseline survey at the time of their housing lottery application. Questions focused on physical, psychological, and social health and current health service use. We calculated descriptive statistics on health status at baseline. 184 participants completed the baseline survey, mean age was 68 years (SD 5.2), and nearly 75% reported an annual income under $30,000. Almost half reported a diagnosis of hypertension, 40% depression, 27% anxiety, and 25% HIV/AIDS. Around 70% reported their health as good to excellent, 21% fair, and 9% poor or very poor. However, 58% reported their physical activities were at least somewhat limited by their physical health, 43% reported difficulties with balance or walking, and 32% reported memory problems. Nearly 3% had been admitted into the hospital and 10% had visited the emergency room in the past 30 days. In terms of social wellbeing, 63% felt isolated from others at least some of the time. In summary, LGBTQ older adults seeking affordable senior housing report relatively good health, although they also experience functional and social difficulties. New forms of housing that are explicitly LGBTQ-welcoming may help address these health challenges.

CORRELATES OF MENTAL HEALTH PROBLEMS AMONG OLDER AFRICAN AMERICANS WITH CHRONIC ILLNESS
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Prior epidemiologic studies have established that high rates of comorbidity of diabetes and depression is common. The aim of this study is to examine prevalence and correlates of mental health conditions among older African Americans with chronic health conditions. The sample (n=1,399) from the first round of the NHATS includes older African Americans living in their community: 60% women, 35% married, 39% less than HS, 57% from the South. A two-way MANCOVA was conducted to determine the...