

# IMPACT OF SERVICE-ENRICHED HOUSING ON HEALTH OUTCOMES

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Nancy VanDeMark, PhD  
Innovela Consulting Group

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## BACKGROUND

Mercy Housing, a leading national affordable housing organization, has developed, preserved, or financed nearly 48,500 homes over the past 30 years. Mercy Housing’s mission embodies the philosophy that stable, vibrant, and healthy affordable housing does more than alleviate homelessness and enrich communities: it is a foundation for residents to improve their lives. In recognition of the challenges facing low-income communities, Mercy Housing’s resident services staff build on the platform of safe, affordable housing by providing a range of supportive services to help residents develop the skills and resources needed to flourish. This combination of affordable housing and resident services, or *service-enriched housing*, is the foundation for Mercy Housing’s work in communities.

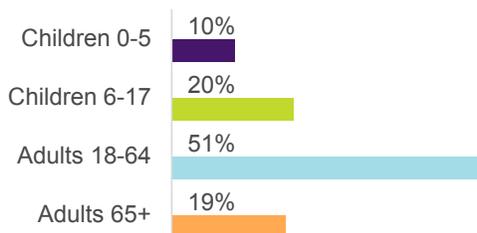
Since good health establishes the groundwork for a stable future, resident services staff facilitates residents’ access to health insurance, health care, and preventive services to support residents in creating a healthy lifestyle. As one component of its efforts to understand the impact of these services, Mercy Housing launched its first annual resident survey in 2012. In an ambitious effort to gather information from residents on their health, Mercy Housing conducted a survey of the 12,000 households where resident services are provided. During 2012 and again in 2013, approximately 55% of the households participated. Each of the two surveys gathered information on the health status of over 10,000 residents across 160 properties and 11 states.<sup>1</sup>

This report highlights the impact of service-enriched housing on residents’ health by examining change in the 1,095 residents who moved in during the 12 months prior to the 2012 Annual Resident Survey and then later participated in both the 2012 and 2013 Annual Resident Surveys. This analysis is intended to isolate the impact of the combination of stable, affordable housing and resident services on the group of new residents surveyed.

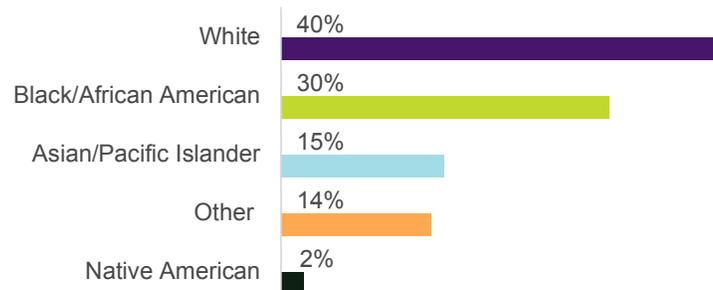
## AGE, GENDER, AND RACE

The residents whose outcomes are described in this report were housed across properties serving families, seniors, and people with special needs. As shown in Table 1, over half of the 1,095 residents included in the sample were adults ages 18-64. One third of the participating residents were children, and one-fifth were adults ages 65 and older. Sixty percent of the group was female and 40% male. Table 2 illustrates the racial identification of the sample, showing that 40% identified as White and 30% identified as Black or African American.

**Table 1: Age Group**  
N=1056



**Table 2: Race**  
N=1056



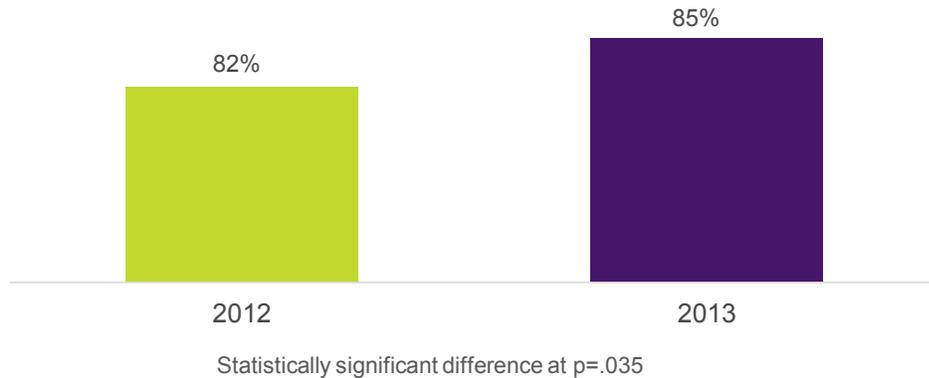
<sup>1</sup> Additional information on the methodology and findings from the Annual Resident Surveys can be found at <http://www.mercyhousing.org/file/RS-Annual-Survey-Report-2012.pdf>

## HEALTH INSURANCE

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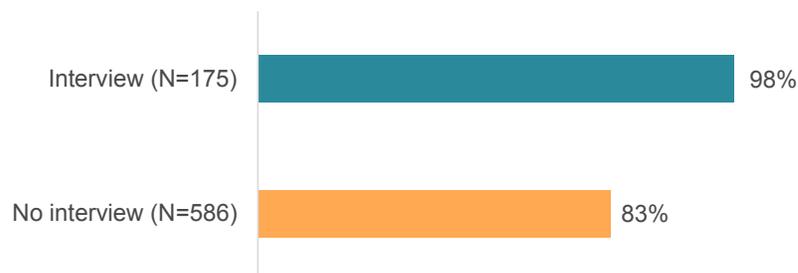
Residents experienced improvement in their health insurance status during their first year in service-enriched housing. As shown in Table 3, the percentage of residents enrolled in health insurance increased in the residents' first year at Mercy Housing from 82% in 2012 to 85% in 2013.

**Table 3: Percentage of Residents with Insurance**  
N= 1095



In addition, residents who participated in resident services were more likely to have health insurance than those who did not participate. As residents move into service-enriched housing, resident services staff offer to conduct a health interview. In the health interview, resident services staff reviews the residents' health insurance status and access to health care. Staff then provides residents with information and referrals to assist residents in accessing health insurance benefits and locating and scheduling health care. Table 4 demonstrates that nearly all (98%) of the residents who participated in the initial health interview with resident services staff had health insurance at the time of the 2013 survey as compared with 83% of the new residents who did not participate in the health interview. These figures suggest that the health interview was effective in assisting residents in accessing health insurance.

**Table 4: Percentage of Residents with Insurance in 2013**



Statistically significant difference at  $p<.001$

## HEALTH CARE ACCESS

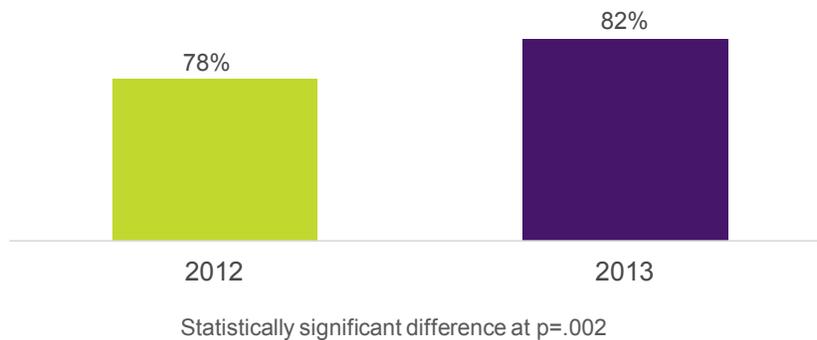
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The domain of health care access included questions about routine care, emergency room visits, and hospital stays.

### Routine Checkups

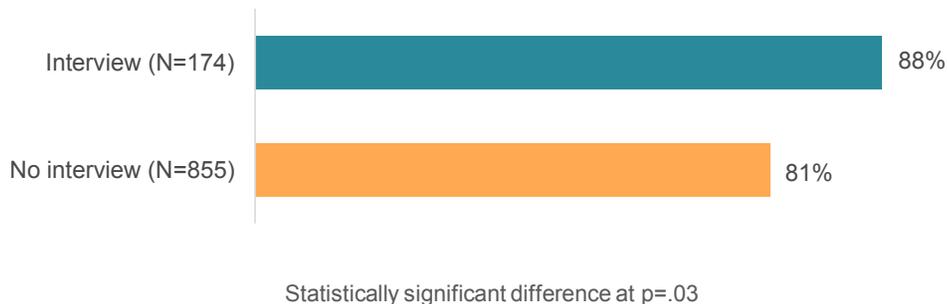
Residents experienced improvement in their access to routine health care during their first year in service-enriched housing. Table 5 indicates that 82% of the residents had a routine checkup in the year prior to the 2013 survey as compared with 78% who reported having a routine checkup in the year prior to the 2012 survey. As might be expected, participating in a routine checkup was correlated with having health insurance ( $r=.259$ ) for this group of new residents.

**Table 5: Percentage of Residents with Routine Checkup N=1029**



Residents participating in resident services were more likely to have routine care than those who did not participate in services. Table 6 demonstrates that residents who participated in the health interview with resident services staff were more likely than those who did not participate in the health interview to have a routine checkup in 2013. This finding suggests that the initial health interview with resident services staff can be an effective approach to increasing access to routine health care for residents in affordable housing.

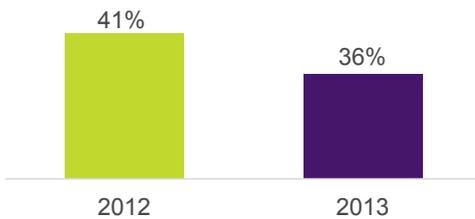
**Table 6: Percentage of Residents with Routine Checkup in Last Year**



## Emergency Room Visits

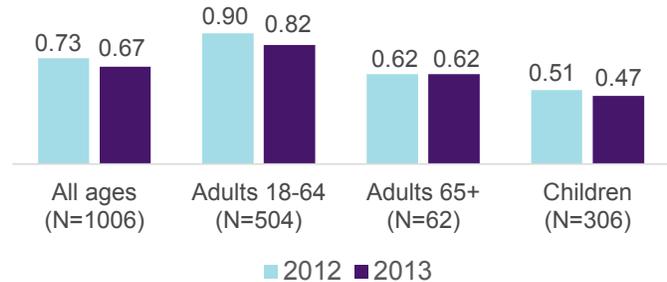
Residents experienced fewer emergency room visits in 2013 as compared with 2012. Table 7 shows that of the 1045 residents participating in both surveys who responded to the question on emergency room visits, 41% had been to the emergency room in the year prior to the 2012 survey and only 36% went to the emergency room in the year prior to the 2013 survey. As shown in Table 8, the average number of emergency room visits declined for adults 18-64 and for children, although this change was not statistically significant. As might be expected, having emergency room visits in 2013 and having poor health showed a small correlation ( $r=.271$ ), but emergency room visits were not correlated with having health insurance.

**Table 7: Percentage of Residents with Emergency Room Visits  
N=1045**



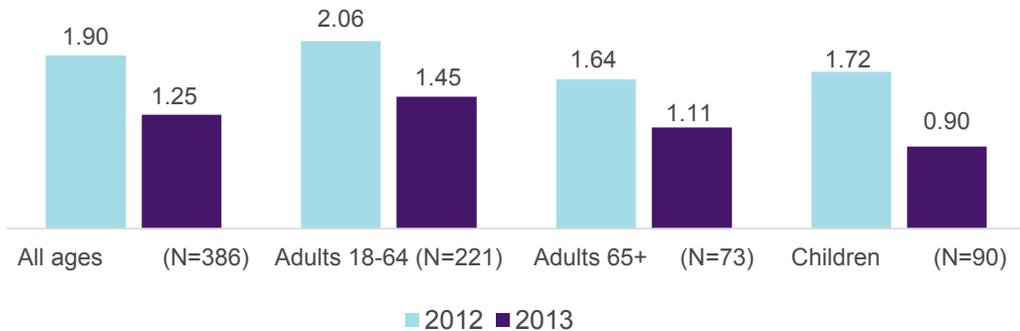
Statistically significant difference at  $p=.01$

**Table 8: Change in Average Number of Emergency Room Visits**



The change in emergency room visits from 2012 to 2013 was dramatic for residents who had a history of visits to the emergency room in the year prior to the 2012 survey. When including only the 386 new residents who reported one or more emergency room visits in the 2012 survey and examining their change in emergency room use between 2012 and 2013, the analysis indicates that, on average, residents with histories of trips to the emergency room visited the emergency room an average of 1.25 times in 2013 as compared with 1.9 visits in 2012 (Table 9). A reduction was seen across all age groups—older adults, adults ages 18-64, and children.

**Table 9: Change in Average Number of Emergency Room Visits for Residents with One or More Emergency Room Visits in 2012**

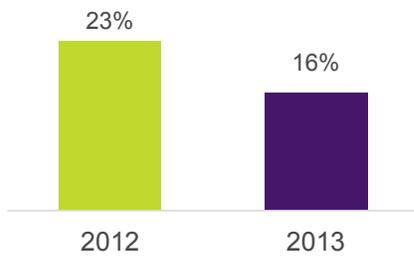


Statistically significant difference at  $p<.001$

# Hospital Stays

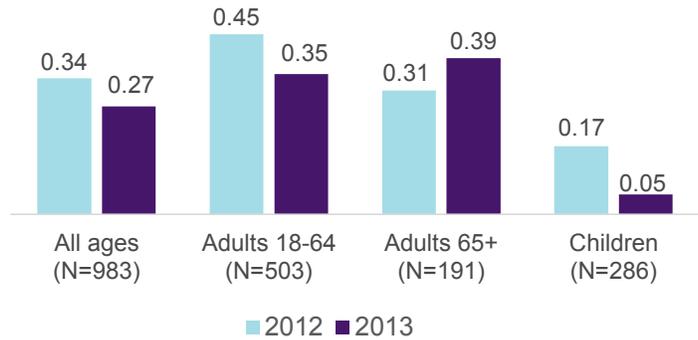
Hospitalizations among residents in their first year of housing were also reduced. As demonstrated in Table 10, nearly one-quarter of residents had a hospital stay in the year prior to the 2012 survey and only 16% reported a hospital stay in 2013. When comparing changes in the average number of hospital stays across the 2 years for the subgroup of residents who reported having one or more hospital stays in 2012, analysis shows significant reductions in hospitalization rates for adults 18-64 and for children (Table 11). Older adults had slightly more hospitalizations; however, the increase for older adults was not statistically significant. The slight increase in hospitalization rates for older adults is not surprising given that older adults are naturally facing worsening health.

**Table 10: Percentage of Residents with Hospital Stays**  
N=1032



Statistically significant difference at  $p < .001$

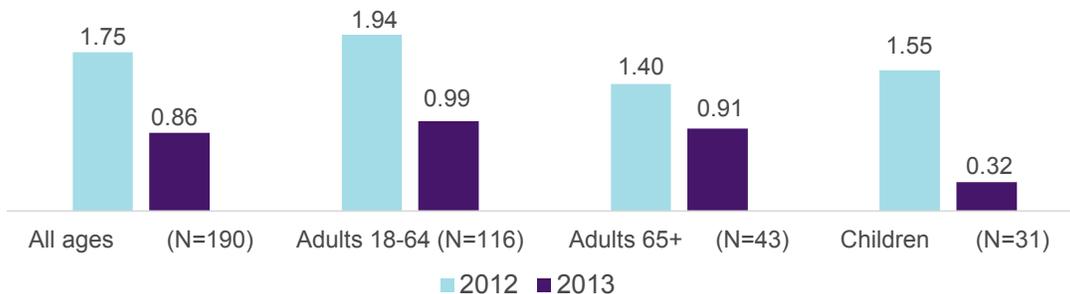
**Table 11: Change in Average Number of Hospitalizations**



Statistically significant difference at  $p < .05$  with exception of Adults 65+

For residents with a history of hospitalization, including older adults, there was a significant reduction in hospitalization rates from 2012 to 2013. Residents who had been in the hospital one or more times in the year before the 2012 interview had an average reduction of nearly one stay per year in the following year. As shown in Table 12, this reduction was seen across adults ages 18-64, older adults, and children, with children experiencing the largest reduction from 1.25 stays in 2012 to .32 stays in 2013.

**Table 12: Change in Average Number of Hospitalizations for Residents with One or More Hospital Stays in 2012**

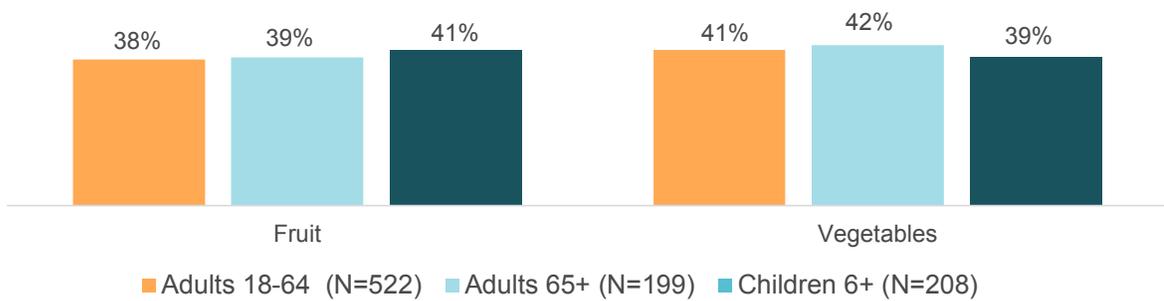


Statistically significant difference at  $p < .02$

## HEALTHY BEHAVIORS

*Residents improved in their healthy eating behaviors in their first year of residence.* Table 13 illustrates the percentage of residents who reported increasing the number of times they ate fruits and vegetables in the prior month. Thirty-nine percent of residents showed an increase in the frequency of eating fruits and 40% reported an increase in the frequency of eating vegetables. These increases were seen across all age groups; however the increases were smaller for children.

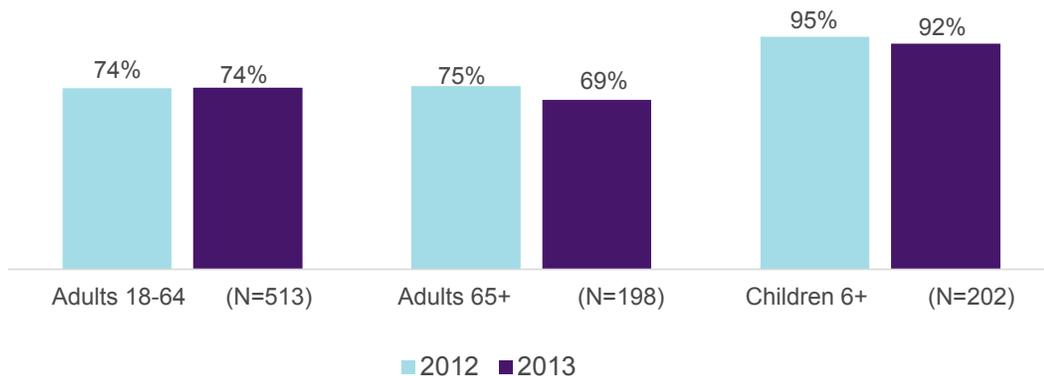
**Table 13: Percentage of Residents with Increase in Times Eating Fruits and Vegetables from 2012 to 2013**



Statistically significant difference in Adults 18-64 and Adults 65+ at  $p < .05$

*Residents experienced no change in their physical activity level.* As shown in Table 14, the proportion of residents participating in some physical activity was stable for adults 18-64 but decreased slightly for adults 65 and older and for children. None of the changes in physical activity from 2012 to 2013 were statistically significant.

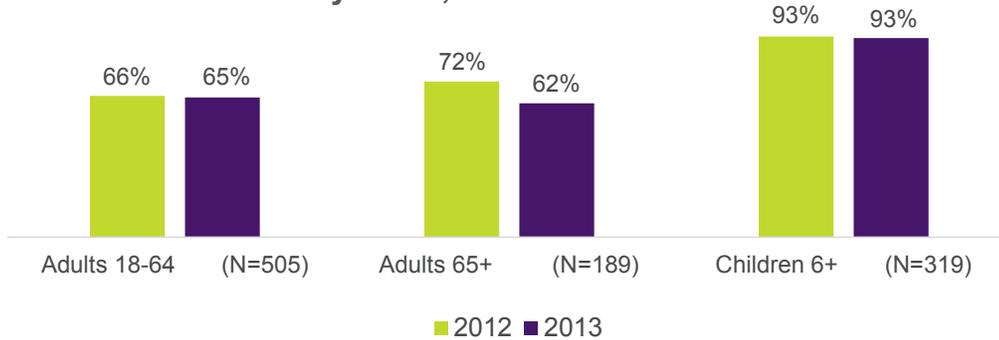
**Table 14: Percentage of Residents Engaging in Physical Activity in Past Month**



## OVERALL HEALTH

The overall health for residents ages 18-64 and for children was stable in the first year of residence with Mercy Housing. Table 15 shows that no significant improvement or decline was found between the 2012 interview and the 2013 interview. As expected, the health of older adults declined during that 1-year period, and a moderate correlation was found between age and poorer overall health ( $r = .339$ ).

**Table 15: Percentage of Residents in Good, Very Good, or Excellent Health**

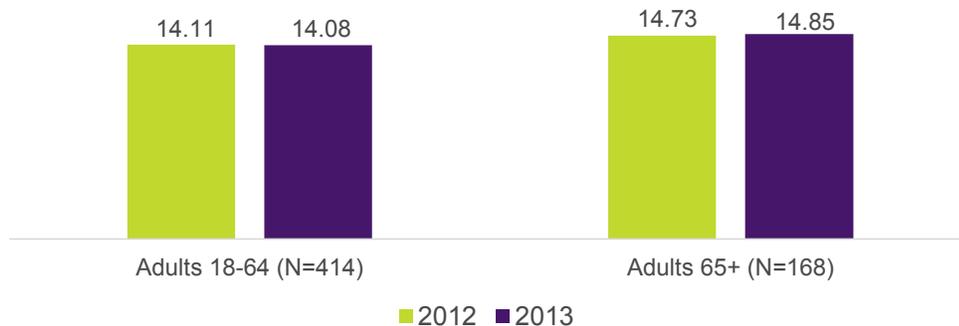


Statistically significant difference for Adults 65+ at  $p = .003$

## EMOTIONAL WELLBEING

The emotional wellbeing of adult residents was also stable in the first year of residence. This trend was found for adults 18-64 and adults 65 and older. Emotional wellbeing included residents' responses to three emotional wellbeing questions—feeling downhearted and blue, feeling down in the dumps, and describing oneself as a happy person. In addition, the responses to these three questions added together formed a composite score for the Mental Health Inventory-3. As shown in Table 16, no significant difference was found in the composite score from 2012 to 2013.

**Table 16: Average Score on Mental Health Inventory-3**



Scores range from 3-18 with higher scores indicating greater emotional wellbeing

## CONCLUSIONS

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This analysis examining the change in Mercy Housing residents who moved in during the 12 months prior to their first survey suggest that service-enriched housing has a positive influence on intermediate outcomes such as access to health insurance and health care and use of emergency rooms and hospitalizations. It further suggests that specific resident services interventions such as the health interview are effective in helping resident access health care. Additionally, this analysis presents some evidence that resident services may be effective in influencing behaviors such as healthy eating, although the trends are mixed across age groups and specific health-related behaviors.

The lack of change in longer-term outcomes such as overall health and emotional wellbeing is not surprising. First, age is clearly a factor influencing the overall health for older adults, and although service-enriched housing may be successful in extending independent living, it is not likely to bend the natural curve of the health problems associated with older age. For younger people, changes in overall health may be outcomes that are too distal to be captured in a 1-year period. Nonetheless, the positive trends in the intermediate outcomes of access to health insurance and routine care indicate that service-enriched housing may exert a positive impact on overall health over the long term.

Despite the strong and consistent findings that new residents have improved access to health insurance and health care and reduced use of acute care services, a number of limitations suggest that these findings be interpreted with caution. The biggest limitation is that because no comparison or control group is available, we cannot be absolutely sure that service-enriched housing “caused” the changes in outcomes. A detailed account of the limitations associated with the annual resident survey is found in the full 2012 report,<sup>2</sup> and a disclosure of the statistical tests and their results are found in an appendix to this report.

In summary, the findings presented here strongly suggest that the service-enriched housing provided by Mercy Housing exerts a positive influence on residents, providing the support needed for residents of all ages to improve and sustain their health and to live independently for as long as possible.

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<sup>2</sup> Additional information on the methodology and limitations of the Annual Resident Surveys can be found at <http://www.mercyhousing.org/file/RS-Annual-Survey-Report-2012.pdf>

## APPENDIX A: TYPES OF STATISTICAL ANALYSES CONDUCTED

Table 1 and Table 2: Frequencies of demographic variables for the sample included in the analysis

Table 3: McNemar Chi-square test comparing the proportion of the sample reporting that they had health insurance across the 2012 and 2013 surveys;  $p=.035$

Table 4: Pearson Chi-square test to examine differences in insurance status between the group of residents who participated in a health interview with the group of residents who did not participate in a health interview;  $\chi^2=17.88$ ,  $df=1$ ,  $p<.001$

Table 5: McNemar Chi-square comparing the proportion of the sample having a routine checkup across the 2012 and 2013 surveys;  $p=.002$

Table 6: Pearson Chi-square test to examine differences in having a routine checkup between the group of residents who participated in a health interview and the group of residents who did not participate in a health interview;  $\chi^2=4.54$ ,  $df=1$ ,  $p=.030$

Table 7: McNemar Chi-square comparing the emergency room visits for the entire sample across the 2012 and 2013 surveys;  $p=.010$

Table 8: Wilcoxon Paired test examining the change in the responses of the sample on the number of emergency room visits they had in the 2012 and 2013 surveys; All ages-  $Z=1.38$ ,  $p=.166$ ; Adults 18-64 -  $Z=1.44$ ,  $p=.149$ ; Adults 65+ -  $Z=.057$ ,  $p=.955$ ; Children -  $Z=.484$ ,  $p<.629$

Table 9: Wilcoxon Paired test examining the change in the responses of the sub-sample who reported at least one emergency visit in the 2012 survey on the number of emergency room visits they had in the 2012 and 2013 surveys; All ages -  $Z=8.218$ ,  $p<.001$ ; Adults 18-64 -  $Z=5.516$ ,  $p<.001$ ; Adults 65+ -  $Z=3.545$ ,  $p<.001$ ; Children -  $Z=5.370$ ,  $p<.001$

Table 10: McNemar Chi-square comparing the hospital stays for the entire sample across the 2012 and 2013 surveys;  $p<.001$

Table 11: Wilcoxon Paired test examining the change in the responses of the sample on the number of hospital stays they had in the 2012 and 2013 surveys; All ages -  $Z=2.305$ ,  $p=.021$ ; Adults 18-64 -  $Z=2.012$ ,  $p=.044$ ; Adults 65+ -  $Z=1.232$ ,  $p=.218$ ; Children -  $Z=2.998$ ,  $p<.001$

Table 12: Wilcoxon Paired test examining the change in the responses of the sub-sample who reported at least one hospital stay in the 2012 survey on the number of hospital stays they had in the 2012 and 2013 surveys; All ages -  $Z=7.912$ ,  $p<.001$ ; Adults 18-64 -  $Z=6.141$ ,  $p<.001$ ; Adults 65+ -  $Z=2.516$ ,  $p=.012$ ; Children -  $Z=4.763$ ,  $p<.001$

Table 13: Wilcoxon Paired test examining the change in the responses of the sample on the number of times they ate fruit and the number of times they ate vegetables in the 2012 and 2013 surveys;

Fruit - All ages -  $Z=3.298$ ,  $p=.001$ ; Adults 18-64 -  $Z=1.971$ ,  $p=.049$ ; Adults 65+ -  $Z=2.234$ ,  $p=.025$ ; Children 6+ -  $Z=1.1690$ ,  $p=.091$

Vegetables - All ages -  $Z=3.741$ ,  $p<.001$ ; Adults 18-64 -  $Z=2.898$ ,  $p=.004$ ; Adults 65+ -  $Z=2.279$ ,  $p=.023$ ; Children 6+ -  $Z=1.129$ ,  $p=.259$

Table 14: McNemar Chi-square comparing the proportion of the sample reporting participating in exercise in the 2012 and 2013 surveys; All Ages -  $p<.001$ ; Adults 18-64 -  $p=1.0$ ; Adults 65+ -  $p=.177$ ; Children 5+ -  $p=.327$

Table 15: McNemar Chi-square comparing the proportion of the sample reporting good, very good, or excellent health in the 2012 and 2013 surveys; All Ages -  $p<.008$ ; Adults 18-64 -  $p=.791$ ; Adults 65+ -  $p=.003$ ; Children 6+ -  $p=.740$

Table 16: Paired t-test comparing the sample's mean scores on the Mental Health Inventory-3, a composite of the responses to the three emotional well-being questions, in 2012 and 2013; Adults All Ages -  $t=.097$ ,  $p<.923$ ; Adults 18-64 -  $t=189$ ,  $p=.850$ ; Adults 65+ -  $t=.554$ ,  $p=.581$



Carol Breslau  
Mercy Housing  
1999 Broadway #1000  
Denver, CO 80202  
<https://www.mercyhousing.org>  
[cbreslau@mercyhousing.org](mailto:cbreslau@mercyhousing.org)



Nancy VanDeMark, Ph.D.  
Innovela Consulting Group  
4098 Field Dr.  
Wheat Ridge, CO 80033  
[nancyvandemark@comcast.net](mailto:nancyvandemark@comcast.net)